Notice

For information pertaining to graduate programs offered by the various Faculties and Schools at AUB, consult the 2013–14 edition of the Graduate Catalogue.

Information in this catalogue applies to academic year 2013–14. The University reserves the right to make changes without prior notice in programs, course offerings, academic requirements, and teaching staff as the need arises.

Student Responsibility for Catalogue Information

Students are responsible for reading the information in this catalogue. Failure to read and comply with faculty and university regulations will not exempt students from whatever penalties they may incur.

All students are assigned post office boxes and email addresses. Students are responsible for checking their post office boxes and email regularly for official announcements and information.

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This catalogue and relevant updates can also be viewed at www.aub.edu.lb/registrar/Pages/index.aspx

Additional information about course requirements can be viewed on the on-line Banner Catalogue available at the AUB webpage.

The American University of Beirut is an affirmative action institution and an equal opportunity employer.
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Academic Calendar 2013–14

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<td>September 5</td>
<td>Change of schedule for the first semester (Drop and Add)</td>
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<td>September 9</td>
<td>Opening Ceremony</td>
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<tr>
<td>September 11–18</td>
<td>Late payment of fees for all students</td>
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<tr>
<td>September 20</td>
<td>Set financial holds for all students who did not settle their financial account (Office of the Comptroller)</td>
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<tr>
<td>October 4</td>
<td>Deadline for submitting NSSF declaration for the academic year 2013–14</td>
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<tr>
<td>October 15–17</td>
<td>Al-Adha, holiday, No classes</td>
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<tr>
<td>November 4</td>
<td>Hijra New Year, holiday, No classes</td>
</tr>
<tr>
<td>November 8</td>
<td>Last day for withdrawal from courses for the first semester</td>
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International student pre-orientation program for all students from abroad, Office of International Programs

On-line course registration for all new and old returning students

Phase II on-line registration for continuing students (except Medicine)

First Semester begins for all faculties except Medicine

Change of schedule for the first semester

Opening Ceremony

Late payment of fees for all students

Set financial holds for all students who did not settle their financial account (Office of the Comptroller)

Deadline for submitting NSSF declaration for the academic year 2013–14

Al-Adha, holiday, No classes

Hijra New Year, holiday, No classes

Last day for withdrawal from courses for the first semester
November 12–13  Second semester advising for continuing students
November 13  Ashoura, holiday. No classes
November 14– January 15  Second semester on-line course registration for continuing students
November 18– January 3  Inter-faculty on-line transfer applications for the second semester 2013–14
November 22  Independence Day, holiday. No Classes
December 2  Founder’s Day. Classes will be held
December 11–12  Reading period for the first semester
December 13  First semester examinations begin
December 16–20  Submission of applications for deferral of payment for the second semester for all current registered students. Application available on the website.
December 21  First semester ends for all faculties except Medicine
December 22– January 1  Christmas and New Year vacation
January 2–29  Payment of fees for continuing students for the second semester
January 6  Armenian Christmas, holiday. No classes
January 13  Prophet’s Birthday, holiday. No classes
January 14–24  Submission of applications for deferral of payment for the second semester for new and old returning. Application available on the website
January 16–17  Submission of official documents for all new students for the Spring Term
January 17  International student pre-orientation program for students coming from abroad. Office of International Programs
January 20–22  New students orientation. Office of Student Affairs
January 20–March 7  Inter-faculty on-line transfer applications for the Fall Term 2014–15
January 21–24  Spring advising and on-line course registration for all new students
January 22–29  Payment of fees for new students

**Spring Term 2014**

January 27  Second semester begins for all faculties except Medicine
January 28–31  Change of schedule for the second semester
January 30–February 6  Late payment of fees for all students
February 9  St. Maroun’s Day, holiday. No Classes
February 14  Deadline for submitting NSSF Declaration for the second semester
March 4  Last day for withdrawal from courses for the second semester
March 25  Annunciation Day, holiday. No classes
April 14–17  Advising for continuing students for the Summer 2014, and Fall 2014–2015
April 14–17  On-line registration for continuing students for the Summer 2014
April 18–21  Easter vacation
April 24–August 15  Fall Term (2014–15) early (Phase I) on-line course registration for continuing students

April 30  Academic year ends for Med. II
May 1  Labor Day, holiday. No classes
May 5–7  Reading Period for the second semester
May 8  Second semester examinations begin
May 16  Second semester ends for all faculties except Medicine
May 19–20  Submission of official documents, advising and registration for all new students for Summer
May 20–27  Payment of fees for the Summer 2014

**Summer 2014**

May 26  Classes begin for Summer 2014 for all faculties except Medicine
May 27–30  Change of schedule for the Summer Term (Drop and Add)
May 28–June 4  Late Payment for the Summer 2014
May 30  Academic year ends for Med. III and Med. IV
May 30  Commencement exercises
May 31  Commencement exercises
June 27  Last day for withdrawal from courses for the Summer 2014
June 30  Academic year ends for Med. I
July 14–18  Final examinations for all faculties except Medicine, Agricultural and Food Sciences, and Medical Laboratory Sciences
July 18  Classes end for the Faculty of Agricultural and Food Sciences, and Medical Laboratory Sciences
July 21–25  Final examinations for the Faculty of Agricultural and Food Sciences, and Medical Laboratory Sciences
August 15  Assumption Day, holiday. No classes
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The American University of Beirut (AUB) is a private, independent, non-sectarian institution of higher learning founded in 1866. It functions under a charter from the State of New York and is governed by a private, autonomous Board of Trustees.

The University has six faculties: Agricultural and Food Sciences, Arts and Sciences, Engineering and Architecture, Health Sciences, Medicine (including the Rafic Hariri School of Nursing), and the Suliman S. Olayan School of Business. At present, AUB offers programs leading to Bachelor's, Master's, MD, and PhD degrees.

The University became co-educational in 1922. The language of instruction is English.

Statement of Accreditation Status (SAS)

Degrees awarded by the American University of Beirut are officially registered with the Ministry of Higher Education in Lebanon and with the New York State Department of Education in the United States. AUB has been accredited as an institution since 2004 by the Commission on Higher Education of the Middle States Association of Colleges and Schools (3624 Market Street, Philadelphia, PA 19104, Tel. 267-284-5000). The University's accreditation was most recently reaffirmed in June 2009, after the completion of an extensive self-study that was reviewed by educational experts chosen in consultation with Middle States. Over the last several years, a number of AUB faculties, in addition to the Medical Center, have also sought accreditation with more specialized bodies. In September 2006, the Faculty of Health Sciences' Graduate Public Health Program became the first such program to be accredited by the Council on Education for Public Health (CEPH) outside of North America. One year later, the Rafic Hariri School of Nursing became the first nursing school beyond American territories to have its nursing programs accredited by the Commission on Collegiate Nursing Education (CCNE); it was reaccredited for 10 years in 2012 (see www.aacn.nche.edu/ccne-accreditation). In 2008, the AUB Medical Center received official accreditation from Joint Commission International (JCI), the international arm of the US-based Joint Commission on Accreditation of Healthcare Organizations (JCAHO). The Medical Center had previously been accredited by JCAHO from 1965 until 1983; however, the outbreak of civil war in Lebanon subsequently prevented periodic site visits by review teams. The Medical Center is also accredited by the American Nurses Credentialing Center (ANCC) as a provider of continuing nursing education. ANCC's Magnet Recognition Program B granted AUBMC its prestigious Magnet designation in June 2009, making the Medical Center the first healthcare institution in the Middle East and the third in the world outside of the United States to be recognized in this way. Also in 2009, undergraduate and graduate programs offered by the Suliman S. Olayan School of Business were accredited by the Association to Advance Collegiate Schools of Business (AACSB). In July 2010, four undergraduate programs at the Faculty of Engineering and Architecture were accredited by ABET, Inc. (the Accreditation Board of Engineering and Technology) retroactive to October 1, 2008.

The University or its representatives are members of the American Council on Education (ACE); the Council of Graduate Schools (CGS); the Association of American Colleges and Universities (AACU); the Association of American International Colleges and Universities (AAICIU); the Global Liberal Arts Alliance (GLAA); the American Association of Collegiate Registrars and Admissions Officers (AACRAO); the Arab Association of Collegiate Registrars and Admissions Officers (Arab ACRAO); the Association for Institutional Research (AIR); the College Board; the Association of International Educators (NAFSA); Student Affairs Administrators in Higher Education (NASPA);

Mission Statement

The American University of Beirut (AUB) is an institution of higher learning founded to provide excellence in education, to participate in the advancement of knowledge through research, and to serve the peoples of the Middle East and beyond. Chartered in New York State in 1863, the University bases its educational philosophy, standards, and practices on the American liberal arts model of higher education. The University believes deeply in and encourages freedom of thought and expression and seeks to foster tolerance and respect for diversity and dialogue. Graduates will be individuals committed to creative and critical thinking, life-long learning, personal integrity, civic responsibility, and leadership.

History

In 1862, American missionaries in Lebanon and Syria, under the American Board of Commissioners for Foreign Missions, asked Dr. Daniel Bliss to withdraw from the evangelical work of the mission in Lebanon to found a college of higher learning that would include medical training. It was felt that this college should have an American educational character, should be administered independently from the mission, and should be maintained by its own funds. Dr. Bliss traveled to the United States in the summer of 1862 to solicit funds for this new enterprise. By August 1864, he had raised $100,000 but, because of inflation during the Civil War, it was decided that he should raise a sterling fund in England to start the operations of the college, leaving the dollar fund to appreciate. After collecting £4,000 in England, Dr. Bliss traveled to Beirut in March 1866.

On April 24, 1863, while Dr. Bliss was raising money for the new school, the State of New York granted a charter under the name of the Syrian Protestant College. The college opened with its first class of 16 students on December 3, 1866.

The cornerstone of College Hall, the first building on the present campus in Ras Beirut, was laid December 7, 1871, by the Honorable William E. Dodge, Sr., then Treasurer of the Board of Trustees. At the ceremony, President Daniel Bliss expressed the guiding principle of the college in these words:

“This college is for all conditions and classes of men without regard to color, nationality, race or religion. A man, white, black or yellow, Christian, Jew, Mohammedan or heathen, may enter and enjoy all the advantages of this institution for three, four or eight years; and go out believing in one God, in many gods, or in no God. But it will be impossible for anyone to continue with us long without knowing what we believe to be the truth and our reasons for that belief.”

College Hall and the first medical building were completed and put to use in 1873, and the bell
in the tower of College Hall pealed for the first time in March 1874. However, College Hall was extensively damaged by a savage explosion in the early morning of November 8, 1991, and the building had to be demolished. It was later rebuilt, and the new College Hall was inaugurated in June 1999.

Since the earliest years, the University has continually expanded and developed new faculties and programs. In 1867, it started the School of Medicine. Four years later, in 1871, both a school of pharmacy and a preparatory school were added. The latter became independent in 1960 and is now known as International College. In 1900, the University established a school of commerce which was later incorporated into the Faculty of Arts and Sciences. In 2000, it regained its independence and was later named the Suliman S. Olayan School of Business.

When the hospital (currently the American University of Beirut Medical Center) opened in 1905, a school of nursing—today the Rafic Hariri School of Nursing—was also established. In 1910, the University opened a School of Dentistry, which operated for thirty years. In the early years of the 1950s, several program expansions took place. The Faculty of Engineering and Architecture was established in 1951; the Faculty of Agriculture—now the Faculty of Agricultural and Food Sciences—first opened its doors in 1952; and the School of Public Health—now the Faculty of Health Sciences—was founded in 1954.

On November 18, 1920, the Board of Regents of the University of the State of New York changed the name of the institution from the Syrian Protestant College to the American University of Beirut; other charter amendments expanded the functions of the University.

At the end of June 2012, the number of degrees and diplomas awarded since June 1870 totaled 82,207.

President Dr. Daniel Bliss 1866–02
President Dr. Howard S. Bliss 1902–20
Acting President Dean Edward F. Nickoley 1920–23
President Dr. Bayard Dodge 1923–48
President Dr. Stephen B.L. Penrose, Jr. 1948–54
Acting President Dr. Constantine K. Zurayk 1954–57
President Dr. J. Paul Leonard 1957–61
President Mr. Norman Burns 1961–65
President Dr. Samuel B. Kirkwood 1965–76
Interim President Dr. James Cowan 1976–77
President Dr. Harold E. Hoelscher 1977–81
Acting President Dr. David S. Dodge 1981–82
President Dr. Malcolm H. Kerr 1982–84
Acting President Dr. Samir K. Thabet 1984
President Dr. Calvin Plimpton 1984–87
President Dr. Frederic P. Herter 1987–93
President Dr. Robert M. Haddad 1993–96
President Dr. David S. Dodge 1996–97
President Dr. John Waterbury 1998–08
President Dr. Peter F. Dorman 2008–

Marquand House, completed in 1879, is the campus residence of the president of the University.

All presidents have lived there during their presidencies, except for Dr. Calvin Plimpton, Dr. Frederic Herter, Dr. Robert Haddad, and Mr. David Dodge.

Three presidents died while in office: Dr. Howard Bliss, Dr. Stephen Penrose, and Dr. Malcolm Kerr. Dr. Kerr, the ninth president, was assassinated outside of his College Hall office on January 18, 1984.

Location and Climate

The University is situated in Beirut, Lebanon, at the crossroads of the Middle East. The campus on the Ras Beirut peninsula stretches along the Mediterranean shore and overlooks St. George’s Bay toward northern Lebanon and the snow-capped mountains to the east. The campus of around 61 acres has 64 buildings, including faculty and administrative buildings, five libraries, three museums, the Charles W. Hostler Student Center, two men’s and five women’s dormitories, and the Medical Center. The luxuriant flowers, shrubs, and trees make it one of the most beautiful campuses in the world.

Lebanon enjoys a Mediterranean climate and is pleasant and sunny for eight months of the year. The winter rainy season from November to March, however, is at times damp and cold. Although most Beirut buildings are centrally heated, warm clothing is recommended for the winter months. The average annual rainfall of 86 cm (34 inches) comes chiefly in the winter when the temperature may drop below 7˚C (50˚F).

Academic Services

Archaeological Museum

Founded in 1868, the University Archaeological Museum is the third oldest museum in the Near East. It was established with a donation from General Cesnola, the American Consul in Cyprus, and the collection has since grown steadily. In 2006, the Museum was completely renovated with the construction of an additional mezzanine and an extensive reorganization in a chronological and thematic treatment of its collections. Today the museum exhibits a wide range of artifacts (15,000 objects; 10,000 coins) from Lebanon and neighboring countries. It traces humankind’s progress in the Near East from the Early Stone Age to the Islamic period. The collections on display provide educational benefits to students and scholars in Near Eastern archaeology.

The museum runs a research program including field excavations and publications of museum collections. Several types of educational activities (e.g., lectures, exhibitions, children’s programs, trips) are also organized in collaboration with the Society of the Friends of the Museum, which also runs the Museum Shop. The museum may be enjoyed by the public free of charge.

Opening hours are Monday through Friday, 9 am to 5 pm. The museum is closed during official and AUB holidays.

Center for Teaching and Learning (CTL)

The Center for Teaching and Learning (CTL) promotes and supports high quality teaching and learning in keeping with AUB’s mission of excellence in education and its commitment
to independent thinking and life-long learning. The Center is an independent, multipurpose, interdisciplinary unit that serves all of the faculties at the University. It is administratively under the Office of the Provost. The CTL works in collaboration with AUB's academic support services, especially the University Libraries, IT Academic Core Processes and Systems, and the Office of Institutional Research and Assessment.

Office of Information Technology (OIT)
The Office of Information Technology (OIT) is AUB’s and AUBMC’s central information technology service provider and a regional leader in technological initiatives for institutions of higher learning. The OIT strives to provide members of the AUB community, vendors, partners, affiliates, and others across the globe with secure, state-of-the-art and cost-effective information technology solutions that empower stakeholders to excel in the pursuit of their goals and in achieving leadership in education and healthcare. The OIT performs its duties in a team-empowered environment with integrity, transparency, and innovation. It is composed of specialized IT departments that are responsible for revamping, deploying, and maintaining systems and infrastructure services aimed at enhancing user productivity through seamless access to services and resources. The IT departments implement innovative solutions focusing on functionality, flexibility, manageability, standardization, security, and data safety. The IT organization manages, through its various departments, the hardware, software, and applications supporting many of the University’s academic and administrative functions. These include the Student Information System (AUBsis) operated by the Office of the Registrar; the Library Information System operated by the University Libraries; the Financial Information System (Oracle eBusiness Suite) operated by the Office of the Comptroller; the learning management system (Moodle) operated by the academic units; and the integrated hospital information system operated by the hospital administration and departments. The smooth and efficient functioning of these systems is overseen by a team of professional and experienced IT staff. You can view the services provided by the IT organization by visiting: www.aub.edu.lb/it/.

IT Academic Core Processes and Systems

The IT Academic Core Processes and Systems (IT-ACPS) department provides academic units with an IT-enabled environment and innovative solutions that facilitate creative teaching, high quality research, effective learning, and professional collaboration and development. IT-ACPS performs its duties transparently to empower stakeholders to advance and lead in education and research. IT-ACPS is responsible for providing services related to plagiarism prevention, e-Learning, student surveys, instructional design, and IT consulting. IT-ACPS advises faculty members, students, and the academic administration on the state-of-the-art technological facilities available for teaching and research. IT-ACPS provides a series of scheduled workshops on e-Learning and instructional design to all faculty members. It also provides stakeholders with face-to-face training sessions that help them to acquire confidence and capacity in a wide variety of computer applications. You can view the services provided by this department by visiting: http://www.aub.edu.lb/it/acps.

AUBnet Intranet and Internet Services

AUBnet provides a state-of-the-art wired and wireless network infrastructure ensuring high-speed, secure, reliable, and widespread access for AUB users across the entire campus and hospital, including all dorms and faculty apartments. AUB students can connect to AUBnet from public computer labs of personal laptops and mobile devices that access the campus-wide wireless network. Using any web browser, students can take over a hundred online e-learning courses, most of which are computer-related.

With an AUBnet account, all students, faculty, and staff have full access to the internet, email, and personal websites. This access is subject to a monthly quota to ensure an optimum level of access across the community, with quota-free access after business hours and during holidays. The IT organization also maintains AUB’s official websites including the Digital Documentation Center’s website.

Computer Labs

In addition to providing internet access, computer labs also offer a variety of other resources to students, such as printers, CD burners, and secure network storage for personal data. They may also request access to servers hosting such applications as Microsoft Office, special software for statistics and graphics, and various programming languages.

Help Desk

Friendly and knowledgeable IT help desk specialists are always ready to support students, faculty, and staff. For IT-related support, contact the IT help desk by email at it.helpdesk@aub.edu.lb, dial ext. 2260, or visit in person.

For more information, visit our website: www.aub.edu.lb/it

Medical Center

The American University of Beirut Medical Center (AUBMC) is a private, not-for-profit, in-patient and out-patient teaching facility of the Faculty of Medicine. As a state-of-the-art tertiary/quaternary medical facility, it operates 352 beds (and is growing its bed capacity), serving 30,732 in-patients per year, and an outpatient facility receiving 318,721 visits (242,341 private; 28,731 general outpatient department; and 47,649 emergencies) per year. It provides a wide spectrum of medical, nursing, and paramedical training programs at the undergraduate and postgraduate levels in different specialties and subspecialties with 358 residents (53 Fellows, 1 PGY VII, 3 PGY VI, 16 PGY V, 37 PGY IV, 63 PGY III, 73 PGY II, 112 PGY I). It is served by 247 predominantly US-trained highly-credentialed physicians. AUBMC is considered the primary and tertiary/quaternary referral medical center in Lebanon and neighboring countries. It is fully equipped and hosts a number of centers of excellence.

IT Medical Center Processes and Systems

IT Medical Center Processes and Systems (IT-MCPS) caters to the information technology needs of the hospital's administration, clinical departments, and nursing services, and supports academic and research activities at the Faculty of Medicine. The Medical Center is presently going through a fast-paced computerization process focused on improving the provision of medical care and streamlining operations in accordance with JCI accreditation standards. Information technology plays an essential role in achieving this goal.

The integrated hospital information system comprises a web portal and web services that link various medical, clinical, and financial applications running on disparate platforms. This architecture allows us to transition gradually to new technologies without the need to compromise or re-develop existing solutions, while at the same time affording us the flexibility needed to develop the system in the highly dynamic fields of medical science and information technology.
Most major areas of the hospital are currently computerized and work continues on projects to expand, upgrade, and address new needs in all areas and to take advantage of evolving information technologies.

Libraries

AUB libraries consist of the following: Jafet Memorial Library (the central library of the AUB campus), the Engineering and Architecture Library, Saab Memorial Medical Library, and the Science and Agriculture Library, with its annex AREC (Farm) Library.

The libraries have a long history in Lebanon and in the region which is reflected in the rich collections that they own. The collections consist of 386,759 books in 464,708 volumes and 6,828 print periodicals (1,800 in Arabic) in 186,355 volumes. The libraries also own 218,293 electronic books and provide access to 87,701 electronic periodicals (8 in Arabic) and 800 journals on microfilm (599 in Arabic). The libraries currently subscribe to 5,000 electronic periodicals, 780 print periodicals (318 in Arabic), and 252 databases. There are about 1,139,340 audiovisual items of all formats, the majority of which are microforms of a substantial number of local and regional journals and newspapers going back to the late 19th century and early 20th century. The Archives and Special Collections contain 673 linear feet of archival material, 1,402 manuscripts, most of which are in Arabic and some are uniquely and/or rarely held resources, 8,146 volumes of theses, projects, and dissertations going back to 1907, 5,022 posters, 776 postcards, and 1,941 maps, as well as 51,067 photographs, of a unique and historical nature. These print and electronic collections are developed and enriched on a regular basis to support the academic and research programs of the University.

The libraries are fully automated and many of their resources, databases, electronic books, and references are remotely accessible, providing a modern and virtual environment that is conducive to research. They are equipped with a state-of-the-art electronic classroom and computer lab. Secure and reliable wireless connections are available in all the libraries. The libraries provide customized reference and instruction services through emails, to walk-ins, and in classes, in an active program of user education which promotes a culture of information literacy at all levels. Researchers from Lebanon, the region, and beyond continuously seek out the libraries for their unique, rich, and historical collections, particularly on Lebanon and the Middle East. The libraries open a total of 106.5 hours per week and 24/7 during reading and exam periods.

The Saab Memorial Medical Library (SML), (http://smlweb.aub.edu.lb/) is dedicated to the memory of Dr. Nicholas Saab (AUB School of Medicine graduate, 1959). The library has been functioning in its present quarters as part of the Medical Center since 1975, and qualifies as one of the best medical libraries in the Middle East. Its collection consists of 188 printed periodical titles, over 84,000 backfile periodical volumes, more than 5,000 e-textbooks, and nearly 48,000 books, over 2,000 of which are of historical value (such as Avicenna's Canon of Medicine, 1933). SML now acts as a hybrid library that is constantly increasing its e-resources while maintaining traditional services. It has a large number of the most important bibliographic medical and allied health databases, and provides access to more than 5,500 medical and health sciences e-journals. In 1978 SML was designated by the World Health Organization as the National Focal Point for Lebanon. The library has a special collection called the Lebanese Corner, which includes publications about Lebanon, or by Lebanese authors, in the fields of medicine and other health related topics. SML also started a Medical Institutional Repository in 2007. SML services are provided mainly to an AUB clientèle, but also to all other medical and allied health users throughout Lebanon. The library opens for a total of 106.5 hours per week. With its rich, up-to-date medical collection, SML aims to promote research, education, and patient care in the medical and allied health fields. SML is a member of three consortia in Lebanon and the Arab world, and it provides training to medical librarians and healthcare professionals in Lebanon and the region.

Office of Institutional Research and Assessment (OIRA)

The Office of Institutional Research and Assessment (OIRA) coordinates institutional assessment and research activities. It is responsible for the collection, analysis, and dissemination of accurate and timely information about the University's environment and performance. This information supports institutional operations, management, decision-making, and planning functions, and sustains excellence in student learning and community service.

The office also develops and conducts assessments for various purposes at institutional, regional, and international levels.

More specifically, the functions of OIRA are to
- act as a resource and repository for official institutional statistics, information, and policies;
- coordinate assessment and evaluation of University programs and processes (e.g., registration, admissions, advising) to support planning, decision-making, and improvement;
- formulate and implement data-gathering activities such as surveys, interviews, and focus groups for a wide variety of internal (e.g., accreditation) and external (e.g., comparison with peer institutions) uses;
- develop, administer, and report assessments required by the University for admissions, placement, program review, and other educational purposes;
- serve as a testing center for various international bodies and organizations; and
- administer instructor and course evaluations, and provide feedback to faculty members to improve teaching.

Office of University Advancement

The Office of University Advancement supports the mission of AUB by developing and strengthening relationships with key constituencies including alumni, donors, and friends. It raises money for University priorities such as scholarships, academic programs, and building projects; develops and strengthens relationships among AUB’s worldwide alumni and between alumni and the University; and is responsible for communicating news and information about the University through print and electronic media to both internal and external constituencies. The Office of University Advancement includes Development, Communications, Alumni Relations, and Advancement Services.
Admissions

The American University of Beirut seeks students of sound character and demonstrated academic achievement and promise. In accordance with the policies of its founders and with its equal opportunity policy, the University admits students regardless of race, color, religion, gender, disability, or national origin. While it attracts students from more than sixty countries from around the world, AUB primarily serves applicants from Lebanon, the Arab world, and other countries of the Middle East, and also seeks to maintain geographic distribution within the region. The University values its strong ties with its alumni and considers the attendance of alumni children important to the maintenance of these ties and to the continuation of its traditions.

Application Procedures

Applications are available at the Office of Admissions at either of the addresses below, and are mailed to applicants upon request. Applications can also be downloaded from the AUB website: www.aub.edu.lb/admissions/Pages/index.aspx

Applicants Outside North America

Office of Admissions
American University of Beirut
PO Box 11-0236
Riad El-Soh 1107 2020
Beirut, Lebanon

Email: admissions@aub.edu.lb
Telephone: 961-1-374374/374444
Ext: 2590/2585/2596
Fax: 961-1-750775

Applicants in North America

American University of Beirut
3 Dag Hammarskjold Plaza, 8th Floor
New York, NY 10017-2303
Telephone: 1-212-583-7665
Fax: 1-212-583-7650

Admission to Undergraduate Study

Students may apply for admission to AUB’s four-year undergraduate program as:

- freshmen in the Faculty of Arts and Sciences
- sophomores/first year professional students in all the faculties
- transfer students from other universities
- visiting students, or non-degree students
- second degree applicants.

AUB has two undergraduate Admissions Committees.

The selection of freshman applicants is made by the Freshman Admissions Committee and selection of sophomore and visiting/non-degree applicants is made by the Undergraduate Admissions Committee. The selection of transfer students to advanced standing or those applying for a second degree is made by the respective faculties.

All admission decisions are conditional upon evidence of the student having received the certificate or degree (recognized by the Ministry of Education of the originating country) on the basis of which admission is sought, and based on evidence of having met the English Language Proficiency Requirement (ELPR). A student is not eligible to register until all conditions of his/her admission are met. Conditions are stated in the letter of admission.

Students applying for entrance in the fall semester are notified of conditional admission by the end of April. Applicants for the spring semester are notified by mid-January, and applicants for the summer session are notified by early June. Upon notification of conditional admission, a student can hold a place for the fall semester by making a non-refundable enrollment deposit of $1000 by June 30 or as listed on the letter of admission. This deposit is credited to the student’s account upon registration.

Students applying as undergraduates should submit the items listed below by the appropriate deadline. Note that recommendations, official transcripts of records, and all other documents presented to complete an application for admission are the property of AUB and are not returned to applicants.

Applicants for the Freshman Year

Freshmen applicants may apply for admission to AUB’s four-year undergraduate program in the Faculty of Arts and Sciences. They may apply for entrance in the first (fall) semester or in the second (spring) semester. Those applying for the Fall semester may opt to apply under a special early admission plan. All applications should be submitted to the Office of Admissions by the deadlines specified below.

Candidates for the freshman year are judged primarily on the basis of:

- their academic record (school grades)
- the results of their SAT I test

Important consideration is also given for:

- their participation in extracurricular activities
- recommendations from teachers and counselors

Factors such as motivation and character, geographic distribution, and alumni relationships may also be considered.

Freshmen applicants must submit the following:

- The application form including the section for freshmen.
- The School Record: official report of grades, including average and rank in class for the two years of schooling prior to the year in which the student is filing the application. Schools that do not provide complete information, particularly average and rank in class, may jeopardize the admission of their students. Applicants should ask the officials of the school they have attended for the last two years to send their school grades directly to the AUB Office of Admissions.
- Applicants to the freshman class are required to present at least two letters of recommendation, one from a Math or Science teacher and another from the school counselor or principal.
- SAT I: The SAT I is required of all undergraduate applicants except junior and senior transfer students and non-degree and visiting students. Each student is responsible for registering and taking the SAT I. Applicants planning to enroll during the spring semester must take the test by the November testing session of the previous year. Students applying for the fall semester must take the SAT I by the January testing session of the same year of their planned
Undergraduate applicants who are not freshmen candidates must submit the following:

- **The Application Form**
- **The School Record**: the official report of grades for the two years of schooling prior to the year in which the student is filing the application, including average and rank in class. Schools that do not provide complete information, particularly average and rank in class, may jeopardize the admission of their students. Applicants should ask the officials of the school they have attended for the last two years to send their school grades directly to the AUB Office of Admissions.
- **SAT I**: The SAT I is required of all undergraduate applicants except junior and senior transfer students and non-degree and visiting students. Each student is responsible for registering and taking the SAT I. Applicants planning to enroll during the spring semester must take the test by the November testing session of the previous year. Students applying for the fall semester must take the SAT I by the January testing session of the same year of their planned enrollment. For students who take the test more than once, the University considers the highest score achieved in each of the critical reading and mathematical reasoning sections. Students should make sure to submit their SAT scores before admission decisions are issued (unofficial scores are considered pending receipt of official ones).
- **Photocopy of applicant's identity card or passport and one recent passport-size color photo.**
- A non-refundable fee of $50 if applying on-line or $75 if submitting a paper application.

### Deadlines for All Undergraduate Applications

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<th>For admission to</th>
<th>Deadline</th>
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<tr>
<td>spring semester of academic year 2012–13</td>
<td>November 30, 2012</td>
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<tr>
<td>fall semester of academic year 2013–14</td>
<td>February 1, 2013</td>
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<td>spring semester of academic year 2013–14</td>
<td>November 30, 2013</td>
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<th>For early admission to</th>
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<tr>
<td>fall semester of academic year 2013–14</td>
<td>November 30, 2012</td>
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### English Language Proficiency Requirement (ELPR)

Prior to registration at the University, undergraduate students admitted to AUB must demonstrate a level of English proficiency consistent with the demands of a program carried out almost exclusively in the English language. This should be done as early as possible (but no later than the end of August) and may be done in any one of the following ways:

- By achieving on the Test of English as a Foreign Language (TOEFL) a minimum score of 573 on the paper and pencil test. Applicants who have taken the computer-based TOEFL should have a score of not less than 230 and those who have taken the Internet-based TOEFL (IBT) should score not less than 88. (Institutional TOEFL scores are not accepted for admission to AUB).
Students enrolled in IEC may register for one or two regular university courses (a minimum of six credits), based on placement in ENGL 100A or ENGL 100B, respectively, thus earning credits toward a degree while working toward achieving the level of English needed for carrying a full course load in the regular program. Such courses are restricted to Arabic and mathematics/statistics/computer literacy courses (maximum six credits) in the Faculty of Arts and Sciences, and equivalent courses in statistics in the Faculty of Agricultural and Food Sciences, the School of Business, and the Faculty of Health Sciences.

The length of time required to complete the IEC varies with the linguistic background and performance of the student; it usually ranges between one to two semesters, depending on the level of proficiency at the time of entry. However, a student who fails to pass the IEC by the end of the second semester loses his/her admission to the University.

Regular IEC attendance is expected due to the intensive nature of the course. Continued class absence may result in a recommendation that the student discontinue IEC.

IEC is designed to develop students' linguistic and communicative competence with special emphasis on developing areas of weakness identified by diagnostic tests. The four skills (reading, writing, listening, and speaking) are integrated. Students are exposed to a wide variety of readings and communicative tasks, which help develop critical thinking. The different stages of the writing process are introduced through a variety of academic and non-academic writing tasks. Lab sessions reinforce grammar, reading speed, vocabulary building, and study skills.

### University Preparatory Program

The Program is designed for high-achieving students who have completed the high school/Baccalaureate II/or other secondary school diploma (based on 12 years of schooling starting with Elementary One Class) and who have minimal formal background in English. The 20 hour per week English curriculum stresses an integrated approach to listening, reading, writing, and speaking. Study skills, pronunciation and research skills are incorporated into the Course which is especially tailored to meet student needs. An additional six hours of Mathematics and/or Science is given to ensure that students are prepared for university work.

It is recommended that students live on campus in one of AUB’s all-men or all-women residence halls and participate in a partial on-campus meal plan. Residence is a means of fostering an “immersion approach” to language learning, giving students the opportunity to practice their English language skills outside the classroom.

Besides the residence/boarding experience, students have the opportunity to participate in regular AUB extracurricular activities and a series of field trips planned in conjunction with course work.

Students enrolled in the UPP are accepted into the Freshman Class at AUB after taking an exit exam and fulfilling the requirements set by the Program; students applying to the Sophomore Class need to take the SAT I and go through the normal admission procedure for regular students.
Early Admission

A special early admission plan for fall admission has been designed for students who fulfill the following requirements:

- submission of application form by November 30
- class rank in the top 25 percent in each of the last two years prior to application
- SAT I scores (last session considered is the November session), Mathematical reasoning and Critical Reading as follows:
  - 1,050 for freshman or nursing I
  - 1,100 for sophomore arts (humanities/social sciences except Economics) or nursing II
  - 1,200 for sophomore sciences quantitative thought, natural sciences or business
economics, first year in the Faculties of Agricultural and Food Sciences and Health Sciences, and first year graphic design
  - 1,250 for first year engineering and architecture

Admission decisions are issued by January 30 and admission is granted to the first choice of major in each of the faculties applied for. Admission is conditional upon the student receiving the certificate or diploma (recognized by the Ministry of Education of the originating country) on the basis of which admission was sought and on evidence of having met the English Language Proficiency Requirement (ELPR). Students may not register until these conditions are met. Applicants who apply early but are not granted early admission are automatically placed in the pool of all other applicants to the same level and same faculty/school and are given equal consideration. Decisions are issued by the end of April.

Transfer from Other Universities

Students enrolled at a recognized institution of higher learning may apply for transfer to the sophomore/first year professional level of any of the faculties if they have completed a class equivalent to that of the freshman class of the Faculty of Arts and Sciences at AUB.

Admission in the above mentioned cases is based on the SAT I scores, and school and university grades and applications should be submitted by the deadlines set for Sophomore applications.

Transfer applicants to the advanced standing i.e. who have completed the 30 sophomore credits or equivalent at other recognized institutions of higher learning need not submit SAT I results. All transfer applicants should consult the appropriate faculty sections of the catalogue, taking particular note of the residence requirement and any particular admission requirements of that faculty. All admitted transfer applicants must submit the most recent transcript of their grades and must meet the English Language Proficiency Requirement (see pages 37–38) before registration.

All transfer applicants need to submit the syllabi of the courses for which they expect to receive credit at AUB together with the application form to the Office of Admissions before April 30 if applying for the fall semester. The deadline for receipt of additional/missing syllabi is May 30, after which no equivalence will be given for courses. Transfer applicants for the spring semester are required to submit the syllabi of the courses by November 30.

Courses of suitable academic standard and in recognized academic disciplines that have been satisfactorily completed at other institutions are given transfer credits only (not grades) pending review by the relevant departments and faculties at AUB. Grades are not transferable.

Credit for University Work Done at the Secondary Level

With approval of the academic departments concerned, freshman credits may be given for high grades on higher level (HL) examinations of the International Baccalaureate, on advanced placement (AP) examinations of the College Board, or on advanced level (A-level) examinations of the General Certificate of Education (GCE).

Admission of Non-Degree Students

Persons enrolled at recognized universities other than AUB (or who have completed some course work —at least one semester or 12 credits —at other universities) and who have a recognized secondary school diploma, or the equivalent from a recognized university, may apply to take up to seventeen credits per semester at the undergraduate level in any faculty for the fall semester (by June 30/rolling till one month prior to the beginning of classes) or for the spring semester (by November 15/rolling till one month prior to the beginning of classes), using an application available from the Office of Admissions. Admission is normally offered for two semesters if the student is joining AUB starting Fall or for one semester if starting in Spring (registration may be extended to another semester depending on course offerings and achievement in courses taken at AUB upon submission of a petition to this effect). Courses successfully completed at AUB by a non-degree student not working for a degree may be considered for credit toward an AUB degree if the student subsequently applies for, and is admitted to, degree candidacy through the regular admission process. Students whose native language is English, or who have completed two years of higher education in a university in which English is the primary language of instruction, are exempted from the English Language Proficiency Requirement (see pages 37–38) for registration.

Admission as a Visiting (Exchange) Undergraduate Student

This category applies to students who are on study abroad or as part of an exchange program. Applicants must be students at other recognized institutions of higher learning pursuing and have completed at least the sophomore year or its equivalent at their home universities. Applications should be submitted to the Office of Admissions along with the degree and transcript of record by April 1 if applying for fall or October 1, if applying for spring. Applicants should specify their intended course of study during their visiting status. Admission is offered normally for two semesters if the student is joining AUB starting Fall or for one semester if starting in Spring (registration may be extended to another semester depending on course offerings and achievements in courses taken at AUB upon submission of a petition to this effect). Students whose native language is English, or who have completed two years of higher education in a university in which English is the primary language of instruction, are exempted from the English Language Proficiency Requirement (see pages 37–38) for registration.
Admission of University Employees

Employees of the University who meet at least minimum undergraduate admission requirements are given admission by the director of Admissions as part-time students. Such applicants must take the SAT I within the set deadlines and must meet the English Language Proficiency Requirement (see pages 37–38) prior to registration. Employees who leave the service of AUB and wish to continue their education at the University must apply for admission in competition with other applicants.

Admission to the Summer Session

Candidates who are not registered at AUB but who wish to join only the summer session must submit their applications before June 1, must hold a recognized secondary school certificate, must be enrolled at a recognized university and must meet the English Language Proficiency Requirement (see pages 37–38). The director of admissions evaluates such applications and decides on the admission or non-admission of these applicants. Currently registered students need not complete an application for admission to the summer session.

Admission to Non-Degree and Other Programs

Some faculties and schools offer non-degree and special programs for which admission requirements differ from those of the degree programs. For information about the admission requirements of these programs, refer to the appropriate faculty or school section and to the Continuing Education Center section in this catalogue.

Readmission/Reactivation

The following factors govern students seeking readmission:

- Students in good standing who withdrew voluntarily shall be granted reactivation to their former faculty if the period between the end of the semester or session of withdrawal, and the beginning of the semester for which readmission is sought, is not more than four regular semesters. The reactivation form, available on the Registrar’s Office web page at www.aub.edu.lb/registrar/Documents/pdfdoc/reactivation-form.pdf, must be submitted to the same office at least one month prior to the beginning of the semester or summer session to which readmission is sought. Readmission is then automatic.

- Students who have left the University for more than two years must submit the readmission request (readmission form) available on the Registrar's Office web page at www.aub.edu.lb/registrar/Documents/pdfdoc/readmission-form.pdf) must be submitted to the same office, and must receive readmission approval from the admissions committee of their faculty/school.

- Students who have left the Faculty of Arts and Sciences while on probation remain on probation for one semester and are required to take 12 or 13 credits. If students do not remove probation at the end of that semester, they are dropped from the faculty.

Deferred Registration of Admitted Students

Undergraduate applicants who are offered admission for the fall semester and who do not register for that semester may be eligible for admission to the spring semester of the same academic year, pending availability of places. A petition should be submitted to the Office of Admissions by December 15 of the same academic year.

Applicants who have been admitted to the fall semester or to the spring semester in two different faculties, and who actually register in one of these, must petition the Office of Admissions by July 31 if they intend to use their second admission for fall, and December 15 if they intend to use their second admission for spring. Admission to the second faculty depends on availability of places.

Requirements of Admitted Students for Registration

Students admitted to AUB are required to meet several requirements prior to registering with the University. These include a medical examination, the English Language Proficiency Requirement (ELPR), and evidence of having received the diploma, certificate, degree, or level of university education on the basis of which the student applied and admission was granted. The ELPR may be met in a variety of ways, as outlined under the ELPR section. The diploma/certificate requirement may also be met in a variety of ways, which in turn determines the faculty and level to which a student applies, is admitted, and may register at the University.

Secondary School Certificate/Diploma Requirements for Registration and the Classes to Which They Admit

All applicants to the freshman class must hold a secondary school certificate awarded either by a public school or a private school. The certificate must be recognized by the Lebanese Ministry of Education and by AUB. The University does not recognize secondary diplomas or certificates that are based on fewer than 12 years of schooling, starting with grade one (Elementary I Class).

For example, the GCE ordinary level, and one year of the College d’Enseignement Général et Professionnel (CEGEP) do not qualify for admission to AUB.

Lebanese applicants to the freshman class may have followed a high school diploma program that fulfills the above criteria. In such cases a student must obtain permission from the Equivalence Committee of the Lebanese Ministry of Education allowing them to pursue their higher education on the basis of a foreign (non-Lebanese) program. Applicants are advised to begin the process of securing this permission at least two months prior to the time set for registration at AUB.

This permission can be obtained by applying to the Equivalence Committee of the Ministry of Education.

- Applicants must provide evidence of having lived and studied outside Lebanon for at least two years. Evidence normally consists of proof of legal residence in a foreign country and the official records of grades from two years of secondary education in that country.
Admitting Certificates and the Classes to Which They Admit

Lebanese Baccalaureates

There are four types of Lebanese baccalaureates: literature and humanities, sociology and economics, general sciences, and life sciences. There is also a Technical Baccalaureate. For the classes and majors to which the four Lebanese baccalaureates permit admittance, see pages 46–48. The Technical Baccalaureate permits admittance to programs that are similar in nature to the area of concentration of the particular technical baccalaureate.

Certificates Issued by Governments

Other government secondary certificates entitle their holders to apply to the freshman class in the Faculty of Arts and Sciences, or to the sophomore or equivalent classes in the other faculties.

Some government certificates are divided into categories of literary and scientific certificates. A literary certificate generally qualifies for consideration of admission to arts or business. However, students with a literary certificate may apply to a science major. Those students are given additional prerequisite courses required for the science major. A scientific certificate qualifies for consideration of admission to all majors (see chart on pages 46–48).

Some systems of education do not distinguish in their secondary certificates among literary, scientific, or other types of certificates, but indicate the subjects passed. The applications of holders of such certificates are evaluated on a case by case basis by the Unified Admissions Committee. The University requires certain certificates to show passes with credit standard. Certificates that do not meet this standard are not considered.

Commercial, Agricultural, and Vocational Secondary Certificates

These certificates are generally not considered for admission to AUB. If, however, the issuing government recognizes the certificate to be equivalent to the official (governmental) secondary school certificate, a student will be eligible for admission consideration. The class and programs to which such certificates admit depends on the area of concentration of the certificate.

Informal Education Preparation

Requirements of formal education for admission to the freshman class may be waived for applicants who have passed their 25th birthday. Such applicants must, however, meet the specific requirements established by the university committee on admissions.

• If the years of study abroad took place at the elementary level, then proof of legal residence and school grades should cover three years.
• Applicants must provide a photocopy of their passport or Lebanese ID.
• Applicants must also provide official score reports for the required SAT I and SAT II.

The Equivalence Committee of the Lebanese Ministry of Education requires Lebanese applicants to the freshman class, who have received permission to pursue higher education on the basis of a foreign program, to take the SAT I and three SAT II subject tests. SAT II should be taken prior to registration in the Freshman Class or during the freshman year prior to registration in the Freshman Class. The SAT I is composed of three parts: mathematical reasoning, critical reading, and writing. The Equivalence Committee requires all Lebanese applicants to take the new SAT I (all three parts) and specifies that the SAT II tests be taken in three subjects as follows:

For admission to freshman year (science track)
• Mathematics IIC (obligatory)
• Two tests from biology, chemistry, or physics

For admission to freshman year (arts track)
• Mathematics IC (obligatory)
• Two tests from subjects of the applicant’s choice

At the time of registration for the freshman class, Lebanese students should check with their advisers to ensure that the number of credits and the types of subjects taken during their freshman year are in compliance with the specifications of the Equivalence Committee of the Lebanese Ministry of Education.

The total score of the combined SAT I mathematical reasoning, critical reading, and writing, together with the scores on the three SAT II subject tests, must be at least 2750 for the science track and at least 2600 for the arts track.

Upon completion of the freshman class at AUB, Lebanese students who have secured this permission are entitled to have their freshman class equated to the Lebanese Baccalaureate by the Equivalence Committee of the Ministry of Education. Students must provide evidence of having received the Lebanese Baccalaureate, or its equivalent, for promotion to the sophomore class or equivalent classes in other faculties/schools.

All applicants for admission to the sophomore class, or to the equivalent classes in other faculties, should hold the Lebanese Baccalaureate, or its equivalent, as recognized by the Lebanese Ministry of Education and by the University.

Applicants who hold certificates that are equivalent to the Lebanese Baccalaureate are entitled to consideration for admission to the University, but the class to which such equivalent certificates may permit admittance depends on the certificate itself.

Candidates admitted to the University as non-Lebanese are not permitted to change their nationality to Lebanese in the records of the University, unless the requirements for admission of Lebanese students were fulfilled at the time of admission to the University.
Certificate and Class Chart

The following chart provides information about the types of certificates and the classes to which such applicants may be admitted. In all cases the SAT I (mathematical reasoning, verbal reasoning, and writing) must be taken by the deadline, and the English Language Proficiency Requirement must be met.

The abbreviations used in the chart are as follows:

- Agri = Agricultural and Food Sciences
- Arch = Architecture
- Biol = Biology
- Chem = Chemistry
- CmpS = Computer Science
- Eng = Engineering
- Eng'g = Engineering
- FAS = Faculty of Arts and Sciences
- Fr = Freshman
- Geol = Geology
- HS = Health Sciences
- Math = Mathematics
- Math = Mathematics
- Nurs = Nursing
- PSt = Petroleum Studies
- Phys = Physics
- Stat = Statistic
- Soph = Sophomore
- SB = School of Business
- SB = School of Business
- SB = School of Business

Certificate Class and department to which the certificate permits admittance

<table>
<thead>
<tr>
<th>High School Diploma or Secondary School Leaving Certificate, based on at least twelve years of schooling starting with Elementary I Class</th>
<th>Freshman or Nursing I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with high grades on certain advanced placement (AP) examinations of the College Board may apply for freshman course credit in those subjects (see page 41)</td>
<td>Freshman or Nursing I</td>
</tr>
</tbody>
</table>

Government Secondary Certificates (literary or scientific), including the German Abitur and the Diplome D’Etudes Collegiales (DEC) based on two years of the CEGEP program, the French Bacc. GCE and IB

1. Government secondary school certificates (including French and Lebanese Bacc. Scientific) qualify the holder for admission to all majors in the sophomore class in the Faculty of Arts and Sciences and to equivalent classes in the other faculties.

2. Government secondary school certificates (including French and Lebanese Bacc. in Humanities or Sociology-Economics) may be required to take additional courses if applying to majors where some science or Math is needed, in the following manner:
   - Math and Sciences pertaining to certain majors in the Faculty of Arts and Sciences, namely Sciences and Economics or in the Suliman S. Olayan School of Business.
   - CHEM 101 and MATH 203 if applying to Agriculture.
   - CHEM 200 and MATH 203 if applying to Landscape and Eco-Management.
   - 9 credits of freshman level Natural Sciences and 6 credits of freshman level Mathematics at the Faculty of Arts and Sciences before joining their major if applying to the Faculty of Engineering and Architecture. This requirement is waived for Sociology-Economics Bacc. holder if they completed Bacc. I scientific track.
   - CHEM 200 and MATH 203 for literary and humanities Bacc. holders if applying to the Faculty of Health Sciences.
   - CHEM 200 for Sociology-Economics Bacc. holders if applying to the Faculty of Health Sciences.

3. General Certificate Of Education (GCE) and International Baccalaureate (IB) Requirements

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>GCE Subjects required</th>
<th>IB Subjects Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Health, Medical Laboratory Sciences, Nutrition, and Food Sciences and Management</td>
<td>A level MATH and CHEM</td>
<td>CHEM at HL, plus MATH at SL or MATH at HL</td>
</tr>
<tr>
<td>Nursing</td>
<td>A level Math and CHEM</td>
<td>CHEM at HL, plus MATH at HL or SL</td>
</tr>
<tr>
<td>Agriculture, Agribusiness, Landscape design and Eco-Management, and Veterinary Sciences</td>
<td>A level MATH and BIOL</td>
<td>BIOL at HL, plus MATH at SL or MATH at HL</td>
</tr>
<tr>
<td>Mechanical, Civil, Construction, Chemical, Electrical and Computer, and Computer and Communications English</td>
<td>A level MATH and PHYS</td>
<td>PHYS at HL plus MATH at HL</td>
</tr>
<tr>
<td>Architecture</td>
<td>AS level MATH and PHYS</td>
<td>PHYS at SL, plus MATH at SL</td>
</tr>
<tr>
<td>Biology</td>
<td>A level MATH and BIOL</td>
<td>BIOL at HL, plus MATH SL or MATH at HL</td>
</tr>
<tr>
<td>Chemistry</td>
<td>A level MATH and CHEM</td>
<td>CHEM at HL, plus MATH SL or MATH at HL</td>
</tr>
<tr>
<td>Physics</td>
<td>A level MATH and PHYS</td>
<td>PHYS at HL, plus MATH at SL or MATH at HL</td>
</tr>
</tbody>
</table>

* Please note that the abbreviations listed above are NOT the course codes used in the course listings or descriptions, but rather a guideline for use in the following charts.
<table>
<thead>
<tr>
<th>MAJOR</th>
<th>GCE Subjects required</th>
<th>IB Subjects Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science</td>
<td>A level MATH and one from PHYS or CHEM</td>
<td>PHYS or CHEM at HL, plus MATH at SL or MATH at HL</td>
</tr>
<tr>
<td>Geology, Math, Petroleum Studies, and Statistics</td>
<td>A level MATH and one from BIOL, CHEM, or PHYS</td>
<td>One from BIOL, CHEM, or PHYS, plus MATH at SL or MATH at HL</td>
</tr>
<tr>
<td>Remaining majors not mentioned above</td>
<td>Any two A level subjects excluding Languages</td>
<td>3 HL and 3 SL subjects including at least MATH SL</td>
</tr>
</tbody>
</table>
General University Academic Information

Academic Advisers

Each student has an academic adviser who mentors the student in course selection. The dean of the Faculty of Arts and Sciences appoints freshmen advisers. The adviser continues advising the student until s/he has been accepted into a major. Students who do not join a major in three semesters are re-assigned a majorless adviser. Names of advisees and their respective advisers are available through the Student Information System (SIS).

Attendance

(Also see Withdrawal from Courses.)

Classes and Laboratories

- Students are expected to attend all classes, laboratories, or required fieldwork. All missed laboratory or fieldwork must be made up. A student is responsible for the work that is done, and for any announcements that are made during his/her absence.
- Students who, during a semester, miss more than one-fifth of the sessions of any course in the first ten weeks of the semester (five weeks in the case of the summer term) can be dropped from the course. A faculty member who drops a student from the course for this reason must have stated in the syllabus that attendance will be taken.
- Students who withdraw or are dropped for excessive absence from a course receive a grade of “W”.
- Students who do not withdraw or cannot be dropped for excessive absence from a course will receive a grade of 40.
- Students can withdraw from registered courses, not later than 10 weeks (five weeks in the summer term) from the start of the semester, provided that their credit load during the semester does not drop below 12 credits.
- Unless approved by the appropriate faculty committee a student cannot withdraw, or be withdrawn, from a course after the announced deadline or if this results in the student being registered for less than 12 credits.

Examinations and Quizzes

Students who miss an announced examination or quiz must present an excuse considered valid by the instructor of the course. Unless stated otherwise in the course syllabus, the course instructor should then require the student to take a make-up examination. Make-ups for quizzes and mid-terms as well as class assignments must be completed BEFORE the final grade of the course is issued at the end of the semester.
Only medical reports and/or qualified professional opinions issued by an AUB employee, an AUB Medical Center (AUBMC) doctor, or by the University Health Services will be accepted. Should there be a question about the validity of any excuse presented by the student, the matter should be referred to the appropriate faculty committee. Instructors should make sure that there is no time conflict between an exam and a regularly scheduled course.

Categories of Students

Full-Time Students
To be considered full-time a student must carry a minimum load of 12 credits per semester. For the required number of credits for summer full-time, refer to the summer session section for each faculty.

Non-degree Students
The category of non-degree students is restricted to those students who are not working for a degree. Such students should be accepted by the University Admissions Committee.

Part-time Students
The category of part-time students is restricted to the following students:
- AUB staff members who are working toward a degree.
- Those who need fewer than 12 credits to complete work for an undergraduate degree.
- Those who are granted permission by the appropriate faculty committee for one of the following reasons:
  - health
  - family problems that may influence academic performance of the student.

Auditing Courses
Those who wish to attend individual classes without receiving credit may apply as auditors. Applications to audit courses are available at the Office of the Registrar.

The applicant should:
- secure eligibility from the Office of Admissions. An applicant is eligible to audit a course if s/he meets the following requirements:
  - Bacc. II, or equivalent, to audit an undergraduate course
  - Bachelor's degree, or equivalent, from a recognized academic institution to audit a graduate course.
- secure approval from the instructor of the course.
- receive approval from the dean of the faculty/school offering the course.
- pay the tuition charge at the Comptroller's Office (student accounts section).
- register as an auditor at the Office of the Registrar.

Applicants are not eligible to audit laboratory, studio, or seminar courses.

Since permission to audit is on a space-available basis, applicants are not permitted to register until after registration of regular students is complete.

The University does not grant academic credit for such work. Audit credits do not appear on transcripts.

General Education Requirements

AUB is committed to offering its students a broad undergraduate liberal arts education that enables them to acquire the analytical skills and habits of life-long learning that they will need to compete successfully in the twenty-first century. The General Education distribution requirements are intended to expose students to a range of intellectual experiences during their time at AUB. We want to give our students the opportunity to make choices and to question and test what they believe are their career goals and their intellectual interests.

In addition to courses in their academic majors and possible minor concentrations in specific fields, all AUB students must satisfy the General Education requirements by taking a minimum of 33–36 credits distributed as follows:
- three credits in Arabic Communication Skills (unless the student is formally exempted).
- three to six credits in English Communication Skills through ENGL 204 (ENGL 206 in FEA).
- six credits in Natural Science.
- twelve credits in Humanities.
- six credits in Social Science.
- three credits in Quantitative Thought.

All new undergraduate students at AUB are required to take English Communication Skills Courses. New undergraduate students are placed in one of the English Communication Skills Courses on the basis of their scores on the TOEFL, the AUB-EN, the SAT Writing, or any equivalent standardized test. The Department of English offers a sequence of two core courses, ENGL 203 and ENGL 204, to all AUB undergraduates, and two specialized courses: ENGL 206 to FEA students and ENGL 208 to OSB students. A new undergraduate student is placed in one of the core courses in the sequence upon matriculation and has to complete the sequence in successive semesters. FEA students take ENGL 206 instead of ENGL 204. OSB students take ENGL 208 after the successful completion of ENGL 204.

Students who are exempted from Arabic are required to take a Humanities or any language course including Arabic as a foreign language. The Arabic Placement Test (APT) is optional. Students who opt not to sit for the APT will have to register in any approved General Education Arabic Communication skills course. The option of taking the APT will be open to students who think they may be too weak to follow coursework higher than the basic language course (ARAB 201A). Such students may sit for the APT to ascertain if their level of proficiency in Arabic is not appropriate for a higher course. This will be further ascertained during the course itself.

We believe that a student who has chosen to follow a course of study at AUB leading to a degree in a professional field such as engineering should be exposed to the humanities and social sciences. By the same token, a student who plans to major in history should have the opportunity to take science courses and to work in a lab.

While being exposed to various fields of knowledge, we also want our students to have the opportunity to experience different modes of learning (lectures, seminars, labs, and independent research projects). Different modes of analysis are designed to enhance students' verbal and interactive skills (seminars), writing and analytic skills (research projects), and hands-on experimental skills (laboratories).
These distribution requirements may be met by either required or elective courses.

Humanities and Social Science courses are divided into two lists: List I and List II within each domain. Students are required to select their courses as follows:

- Two Humanities courses from Humanities List I. (FAS students are required to select CVSP courses.)
- Two Humanities courses from either of the Humanities lists (I or II).
- One Social Science course from Social Sciences List I.
- One Social Science course from either of the Social Sciences lists (I or II).

In addition, no more than two courses from the student’s major may fulfill the Humanities requirement; no more than one course from the student’s major may fulfill the Social Science requirement; and no more than one course from the student’s major may fulfill the Natural Science requirement.

FAS requires that a minimum of six credits in Humanities be taken from CVSP courses 201-208. FAS students must complete one course from each of the two CVSP sequences; that is, one course from Sequence I followed by one course from Sequence II. (See Civilization Sequence Program in this catalogue.)

A comprehensive list of approved General Education courses is available on the Office of the Registrar (http://www.aub.edu.lb/registrar/Pages/index.aspx). Active General Education courses in any semester may be searched by subject through the AUBSIS homepage. A comprehensive list of approved General Education courses is available on the Office of the Registrar (http://www.aub.edu.lb/registrar/Pages/index.aspx). Active General Education courses in any semester may be searched by subject through the AUBSIS homepage.

- English Communication Skills: ENGL 203, ENGL 204, ENGL 206, ...
- Humanities List I: AMST 215, AMST 230, AMAR 201B, ARAB 201, ARAB 211, ...
- Humanities List II: AMST 240, ARAB 216, ARAB 231, AROL 211, AROL 213, BUSS 215, EDUC 228, EDUC 229, ENGL 205, ENGL 211, FAAH 229D, FAAH 229F, HIST 260, HIST 261, PHIL 209, PHIL 216, ...
- Social Sciences List I: ECON 211, ECON 212, EDUC 215, EDUC 223, MCOM 201, MCOM 203, MNGT 215, PSBS 202, PSBS 212, PSY 201, SOAN 201, SOAN 203, ...
- Social Sciences List II: ECON 203, EDUC 211, EDUC 218, ENGL 247, MCOM 202, MCOM 231, PSBS 201, PSBS 213, ...
- Natural Sciences: BIOL 201, BIOL 209, CHEM 208, CHEM 209, GEO 201, GEO 205, PHYS 204, PHYS 205, ...
- Quantitative Thought: CMPS 200, CMPS 206, CMPS 209, MATH 201, MATH 203, MATH 204, STAT 201, STAT 210, ...

English Proficiency

AUB students must demonstrate English language proficiency in order to graduate. Grades on papers (term papers, essays, or examinations), or a final course grade, may be lowered for the quality of the writing alone.

The Intensive English Course (IEC), ENGL 100, is intended for students who have been admitted but have not met the English Language Proficiency Requirement (ELPR). The minimum score for admission to IEC is 375 on the AUB EEE or 490 on the paper-based TOEFL (equivalent to 163 on the computer-based TOEFL [CBT] or 57 on the Internet-based TOEFL [IBT] or 350 on the Writing section of the SAT I).

Students are placed in either ENGL 100A (15 hours) or ENGL 100B (10 hours) based on their EEE and TOEFL and SAT I Writing scores. Students with scores of 375–449 on the EEE or 490–500 on the TOEFL (163–173 on the CBT or 57–61 on the IBT) or 350 on SAT I writing go into 100A. Those with scores of 450–499 on the EEE or 503–567 on the TOEFL (177–227 on the CBT or 62–87 on the IBT or 360–370 on the SAT I writing) go into 100B.

Students enrolled in the IEC may register for one or two regular university courses (up to a maximum of six credits) depending on whether they are placed in ENGL 100A or ENGL 100B, respectively, thus earning credits toward a degree while working toward achieving the level of English needed in order to carry a full load of courses in the regular program. Such courses are restricted to Arabic and mathematics/statistics/computer literacy courses (maximum six credits) in the Faculty of Arts and Sciences, and equivalent courses in mathematics and statistics in the Faculty of Agricultural and Food Sciences, the School of Business, and the Faculty of Health Sciences.

Students usually complete the IEC in one or two semesters. A student who fails to pass the IEC by the end of the second semester loses his/her admission to the University. A student in the IEC program is subject to the same attendance requirements as all other AUB students.

ENGL 100A Intensive English Course/ENGL 100B Intensive English Course. These zero-credit courses are offered each semester. The courses are designed to help students develop linguistic and communication skills with a special emphasis on strengthening areas of particular weakness that are identified by diagnostic tests. The four skills (reading, writing, listening, and speaking) are integrated. Students are exposed to a wide variety of assignments to assist them in developing critical thinking skills. Laboratory sessions reinforce grammar, reading speed, vocabulary building, and study skills.

Premed Requirements

Students seeking eligibility for admission to the Faculty of Medicine must complete the premedical requirements detailed on pages 373–75 in the 2013–14 Graduate Catalogue.

Double Major/Concentration (within the same faculty and degree structure)

Students may, upon approval of the relevant faculty/school, earn one degree with a double major within the same faculty so long as both majors share the same degree structure (e.g., both lead to BA, BS, or BE degrees). In such cases, one diploma will be issued with both majors indicated. The student must complete the requirements for both majors before the degree can be awarded. To be eligible to apply for a double major, the applicant must:

- have completed at least 24 sophomore credits
- be good academic standing (not be on probation).
Students enrolled in double majors must satisfy requirements of both majors and must complete at least 15 credit hours over and above the requirements of the first major.

Students interested in earning dual majors must complete an application form in their faculty/school within the announced deadlines for change of major and transfer applications for the fall or spring semester. The application must be approved by the receiving department and the Admissions Committee of the faculty/school.

Students of the Olayan School of Business, who wish to graduate with more than one concentration, must complete nine credit hours for each additional concentration.

Dual Degree
(from two different faculties/schools or two different degree structures in the same faculty)

Students may, upon approval of the relevant faculty/school, complete the requirements for another simultaneous degree while registered in another faculty/school at AUB. Within the Faculty of Arts and Sciences: a dual degree is allowed for distinct degree structures (e.g. BS in Mathematics and BA in Economics, or BS in Biology and BA in Political Science or History). In such cases, the student will be granted two degrees at the same time at graduation, in other words, a separate diploma for each degree program they complete. If tuition differs, students will pay the higher of the tuitions. To be eligible to apply for a dual degree, the applicant must:

• have completed at least 24 sophomore credits
• be on good academic standing (not be on probation)
• have achieved a minimum overall cumulative average as required by the faculty/school concerned.

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places in the faculty concerned for the semester in question. The applications are treated in terms of grade requirements similar to transfer applications across faculties/schools.

The student interested in a dual degree must submit a dual degree application to the faculty/school offering the dual degree program within the announced deadlines for transfer applications for the fall or spring semester. There is no application fee for the dual degree, but the student must complete the application form. Students should refer to the University Calendar for further information on deadlines. Information about deadlines and applications are available through the following link: www.aub.edu.lb/REGISTRAR/Pages/forms.aspx.

Faculties/Schools that grant dual degrees are FAFS, FAS, FEA, FHS, HSON, and OSB. Once a student is accepted for a second simultaneous degree, the Registrar informs the current and second degree faculty/department with a copy to the current degree advisor.

Students enrolled for a dual degree must satisfy the full requirements of both degrees and complete at least 30 credit hours over and above the requirements of the greater credit hours required for either degree. Students may withdraw from either degree before graduation.

Graduation with Distinction and High Distinction for a Dual Degree

For each program in a dual degree, the last 60 credits that apply to fulfill separately the degree requirements are considered for average computation.

To graduate with distinction in either degree, a student must have an average of 85 or higher in the 60 credits or more (65 credits or more for FHS), and be recommended by his/her department for distinction.

To graduate with high distinction in either degree, a student must have an average of 90 or higher in the 60 credits or more (65 credits or more for FHS), and to be recommended by his/her department for high distinction.

For purposes of graduation with distinction or high distinction, all grades including repeated courses enter into the computation of the student’s overall average.

Second Degree
(from same or different faculties/schools)

Students working towards completion of their undergraduate major degree who wish to obtain a second degree in the same or another faculty after completion of their first degree can apply for a second degree as follows:

• The students who apply for a second degree during the last year of study of the first degree or within two years of completion of the first degree can do so by completing an internal application form posted on the Registrar website at: www.aub.edu.lb/Registrar/. The second degree application can be in the same faculty as the first degree or in another faculty. The second degree applications will be considered by the faculty/school concerned following the same internal procedure for change of major (same faculty)/transfer (another faculty) applicants and the concerned faculties/schools will send their decisions to the Registrar and Admissions.

• Students already holding an AUB bachelor’s degree for more than two years and wishing to obtain a second bachelor’s degree in the same faculty or in another faculty must apply through the Office of Admissions for advanced standing at the concerned faculty and will be exempted from SAT I and English language proficiency requirements. Advanced standing transfer applications are available at the Office of Admissions website.

• Students holding a bachelor’s degree from an accredited institution of higher education recognized by AUB can apply for a second degree (not in the same major of the first degree). Advanced standing transfer applications are available at the Office of Admissions website.

The faculty/school Admissions Committee evaluates all applications for a second degree and makes recommendations to the dean of the concerned faculty/school. All final admission decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Students enrolled in a second degree must complete a minimum of 30 credit hours, and must meet all faculty and departmental requirements for the degree.

Note that all faculties admit students for a second degree. Specific faculty requirements for a second degree can be found in the faculty specific section of the catalogue.
Minor
(within or from different faculties)
Various departments in faculties/schools offer a number of minor fields of study. General requirements for University minors are as follows:

- A minimum of 15 credit hours completed in regular graded courses (not tutorial or special project type courses) is required for a minor (see also the requirements of the individual faculties/schools).
- At least nine credit hours of course work must be completed at AUB.
- At least nine credit hours of course work may not be used to satisfy a requirement for another major or minor.

Students should refer to the catalogue of the concerned faculty/school for further information on the requirements for each minor. A minimum grade of 70 is required by the University for a course to count toward the fulfillment of a minor. Faculty/Schools may enforce stricter requirements for minor grade average. The minor will appear in the student’s transcript, but will not be stated on the degree.

Dean’s Honor List
To be placed on the dean’s honor list at the end of the semester, a student must

- be carrying at least 12 credits
- not be on probation
- have passed all courses and attained an overall average of 85 or be ranked in the top 10 percent of the class and have an overall average of 80
- not have been subjected to any disciplinary action within the University during the semester
- be deemed worthy by the dean to be on the honor list.

Correct Use of Language
Facility in clear, correct, and responsible use of language is a basic requirement for graduation.

Papers (term papers, essays, or examinations) that are ill-written, no matter what the course, may receive a lower grade for the quality of the writing alone.

The final grade in any course may be lowered for consistently substandard written or oral expression; in extreme cases a failing grade may be given for this reason alone.

See the section on English Proficiency above.

Registration
Requirements
Before proceeding to registration, new students must ensure that all requirements for registration have been met, particularly conditions detailed in the admission letter from the director of admissions. These conditions include 1) meeting the English Language Proficiency Requirement (see pages 37–38); and 2) evidence that the student received the diploma, certificate, degree, or level of university education on the basis of which he/she applied for and received admission to AUB (see Requirements of Admitted Students for Registration, page 43).
Courses

Course Loads

To be considered full-time, a student must carry a minimum load of 12 credits per semester. (See the required number of credits for summer full-time status under summer term for each faculty.) If a full-time student wishes, or is forced, to reduce his/her load to fewer than 12 credits, the issue must first be referred to the appropriate faculty committee.

Students can normally register for up to 17 credits per semester and nine credits during the summer term. Students in the following categories must petition the appropriate faculty committee but are, however, normally granted permission to register for more than 17 credits:

• Freshman students intending to go into medicine or engineering, and who have an average of at least 80 in the first semester, may take an additional course in the second semester.
• Junior and senior (third and fourth year in the professional schools) students who have completed their English communication skills requirements at the level required by their major departments may register for a maximum of 18 credits per semester (a maximum of 19 credits per regular semester in FEA).
• If the program requires that students register for more than 17 credits in a particular semester.

In all other cases, students who wish to register for more than 17 credits must petition the appropriate faculty committee for permission to do so. Their requests are handled on a case-by-case basis.

The credit load in a regular semester of a student who continues to be on probation beyond one semester or is placed on three non-consecutive probations shall neither be fewer than 12 nor more than 13 credit hours.

Repeating Courses

A student who fails a required course must repeat the course at the earliest opportunity. No course may be taken more than three times including withdrawals from the course. When a course is repeated, the highest grade is considered in the calculation of the cumulative average. All course grades remain in a student’s permanent record.

Withdrawal from Courses

(Also see Attendance)

Students can withdraw from only one required course per semester. Students who wish to withdraw from more than one required course in any given semester must petition the appropriate faculty committee for permission.

Students can withdraw from elective courses, down to a minimum of 12 credits, no later than 10 weeks (five weeks in the summer term) from the start of the semester. Students receive a grade of W for the course.
Residence Requirements

Students transferring to AUB must earn the last 45 credits while in residence at AUB. An AUB student in good academic standing, who did not transfer to AUB from another university, and who wishes to study abroad, may spend up to one year and earn up to 30 credits at another university. An AUB student must spend his/her final semester at AUB. See, as well, Study Abroad/Student Exchange in the Office of Student Affairs section of this catalogue.

Grades

Grading System

In the faculties of Agricultural and Food Sciences, Arts and Sciences, Engineering and Architecture, and Health Sciences, and the Suliman S. Olayan School of Business and Rafic Hariri School of Nursing, the following grading system is used.

<table>
<thead>
<tr>
<th>Cumulative Average</th>
<th>GPA</th>
<th>Cumulative Average</th>
<th>GPA</th>
<th>Cumulative Average</th>
<th>GPA</th>
<th>Cumulative Average</th>
<th>GPA</th>
</tr>
</thead>
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<tr>
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<td>1.86</td>
<td>75</td>
<td>2.73</td>
<td>83</td>
<td>3.46</td>
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<tr>
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<td>1</td>
<td>68</td>
<td>1.98</td>
<td>76</td>
<td>2.82</td>
<td>84</td>
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<tr>
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<td>69</td>
<td>2.09</td>
<td>77</td>
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<td>85</td>
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<td>70</td>
<td>2.2</td>
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<td>3.02</td>
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<td>88</td>
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<tr>
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<td>82</td>
<td>3.38</td>
<td>&gt;=90</td>
<td>4</td>
</tr>
</tbody>
</table>

I: Incomplete
P: Pass
PR: In Progress
W: Withdraw
F: Fail

All final grades are expressed in multiples of one.

Change of Grade Policy

After grades are posted on the AUB Student Information System (AUBSIS), a change of grade is not allowed unless a demonstrable mistake was made in the correction of the final examination or in the calculation of the grade. In such a case, the instructor must complete a Change of Grade form and submit it to the chairperson of the department in which the course is offered, with supporting evidence for the mistake warranting the change of grade. If the chairperson of the department approves the change of grade, s/he will sign the form and transmit it for final approval to the dean (all faculties except FAS) or to the FAS Student Academic Affairs Committee (if the course is offered in FAS).

Students have the right to access their corrected exams, including final exams, and to request review of their exams in case mistakes have been made in calculating grades or in corrections.

The student’s request to review the course grade should be made to the course instructor within one week of the date of the posting of course grades. In case the review by the instructor results in a change of course grade, the instructor shall complete the Change of Grade form in accordance with the procedure outlined by the faculty in which the course is offered.

If a dispute regarding the change of a grade continues, the student should discuss the issue with the chair of the department. If the student is still not satisfied, s/he may submit a petition to the Faculty Academic and Curriculum Committee, requesting further consideration.

Incompletes

A student who receives an incomplete grade for a course must petition or submit a valid reason for missing the work to the appropriate faculty committee within two weeks of the date of the scheduled final exam in order to obtain permission to complete the course. Coursework must be completed within one month of the start of the next regular semester. In exceptional circumstances, the appropriate faculty committee may decide to give the student additional time to complete a course. In the Faculty of Engineering and Architecture, a student who received incomplete grades will not be permitted to register for more than 16 credits.

Incomplete course work is reported as an “I”. Normally, “I” is followed by a numerical grade reflecting the evaluation of the student available at the end of the semester. This evaluation is based on a grade of zero on all missed work and is reported in units of five. If the work is not completed within the period specified, the “I” is dropped and the numerical grade becomes the final grade.

Transfer within the University

Transfer of Major within the Faculty of Arts and Sciences

Students who wish to transfer from one major to another in the Faculty of Arts and Sciences may do so only after completion of at least two full semesters of work in their current major. Transfer forms are available on the FAS web page. The transfer form must be submitted to the chairperson of the prospective department at least three weeks before the end of a semester. If approved, the transfer becomes effective at the beginning of the following semester. Students must follow the following transfer procedures:

- complete the transfer form
- attach grades to the transfer form
- submit the form to the chairperson of the current department (who will make his/her recommendation to the chairperson of the prospective department).

The chairperson of the prospective department presents the form to the FAS Admissions Committee. The decision of the committee is communicated to the student by the Registrar.

Transfer from one Faculty to another within the University

Students who wish to transfer from one faculty to another must complete the application for transfer form available on AUBsis. Students must apply within deadlines specified in the University Calendar.
Disclosure of Student Records

The University may disclose routine information without prior written consent from the student. This information is of a directory nature and includes only the following items: student's name, degrees received, major field(s) of study, awards received, and participation in officially recognized activities and sports.

With the exceptions specified below, the University releases other information, including information from academic records, only upon written consent from the student. This consent must specify the information that is to be disclosed, state the purpose of the disclosure, and provide the names and addresses of the individuals or institutions to whom disclosure is to be made. However, the University may disclose information, including information on academic records, without prior written consent of the student:

- upon the request of officers of other educational institutions where the student seeks to enroll (in such cases the student is given, upon his/her request, a copy of the information sent to the institution)
- as necessary to academic officers, academic advisers, and faculty members within the University
- to parents of a dependent student
- in compliance with a judicial order
- to financial aid services in connection with financial aid for which the student has applied or which the student has received.

Probation

Placement on Academic Probation

A student is placed on academic probation if the student's overall average is less than 68 at the end of the 2nd regular semester; if the semester average is less than 69 at the end of the 3rd or 4th regular semester; or if the semester average is less than 70 in any subsequent semester, excluding the summer term.

It is to be understood that the semester in which the student is considered to be 'on probation' is the semester that immediately follows the semester in which the student has earned the grades leading to that placement.

For evaluation purposes, the minimum number of credits at the end of the 2nd regular semester at the University should be 24, including all repeated courses, and 12 in each subsequent fall or spring semester, including all repeated courses.

Courses/credits taken during a summer term are counted towards the semester average of the next regular semester. If the number of credits taken in any one regular semester is less than 12 (for approved reasons), courses/credits taken during that semester are counted toward the semester average of the next regular semester.

Credit for incomplete courses will be included in the semester in which the incomplete courses were taken. The evaluation for that semester will be carried out as soon as the grades for the incomplete courses have been finalized.

For implementation purposes, the academic standing of a student is represented by two attributes (a, b).

- The first attribute (a) represents the student's current academic status as follows:
  0: clear status
  1: student is currently on probation but was not on probation in the immediately preceding regular term
  2: student is currently on probation and was on probation in the immediately preceding regular term
- The second attribute (b) represents the probation history of a student, i.e., the number of times that the student has been placed on probation.

Removal of Probation

Probation is removed when the student attains a semester average of 69 or more in the 3rd or 4th regular semester, or a semester average of 70 or more in any subsequent regular semester. The student is off probation during the semester following the one in which such grades are earned.

Probation should be removed within two regular semesters, excluding summer, after the student is placed on probation, or when the student completes his/her graduation requirements (see Graduation Requirements).

Dismissal and Readmission

A student may be dismissed from the faculty for any of the following reasons:

- if the student's overall average is less than 60 at the end of the 2nd regular semester.
- if the student fails to clear academic probation within two regular semesters, excluding the summer term, after being put on probation; i.e., the student's academic status is (2,2) or (2,3), and the student has failed to remove the probation.
- if the student is placed on academic probation for a total of four regular semesters (a student can be dropped for this reason even if s/he is in the final year at AUB); i.e., the student's academic status is (0,3) or (1,3), and the student is again placed on probation.
- if the student is deemed unworthy by the faculty to continue for professional or ethical reasons.

A student is normally considered for readmission only if, after spending a year at another recognized institution of higher education, the student is able to present a satisfactory record and recommendation. Exceptions may be made for students who left the University for personal or health reasons. Transfer credit is considered after departmental evaluation of a student's coursework.

Graduation Requirements

Students are strongly advised to prepare their registration schedules with their advisers to ensure graduation requirements are fulfilled. Failure to do so may mean that a student has to spend an additional semester, or more, at AUB to complete graduation requirements.
Commencement Exercises

Commencement exercises are held at the end of the academic year. Students who graduate in October or February may participate in the commencement exercises. October or February graduates who wish to participate in the June commencement exercises should notify the Office of the Registrar of their intention by completing Form CE1 and submitting it to the Office of the Registrar.

Students who graduate in June have places reserved for them in the June commencement exercises. June graduates who opt not to participate in the commencement exercises should complete Form CE2 and submit it to the Office of the Registrar. June graduates who do not receive their degrees during the commencement exercises and who have submitted Form CE2 within the above-indicated deadline can receive their diplomas at the Office of the Registrar at a date subsequent to commencement.

Names on Diplomas and Degrees

Names on diplomas and degrees are spelled exactly as they appear on passports or identity cards. According to the Lebanese Ministry of Education, names of Lebanese students should include first name, father's name, and family name. Names on AUB diplomas and degrees appear both in Arabic and English. If a name on a passport or an identity card does not appear in both languages, then the name that does not appear in one language will be spelled on AUB diplomas and degrees according to the personal preference of the student.

Graduation with Distinction and High Distinction

To graduate with distinction a student must

• have an average of 85 or higher in all work of his/her final academic semesters, including summers: (two summer sessions are equivalent to one semester) during which 60 credits or more (65 credits or more in the Faculty of Health Sciences) have been completed at AUB

• be recommended by his/her department for distinction

To graduate with high distinction a student must

• have an average of 90 or higher in all work of his/her final academic semesters, including summers: (two summer sessions are equivalent to one semester) during which 60 credits or more (65 credits or more in the Faculty of Health Sciences) have been completed at AUB

• must be recommended by his/her department for high distinction

For purposes of graduation with distinction or high distinction, when a student repeats a course, all grades enter into the computation of the student’s overall average.

Recognition of AUB Degrees by the Lebanese Ministry of Education

The Lebanese Ministry of Education recognizes all degrees awarded by the American University of Beirut provided students are admitted on the basis of the Lebanese Baccalaureate, or its equivalent, as determined by the Lebanese Ministry of Education.

### Medical Record

An entrance medical record form is sent to all admitted students who have committed to enroll at AUB. It is to be completed by the student’s family physician and mailed as soon as possible, and before the period of registration, in the pre-addressed envelope provided by AUB. Alternatively, the completed medical record form can be delivered by hand to the Office of Admissions.

All new students must have a tuberculin test at the time of the preliminary medical check, held during registration, and must report 48 hours later for a check on the test. Upon clearing the medical test, the student is issued a clearance slip to proceed with registration. Students are not registered unless they obtain this clearance slip. Students who report late for the medical check are charged a late fee.

Medical checks may be completed in advance of registration provided that the student reports to the University Health Services on campus, and brings the letter of acceptance and the entrance medical record.

Returning students are not required to complete any medical forms. Important changes in the student’s medical condition and/or updating immunizations should be reported to a university physician by appointment at the Health Services Center early in the first semester. Information is kept confidential.

### National Social Security Fund (NSSF) Medical Branch

Membership in the NSSF is mandatory by law for all Lebanese students excluding freshman and non-degree students, and students who are older than 30 years. Non-Lebanese students may not join.

To facilitate enrollment in the NSSF Medical Branch, students are urged to bring the following items when registering:

• A social security application form filled in correctly. Copies of this form will be available for distribution at the time of registration to students who have not yet completed it
Foreign students joining AUB must have passports valid for a period of not less than 13 months from the date of joining the University; they should also secure an entry visa to Lebanon from the nearest Lebanese embassy or consulate in their country. The Office of Student Affairs, in coordination with the Personnel Office, the Office of Admissions, and the Office of the Registrar, help provide the necessary certificates for registered foreign students to acquire residence permits from the Lebanese authorities.

Payment of Fees
All students must finalize registration, including payment of tuition and other charges, by the announced deadlines. For full instructions on payment of fees, see the Tuition Fees section on pages 68–69.

Study Abroad for Undergraduate Students
AUB undergraduate students may choose to study abroad in their Junior year (or equivalent class in professional schools) in an approved program of study, without losing their status at AUB. They may apply for an established program at a university that has an exchange agreement with AUB, or they may initiate their own proposal for study abroad at a university of their choice that is recognized by AUB.

In both cases, an application and approval of the faculty are required. More information regarding study abroad options and procedures is available from the Office of International Programs (www.aub.edu.lb/oip).

• A photocopy of their Lebanese identity card
• Their NSSF number if already registered
• The NSSF number of their parent if insured with the NSSF through father or mother.
• Family record is required of married students only

Health Insurance Plan (HIP)
The Health Insurance Plan (HIP) provides medical and hospital coverage to the AUB community, namely, academic and non-academic staff, retirees, students, and IC staff and their families.

- Health insurance coverage is mandatory for all students, at 2nd class health care coverage, during their years of study at AUB; therefore, a student, new or continuing, registered for at least 6 credit hours, is automatically enrolled under the Health Insurance Plan (HIP). However, a student may be exempted from enrolling in HIP if s/he presents proof that s/he is covered by another healthcare insurance provider.

- HIP members are required to use exclusively the medical services of the AUB Medical Center (AUBMC). HIP coverage to students is limited to medical care inside Lebanon only.

- ‘Student’ means a person registered for a course of study at the University, whether working or not working for a degree, on a full-time or part-time basis. Auditors are not considered students.

- Graduate students registered for a thesis are eligible to continue HIP coverage for a period of two consecutive years only.

- Students who register at the beginning of the first semester are covered by HIP for twelve months, provided they do not graduate or withdraw, or are not suspended and/or dropped from the University. HIP fee charges per semester are announced each year by the AUB Benefits Coordinator’s office.

- Students who register at the beginning of the second semester are covered until September 30 of the same year, provided they do not graduate or withdraw, or are not suspended and/or dropped from the University.

- Students who register at the beginning of the summer session are covered until September 30 of the same year. Student coverage during the summer is strictly limited to use of the AUB Medical Center (AUBMC) services.

- In case of emergency during the fall and spring terms only, and if students are not on campus or within the vicinity of the AUB Medical Center, students can report to the nearest medical service provider and get the needed care. Reimbursement of the bill cannot exceed 80 percent of AUBMC rates.

- Eligible married students may enroll their spouse and children, who are living with them in Lebanon, at the regular 2nd class rate as long as they remain duly registered at the University and are HIP members.

- Unlike other HIP members, students are not charged co-payment or cost sharing for outpatient services.

These guidelines are meant to be a mere summary of the provisions of the plan and are provided solely as a matter of convenience and in no way define or limit the scope or intent of any provision of the plan.
Fees and Expenses

The American University of Beirut is a non-profit institution. Costs to students in tuition and other university fees are kept at a minimum consistent with the provision of high quality instruction and adequate facilities and equipment. The University reserves the right to change any or all fees at any time without prior notice. Such changes are applicable to students currently registered with the University as well as to new students.

Students are not permitted to enter classes at the beginning of the term until their fees are paid or special arrangements have been made with the Office of the Comptroller (see below). All fees are quoted in Lebanese pounds and US dollars.

Payment of Fees

- Each AUB student must pay all his/her tuition and other university fees.
- Statements of fees are available on the AUB website.
- All students must complete registration and the payment of tuition fees and other charges, according to the academic calendar on pages 17–19 for the first and second semesters. Under special circumstances, late payment is permitted during a period of no more than five working days after the announced deadline, and is subject to a late payment fee of $100.
- Checks must be issued to the order of the bank concerned using the following format: Pay to the order of (Name of Bank)—Account AUB.
- Students with zero or credit balances must inform the Office of the Comptroller—Students Accounts Section via email at compt_sas@aub.edu.lb—to finalize their registration.
- Sponsored students, staff dependents, graduate assistants, and student staff members should contact the Office of the Comptroller—Students Accounts Section—before the payment deadline in order to finalize their registration.
- Students who demonstrate financial need must formally apply to the Office of the Comptroller for deferred payment arrangements for tuition fees, according to the academic calendar on pages 17–19 for the first and second semesters. Applications for deferrals are not accepted thereafter. Deferred payments are not a right and are only agreed to under specific and special circumstances. Students who arrange for deferred payments are still required to complete all registration formalities within the set deadlines. Deferred payment arrangements are not permitted for the summer session in any faculty.
- Applications for deferred payment arrangements are reviewed by the Office of the Comptroller which is responsible for administering all deferred payment arrangements.
- All students who apply for deferred payment arrangements, must pay at least 50 percent of the net amount of tuition due. All other charges must be paid in full with no deferrals. A student must pay a deferred payment application fee of $33, whether the application is approved or not. Should the student’s application be approved, the student must pay the balance of tuition, the deferred application fee of $33, and an interest of 1 percent per month on the deferred amount. All payment must be concluded by the announced deadlines.
- Every student granted deferred payment arrangements must sign a statement indicating agreement that failure to complete payment by the set deadline will result in receiving no credit for the semester in which the student has defaulted on payment.

Due dates are not extended nor are late payment fees waived for any reason.
- Students are expected to meet all financial obligations to the University by the appropriate due date. For any student who fails to promptly meet his/her financial obligations, the University reserves the right to place an encumbrance on the student’s record that prevents registration for future semesters and the release of transcripts and diplomas, and also prevents access to other university services. It is each student’s responsibility to be informed of all registration and fee payment dates and deadlines.

Up-to-date schedules for registration and payment of fees are available through the Office of the Registrar. This information, as well as the tuition fee tables, is also on the following websites:

www.aub.edu.lb/comptroller/Documents/doc/Tuition%20Fees%2009-2010.pdf

Office of the Registrar
American University of Beirut
PO Box 11-0236
Riad El Solh 1107 2020
Beirut, LEBANON
Tel: +961-1-374274/374444
Ext: 2570/2571
Fax: +961-1-744469
Email: registrar@aub.edu.lb

Withdrawals

In the event a student withdraws for justifiable reasons after registration, fees are refunded according to the following schedule for the fall and spring semesters:

- Before the official start of classes: 100% of full tuition and other fees1
- During the first week of classes: 75% of tuition
- During the second week of classes: 50% of tuition
- During the third week of classes: 25% of tuition

The following schedule is applied in refunding fees for the summer session:

- Before the official start of classes: 100% of full tuition and other fees
- During the first week of classes: 75% of tuition
- During the second week of classes: 25% of tuition

For additional information, contact:

Office of the Comptroller—Students Accounts Section
American University of Beirut
PO Box 11-0236
Riad El Solh 1107 2020
Beirut, LEBANON
Tel: +961 1 353195/350000
Ext: 2473/2478
Fax: +961 1 744465
Email: compt_sas@aub.edu.lb

1 Other charges include health insurance plan, internet fee, social activity fee and NSSF

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For additional information, contact:

Office of the Comptroller—Students Accounts Section
American University of Beirut
PO Box 11-0236
Riad El Solh 1107 2020
Beirut, LEBANON
Tel: +961 1 353195/350000
Ext: 2473/2478
Fax: +961 1 744465
Email: compt_sas@aub.edu.lb

For additional information, contact:

Office of the Comptroller—Students Accounts Section
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PO Box 11-0236
Riad El Solh 1107 2020
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Financial Aid

AUB offers financial aid to qualified students in the form of need-based financial aid grants and loans, merit scholarships, student work-study, and graduate assistantships. In 2011–12 the University awarded $15.6 million in need-based grants and merit scholarships and an additional $4.7 million in funds for graduate assistantships and student employment.

Financial need is a necessary condition for a financial aid grant. Need is assessed for each student, yearly, on the basis of factors such as family income, number of siblings enrolled in school/university, assets such as home(s), car(s), and other property, and major changes in financial status. Assessments are made by the Interfaculty Committee for Financial Aid using an application for financial aid completed by a student and his/her family before the required deadline. For new students living in Lebanon, an interview is usually required to help the committee assess need. Further need assessment may be carried out through house visits when deemed necessary. Need is a necessary but not sufficient condition for financial aid.

Need-Based Financial Aid Grants

Grants are outright awards of assistance, mainly for undergraduate and medical students, based on demonstrated need. Additional, partial small merit awards are made to new needy undergraduate students with records of high scholastic achievement. Other graduate students may receive such grants, if eligible, in small amounts to cover a small part of the tuition. Selection is based first on need and then on academic performance. Students applying for the first time for financial aid may obtain applications from the Office of Financial Aid, West Hall, American University of Beirut, or can download the application from the AUB homepage: www.aub.edu.lb under the link Admissions then Tuition and Financial Aid. New students applying for the academic year 2013–14 must complete and submit the application with all required supporting documents by February 4, 2013. Previous financial aid applicants re-applying for the academic year 2013–14 must complete the application on-line and submit a printed copy of the on-line application along with supporting documents by March 31, 2013. The required documents should be delivered in person to the Office of Financial Aid in the basement of West Hall. Awards are usually announced by the end of May for students admitted to the fall semester and by mid-January for students admitted to the spring semester.

Need-Based Student Loans

In September 2003 a loan program for students at the Faculty of Medicine was started to support the AUB financial aid program, allowing further financial support to those students finding it difficult to complete their medical studies. In 2004 undergraduate students in the Faculty of Engineering and Architecture (second year and on) also benefited from this program, followed by nursing students in 2005. In 2006 the loan program was extended for undergraduate business students, second year and on. The program is now available for the six faculties of AUB. Loans will be offered to Lebanese undergraduate students who have at least a Junior status or equivalent and who have received financial aid. The students would apply for financial aid as usual, however, if eligible, the students would receive financial assistance in the form of a grant from AUB and a loan from one of the participating banks who are supporting the government subsidized loan program. Students will pay interest only on the loan during their period of study and for a one year grace period after graduation, at which time the students start repaying the full loan principal and interest over a maximum period of ten years.

U.S. Federal Student Loans

Student loans are available for American students pursuing their studies at AUB. These low-interest loans are offered by the U.S. Treasury in the form of Direct Stafford and PLUS loans. Applications are submitted yearly online at www.fafsa.ed.gov. Students who are American citizens or permanent residents, enrolled at AUB in a regular degree program, and maintaining a satisfactory academic progress are eligible for U.S. federal student loans.

The need of eligible students is assessed by the Loan Unit in the Financial Aid Office based on established criteria by the U.S. Federal Student Aid program. Students will have to repay these loans over a period of ten years following a six months grace period. In 2011–12, 82 students were certified around $1 million in direct loans.

AUB and AUB’s Office of Financial Aid have developed a portal for obtaining consumer information about the University and its offered federal loans. This data can be used as a resource to identify important university information such as its academic programs, retention/completion information, financial aid procedures, various contacts, and more.

The consumer information portal is found at www.aub.edu.lb/faid/consumer_info.

Merit Scholarships

In 1999 the Board of Trustees of AUB established an AUB Merit Scholarship Program for new students. This program enables the University to award full-tuition merit scholarships each year to ten new undergraduates with outstanding academic qualifications. AUB merit scholarship awardees are selected from among the newly admitted undergraduate students on the basis of academic achievement and promise alone; no application is required for merit scholarships. Awards are renewable for each undergraduate year provided that the student maintains a minimum cumulative 85 percent average.

In 2006 AUB and the National Council for Scientific Research (NCSR) signed a cooperation agreement whereby the best three students in each of the four sections of the Lebanese Baccalaureate would be granted a full scholarship. The NCSR would provide 10 million Lebanese Pounds for each student while AUB would cover the remaining amount of the tuition in addition to the living expenses including boarding or transportation based on the student’s need.

Student Work-Study

As part of its financial aid program, the University provides full-time undergraduate and graduate students with the opportunity to participate in its student work-study program. Priority is given to students with financial need. Students contribute toward their educational expenses while also developing job skills in various campus offices and the Medical Center. Applications are available at the Office of Student Affairs and should be submitted online within certain deadlines announced for by the Office of Student Affairs. Placement is made on the basis of need, capability, and job availability. Students may work a maximum of 80 hours per month in the Fall/Spring Semesters and 60 hours per month in the Summer semester; the hourly rate is based on the type of work performed.
Graduate Assistantships

Assistantships covering partial or full tuition and partial living expenses are available to students at the graduate level in return for work at a specified number of hours each week for an academic department. Assistantships are made on the dual basis of their academic record and departmental needs. Application forms for new students are enclosed in the admissions application package. Continuing students may obtain application forms from the office of the dean of the faculty in which they are enrolled. Applications should be submitted early in the semester preceding the semester for which one is applying.
Office of Student Affairs

The Office of Student Affairs oversees student activities, athletics, counseling, student housing, career and placement services. The office also manages university-wide operations such as the bursary, the New Student Orientation and the work-study programs. The Office of Student Affairs provides services to students that enhance their overall well-being and create opportunities for them to enrich and broaden their educational experience.

The website has comprehensive information on all programs: www.aub.edu.lb/sao/Pages/index.aspx.

Contact
West Hall, ground floor, room 109 - 112
Tel: +961-1-374374, ext. 3170 or ext. 3171
Fax: +961-1-744478
Email: sao@aub.edu.lb
The office is open during regular work hours.

Student Activities

Student Activities aims to provide opportunities for student development through co-curricular activities that complement AUB's academic programs. The specific aims of the department are to:

• provide opportunities for student leadership in a variety of settings such as clubs/societies, student representative committees and student publications
• serve as an information resource for students about student life at AUB
• provide support services for student organizations
• promote diversity and civic responsibility
• coordinate and facilitate the work and events of AUB student organizations
• organize major campus events, such as the Outdoor Festival, the Folk Dance Festival and the New Student Orientation Program.

All activities organized by students must be approved by the Department of Student Activities and the Dean of Student Affairs. The department's role is to supervise these activities and other student activities which take place in West Hall. West Hall hosts most student activities in addition to various AUB events sponsored by faculties, departments, centers, and alumni.

Contact
West Hall, ground floor, room 112-112 C
Tel: +961-1-374374, ext. 3197 or ext. 3182
Fax: +961-1-744478
Email: std-act@aub.edu.lb
Counseling

Adjusting to university life can be a difficult transition and a very stressful experience for many students. Personal difficulties, whether of a recent or long-standing nature, can hinder academic success and seriously affect a student’s quality of life and well-being.

Personal counseling is offered to AUB students to help them identify and address their issues and problems. This could include anxiety, depression, grief, substance abuse, eating disorders, and relationship and family problems. In fact, there are no restrictions as to what can be discussed in counseling.

The counseling team provides assistance to students with study-related issues such as test anxiety and time management. Counseling is free and confidential.

Contact
West Hall, 2nd floor, room 210
Tel: +961-1-374374, ext. 3178, 3158, or 3196
Email: ak28@aub.edu.lb, oo03@aub.edu.lb, nk63@aub.edu.lb, or ck05@aub.edu.lb

Career and Placement Services

The Career and Placement Services (CPS) aims at helping AUB students in their transition from being students to becoming professionals. The CPS encourages students to develop their career plans by providing resources, contacts, activities, workshops, seminars, job fairs, career events and career counseling. CPS strives to promote:

• Career Exploration and Decision Making
  Facilitating the exploration of career options and developing effective career planning skills.

• Skills Development
  Helping students develop skills within their academic disciplines to enhance their professional image.

• Experiential Learning
  Disseminating employment information and providing resources to explore changing trends in the global job market by different means including the AUB Mentor-Mentee Program.

• Career Placement
  Helping current and former AUB students to achieve their career goals through the development of lifetime career planning and job search skills. Assisting them in finding full-time employment, internships, and part-time jobs.

• Employer Development
  Building and expanding long-term relationships between the American University of Beirut and the employment community.

• Major employment events
  Organizing Annual Job Fair in April and Fall, special employment in September through which students are exposed to job opportunities available at firms with diversified industrial sectors.

• Social Media
  Using social media through Facebook and Twitter to advertise all career activities and interact with AUB students/Alumni.

University Sports

The University offers a wide range of sports, athletics, fitness and recreational programs through University Sports. The Charles Hostler Student Center has invigorated athletic life on the lower campus. It includes a gymnasium with three full-size basketball, volleyball, handball and futsal courts, a 25 meter indoor pool with a touchpad and electronic score board, a free weight area, cardiovascular training area, an activity room for dance and martial arts, two squash courts, a 400 meter track, an artificial turf field, an auditorium, an amphitheater, conference rooms and much more. Between May and October, students may use the AUB beach for swimming, water sports, beach volley, recreation, or relaxation.

There are four floodlit tennis courts on campus. Professional tennis lessons are available. Opportunities for competitive and team sports abound, as do options for individual recreational activities. Fitness and swimming courses are being offered all year round.

The following are some programs offered:

- Basketball (Men, Women, Junior)
- Soccer (Men, Women, Junior)
- Volleyball (Men, Women)
- Handball (Men)
- Tennis (Men, Women)
- Badminton (Men, Women)
- Rugby (Men and Juniors)
- Track and Field (Men, Women)
- Squash (Men, Women)
- Table Tennis (Men, Women)
- Body Building
- Judo
- Karate
- Aerobics
- Pilates
- Dance
- Extreme Pump
- You Taek Won Do
- Beginning Swimming
- Fitness Swimming
- Swimming (Men, Women)
- Water Polo
- Yoga
- Aqua Gym
- Power
- Fight-Do
- X-55
- Lacrosse
- American Football (and a Cheerleading team)

Contact
Charles Hostler Student Center
Tel: +961-1-374374, ext. 3200 or 3201
Email: chsc@aub.edu.lb
Website: www.aub.edu.lb/~webchsc/

Student Housing

As one of the few residential universities in the Middle East offering a beautiful campus where a rich extracurricular activity prevails, strong and supportive communities flourished offering thousands of residents the chance to experience the wonders of community living.
The priority is to accommodate undergraduate applicants, mainly freshman students from outside Beirut as well as international students.

Freshman students whose parents reside outside Beirut are required to live in the University’s residence halls throughout their first year unless otherwise requested in writing by their parents. Graduate students may be considered subject to availability. Arrangements for University housing are made through the Office of Student Affairs.

The Residence Hall application is available on the student housing website and must be submitted online. Early application is strongly advised.

The application form must be completed and returned to the Office of Student Housing according to the deadlines set by the Office of Student Housing for each semester (usually in July for the Fall term, and December for the Spring term). Each student applying to the residence halls for the first time must pay a “dorm deposit” fee of LL 300,000 which may be paid in cash at the AUB Cashier or by check issued in Lebanese Pounds or U.S. Dollars to the order of the American University of Beirut. This deposit will be reimbursed to the student upon graduation.

Students who do not live in a residence hall during the fall semester but wish to do so in the spring semester and/or summer session may apply and are assigned space subject to availability. For each semester the housing charges appear on the statement of fees issued to each student following the completion of the registration process; they vary depending on the type of accommodation selected as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double</td>
<td>LL 2,000,000 (double occupancy room with a shared floor bathroom)</td>
</tr>
<tr>
<td>Semi-private</td>
<td>LL 2,470,000 (two double occupancy rooms with their own bathroom)</td>
</tr>
<tr>
<td>Private</td>
<td>LL 3,265,000 (single occupancy room with a shared floor bathroom) only available in summer.</td>
</tr>
</tbody>
</table>

**Off-Campus Residence Hall Rates**

The rates above do not apply to the AUB women’s off-campus residence hall on Sidani Street where the rooms are divided into double, single and suites, each having its own bathroom, balcony, and telephone.

<table>
<thead>
<tr>
<th>Category</th>
<th>Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double</td>
<td>LL 2,862,000</td>
</tr>
<tr>
<td>Private</td>
<td>LL 5,056,000</td>
</tr>
<tr>
<td>Suite</td>
<td>LL 5,418,000</td>
</tr>
</tbody>
</table>

**Guest Rates**

Residents have the right to host guests as per our guest policy (available on-line).

<table>
<thead>
<tr>
<th>Category</th>
<th>Charge</th>
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</thead>
<tbody>
<tr>
<td>Double</td>
<td>LL 26,000</td>
</tr>
<tr>
<td>Semi-Private</td>
<td>LL 30,000</td>
</tr>
<tr>
<td>Private</td>
<td>LL 42,400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Charge</th>
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</thead>
<tbody>
<tr>
<td>Double</td>
<td>LL 33,000</td>
</tr>
<tr>
<td>Semi-Private</td>
<td>LL 43,000</td>
</tr>
<tr>
<td>Private</td>
<td>LL 60,000</td>
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</table>

<table>
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<tr>
<th>Category</th>
<th>Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double</td>
<td>LL 38,000</td>
</tr>
<tr>
<td>Private</td>
<td>LL 58,000</td>
</tr>
<tr>
<td>Suite</td>
<td>LL 65,000</td>
</tr>
</tbody>
</table>

*B Semi-private units are only available in the women’s residence halls.*

**Residence Halls**

There are seven student residence halls: five for women, two for men. The rooms are divided mainly into shared double and in rare instances, when availability permits, a few private rooms. The semi-private category is not available in the men’s residence halls.

All residence halls have heating, air-conditioning, hot water, washing machines, dryers, iron, and wireless Internet. Each room is equipped with a bed, desk, chair, and closet.

**Women’s Residence Halls**

Four women’s halls are located on the lower campus overlooking the Mediterranean, while the fifth is located off-campus in the heart of Hamra area within a short walking distance from campus. The ground floor of each hall houses a reception desk, a kitchen, and a lobby for socializing, receiving guests and watching television with cable subscription. International pay phones, printers/photocopies, laundry facilities and vending machines with snacks and soft drinks are installed at the residence entrance.

**Men’s Residence Halls**

The two men’s residence halls are located in the west part of the upper campus, overlooking the splendid Mediterranean and close to Bliss Street, with its abundance of shops. The ground floor of each hall houses a reception desk, a kitchen, and a lobby for socializing, receiving guests and watching television with cable subscription. International pay phones, printers/photocopies, laundry facilities and vending machines with snacks and soft drinks are available on the ground floor.

**Contact**

West Hall, ground floor, room 112A-112B
Tel: +961-1-374374, ext. 3175, 3183
Fax: +961-1-744478
Email: stdhouse@aub.edu.lb

**Bursary Program**

A number of students from the Arab world and beyond are sponsored to study at AUB by their national governments, or through private institutions. The Office of Student Affairs provides administrative support and financial updates to the sponsoring institutions or embassies.

**Contact**

West Hall, ground floor, room 109-109 C
Tel: +961-1-374374, ext. 3174
Fax: +961-1-744478
Email: sao@aub.edu.lb

**Work-Study Program**

The Office of Student Affairs coordinates an extensive work-study program that provides work-study opportunities on campus and for eligible undergraduate and graduate students.
During the academic year 2012–13 over 600 students participated in the work-study program working with faculty and administration in various campus offices and in the Medical Center.

All full-time students in good academic standing may apply for open positions at the Office of Student Affairs. Selection is competitive.

Contact
West Hall, 3rd floor, room 326 – 318
Tel: +961-1-374374, ext. 3177/3187
Fax: +961-1-744478
Email: wsparr12@aub.edu.lb

Office of International Programs

The Office of International Programs is located in West Hall, 3rd floor, Room 320.
Telephone: +961-1-374374 ext. 3147
Email: oip@aub.edu.lb
Website: www.aub.edu.lb/oip

Passports, Visas, and Residence Permits

International students joining AUB, meaning any student who does not hold a Lebanese passport or Lebanese identity card, must have their foreign passports valid for a period of not less than 13 months from the date of joining the University. All such students should also check with the nearest Lebanese Embassy or consulate in their country as to whether they require an entry visa in order to legally enter Lebanon or are eligible to obtain a one-month entry visa at the airport.

Once registered, all students who do not hold Lebanese passports are required to obtain a residence permit before the expiration of the entry visa stamped in their passports. Students must apply for this permit within one month of arrival in Beirut, and ONLY after registering and paying AUB tuition fees. For this reason, it is strongly advised not to enter Lebanon more than two weeks prior to the beginning of the semester in which you plan to first enroll.

The Office of International Programs, in coordination with the Office of the Registrar, will help to provide the necessary certificates for registered non-Lebanese students to acquire residence permits from the Lebanese authorities. Information about obtaining a residence permit is distributed at International Student Welcome Day at the beginning of each semester or may be obtained in room 322 of West Hall, as well as on the OIP website referenced above.

International Student Services

The Office of International Programs provides support to all international students studying at AUB. During International Student Welcome Day, all international students will be assigned a student mentor, and provided with information about special services and activities, such as:

- Social gatherings, activities, and trips for international students
- Residence permit information and assistance
- Advising about study abroad (for international degree-seekers)
- Advising about adaptation to new cultures and to AUB

Study Abroad and Student Exchange

AUB has several study abroad and exchange programs for undergraduate and graduate students. AUB’s growing number of international partner institutions include but are not limited to:

- American University, USA
- American University of Cairo, Egypt
- Boston University, USA
• Danish School of Media and Journalism, Denmark
• l'Institut d'Etudes Politiques (“Sciences Po”), France
• Koc University, Turkey
• Lund University, Sweden
• Salzburg Academy on Media and Global Change, Austria
• Universidad Carlos III de Madrid, Spain
• Universite de Geneve, Switzerland
• Universite de Montreal, Canada
• University of California, Berkeley, USA

Undergraduate students are required to complete at least 24 credits at AUB before beginning a period of study abroad, while graduate students are required to complete at least six (6) credits at AUB before studying abroad; additional academic policies and procedures also apply. For a complete list of exchange and other study abroad options at AUB, or to review the guidelines for study abroad, please visit http://www.aub.edu.lb/oip or Room 320 in West Hall.

OIP Resources for Faculty

The Office of International Programs is pleased to provide information to faculty on international standards of practice for credit transfer and grade transfer upon request. In addition, OIP maintains a current listing of all institutions/consortia/universities with which AUB maintains formal agreements for purposes of student exchange and study abroad. Please note that exchange agreements cannot be put into effect at AUB without the approval of the Provost, for whom the Office of International Programs serves as the official record-keeper. Guidelines for the setting up of new international academic exchange agreements and similar linkages are available by request from the Director.
Faculty of Agricultural and Food Sciences (FAFS)
Faculty of Agricultural and Food Sciences (FAFS)

Mission

The mission of FAFS is to foster the sustainable enhancement of the health and well being of people and nature throughout Lebanon and the region. To achieve its goals, the Faculty uses basic and applied research as well as student-centered learning to prepare leaders and agents of change to address issues of local and global relevance at the nexus of human nutrition, food security and the sustainable use of resources.

Vision

FAFS is a reference academic center specialized in issues of relevance to the Middle East related to agriculture, food, nutrition and the environment for the enhancement of livelihoods, human health and well being.

Undergraduate Programs

Six undergraduate programs are offered by FAFS:

BS in Agriculture and the Diploma of Ingénieur Agricole

This program is offered by FAFS for training in general agriculture. A limited number of elective credits allow students to select courses from among different disciplines in FAFS for desired areas of emphasis.

Bachelor of Landscape Architecture (BLA) and the Diploma of Ingénieur Agricole

This is a professional program offered by FAFS for training students to embrace the art of design, planning, or management of the land, the arrangement of natural and man-made elements in rural, and urban settings.

BS in Nutrition and Dietetics

This is a four year program which will lead to a BSc degree in Nutrition and Dietetics (Coordinated Program). The program combines the three years theoretical learning with an additional year of supervised practice with an emphasis in clinical nutrition practice. The proposed educational...
Goals and Expected Outcomes of the proposed CP in Dietetics

The goals of the CP in dietetics are listed below; each is followed with supporting measurable expected outcomes.

• To provide quality didactic and supervised practice learning experiences that prepare students to be competent entry level dietitians.
  – At least 80% of students who enter the CP will successfully complete the program and receive a verification statement within four and a half years of enrolment.
  – Over a period of five years, at least 80% of all graduates of the CP who sit for the colloquium/RE exam will pass from the first time.
  – At least 90% of responses that evaluate the competencies attained from the CP will meet or exceed a rating of 3 on a 1–5 scale.
  – At least 90% of ratings of professional preparation from the CP graduate’s view will reach a rating of at least 3 on a 1–5 scale.
  – At least 90% of ratings of professional knowledge from the employer’s opinion will reach a rating of at least 3 on a 1–5 scale.
• To prepare students who will commit to improving the quality of life of the community through improved health and wellbeing.
  – Within five years of graduation from the CP, employment data will demonstrate that at least 70% of all graduates who sought employment will be employed in Lebanon or the Middle East region in a health-related position that requires nutrition expertise.
• To prepare graduates who will be successfully employed in their fields, attend graduate school or pursue other career options.
  – At least 80% of CP graduates, who have sought higher education or employment, will pursue an advanced degree or be employed in the field of dietetics within 12 months of graduation.
  – At least 80% of CP graduates who have sought employment in dietetics will be employed within 18 months of program completion.
  – At least 80% of employers will indicate that they would hire a graduate of the American University of Beirut CP in Dietetics.

Program outcome data are available from the program director upon request.

BS in Food Science and Management

This is a specialized three-year program offered by FAFS to prepare graduates to satisfy the needs of food industries and establishments in the region. Graduates of this program do not receive the Diploma of Ingénieur Agricole.

BS in Agribusiness

The BS in Agribusiness is a three-year cross-disciplinary program designed to provide students with comprehensive knowledge of the decision-making processes of business and the technical aspects of modern agriculture and food systems. Graduates of this program do not receive the Diploma of Ingénieur Agricole.

Admission

AUB admits students from both twelve and thirteen-year secondary school systems. Students holding diplomas from a twelve-year secondary school system may gain admission to the Faculty of Agricultural and Food Sciences by completing the freshman program at AUB or its equivalent elsewhere. Those coming from the freshman program should have completed six credits of freshman math (MATH 101, 102), eleven credits of natural sciences (CHEM 101, 101L, 102, 102L, BIOL 101 except Agribusiness), and thirteen credits of natural sciences for Landscape Architecture (CHEM 101,101L, GEOL 101,102 and BIOL 101). Students from a thirteen-year secondary school system must hold the Lebanese Baccalaureate Part II in general sciences or life sciences, or the equivalent, if they come from another country. Holders of the Baccalaureate Part II in sociology and economics may be considered for admission provided they take five additional courses, CHEM 101,101L, 102, 102L, BIOL 101, except Agribusiness, and thirteen credits of natural sciences for Landscape Architecture to be considered for admission. Admission is by selection of the most promising eligible applicants. For complete and detailed information regarding admission to the University, including recognized certificates, see the admissions section in this catalogue.
Requirements for BS in Nutrition and Dietetics (Coordinated Program)

Students are first admitted to the three year Nutrition and Dietetics program, in addition, a separate application for the CP must be submitted before the first semester of the junior year (upon completion of at least 80 credits). The selection of students for the CP is based on cumulative average of the didactic program (80 or above, unless stated otherwise by the department), and completion of the prerequisite courses. Individuals interested in applying to the CP must contact the department for application details before the beginning of the junior year.

A maximum of 20 students are admitted each year. Students applying to the NFSC department for a second BS in Nutrition and Dietetics are not eligible for the CP.

Requirements for Premedical Study

Students entering the Faculty of Agricultural and Food Sciences, and who intend ultimately to enter the Faculty of Medicine, must complete the premedical requirements as outlined in the admission section under the Faculty of Medicine in the 2013–14 Graduate Catalogue, pages 373–75.

Graduation Requirements

Eligibility for Graduation

To be eligible for graduation with the degree of BS in Agriculture (AGRI) or Bachelor of Landscape Architecture (BLA), and the Diploma of Ingénieur Agricole, a student must

- complete a minimum of 128 semester credit hours (AGRI) or 144 semester credit hours (LDEM)
- complete a minimum of eleven semesters of residency
- achieve an overall minimum grade average of 70
- be approved for graduation by the faculty

To be eligible for graduation with the degree of BS in Nutrition and Dietetics (NTDT) or BS in Food Sciences and Management (FSMT), or BS in Agribusiness (AGBU) a student must

- complete a minimum of 96 semester credit hours for the NTDT program, 97 semester credit hours for the FSMT program, and 96 semester credit hours for the AGBU
- complete a minimum of five semesters of residency
- achieve an overall minimum average grade of 70
- be approved for graduation by the faculty

To be eligible for graduation with the degree of BS in Nutrition and Dietetics (Coordinated Program), a student must

- Successfully complete a minimum of 129 credits hours
- Complete a minimum of 1200 hours of supervised practice in an affiliated hospital
- Achieve an overall minimum average grade of 80 in each of the three years of CP
- Achieve an overall minimum average grade of 80 in the supervised practice
- Successfully complete the program within four and a half years of enrollment in CP

Failure to meet the above CP graduate requirements will result in dismissal from the CP program in which case, students will graduate with a BS in Nutrition and Dietetics.

For transfer students to the Faculty of Agricultural and Food Sciences from another Faculty or University, course credits pertinent to the agricultural curriculum may be transferred at the discretion of the Academic and Curriculum Committee. However, advanced standing can be considered only for students who transfer from an agriculture program of another recognized institution of higher learning. Transfer students from faculties within AUB to FAFS are allowed to transfer a maximum of two semesters toward the residency requirements at FAFS, based on the rate of equating each 12 credits of transferable courses taken at AUB to one residency semester. For purposes of residency requirements, two summer sessions are equivalent to one semester.

Minors in Nutrition and Dietetics, and Food Science and Management

The Nutrition and Food Sciences Department offers two minors: A Minor in Nutrition and Dietetics, and a Minor in Food Sciences and Management, with a minimum of 16 credits/program.

Students already working on a bachelor’s degree outside Nutrition and Dietetics (ND) or Food Sciences and Management (FSM), and who wish to obtain a minor in ND or FSM, must apply to the relevant Minor before taking any course in the requested minor. The Department of Nutrition and Food Sciences evaluates all applicants for a minor and makes recommendations to the Academic and Curriculum Committee (ACC).

A student is eligible to be considered for a minor in either major after completing 24 credit hours in his/her major with a cumulative grade average of 75.

The courses required for a Minor in Nutrition and Dietetics are NFSC 221, NFSC 222, NFSC 240, NFSC 265, NFSC 274, and NFSC 285. Additional courses may be required from Agriculture and Food Sciences and Management students to replace required courses common to the major and minor.

The courses required for a Minor in Food Sciences and Management are NFSC 265, NFSC 278, NFSC 282, NFSC 288, MNGT 215, and MKTG 210. Additional courses may be required from Agriculture and Nutrition and Dietetics students to replace required courses common to the major and minor.

Minor in Food Systems

Food security, climate change and depletion of natural resources are now major concerns at the national and global levels. The vital need for sustainable production techniques able to reconcile economic profitability and environmental preservation is exerting an increasing pressure on public policies and agendas. The interdependence of these concerns requires the development of a comprehensive and multidisciplinary approach to food systems.

Goal

This interdisciplinary minor in Food Systems equips students with the knowledge and skills required to develop a comprehensive view and understanding of the different yet interdependent stages of food systems including food production, processing, marketing, distribution and consumption. Eighteen credit hours are required; 3 credits of each of the majors listed below.
Learning Outcomes:
- Identify key stages of food-products’ development.
- Acquire knowledge and practical skills in land preparation, farm irrigation methods and water measurement techniques.
- Develop an awareness of safe working environment and monitoring sustainable practices in livestock and field crops production.
- Determine the usefulness and limitations of various techniques in food production and processing practices and assessing their impact on human health.
- Understand concepts of environmental horticulture and its role in promoting nature conservation.
- Develop marketing and distribution strategies to promote food products.

List of Courses for the Minor in Food Systems
NFSC 220, NFSC 252, LDEM 211, AVSC, 220, AGSC 203 and AGSC 210.

Second BS Degree
To obtain a second BS in Agriculture and the Diploma of Ingénieur Agricole, a student must complete all AGRL III and AGRL IV courses, including all FAFS electives and humanities courses.

Applicants who have a BS degree in biology, chemistry, or environmental health do not need to take any additional prerequisite courses. Holders of BS degrees from other majors will be required to:
- complete additional prerequisite courses as recommended by the Admissions Committee and approved by the Academic and Curriculum Committee.
- complete at least five terms of residency at FAFS.

To obtain a second BS in Nutrition and Dietetics or Food Sciences and Management, a student must:
- complete a minimum of 51 credits while registered in FAFS, including all NTDT II and NTDT III or FSMT II and FSMT III required core courses listed in this catalogue (of which up to 15 credits can be from transferred course credits).
- complete additional prerequisite courses as recommended by the Admissions Committee and approved by the Academic and Curriculum Committee.
- complete at least three semesters of residency at FAFS.

Second BS Degree in Agriculture for Agribusiness Students
A candidate with a Bachelor’s degree in Agribusiness wishing to obtain a second degree in Agriculture and the Diploma of Ingénieur Agricole must complete a minimum of 45 credit hours with a minimum residency period of two semesters, and must complete the following course requirements with a minimum average of 70.

List of courses for Second BS Degree in Agriculture for Agribusiness Students:

- Fall Semester: NFSC 221, AGSC 221, AVSC 243, AVSC 271, AGSC 220
- Spring Semester: AGSC 222, AVSC 222/226, AGSC 228, AGSC 231, AGSC 224, AGSC 284
- Fall Semester: AGSC 232, AGSC 295, AGSC 235, three credits of AGSC Electives and three credits of AVSC Electives.

FAFS students can transfer their earned residency between the two programs at FAFS.

Dual Degree
Students may, upon approval of the faculty concerned, complete the requirements for a second degree while registered in another faculty at AUB. In such a case, a student will be granted two degrees at the same time of graduation. If tuition differs, students will pay the higher of the tuitions.

Information about deadlines and applications are available on the following link:

Transfer to Another Faculty
Students wanting to transfer to another faculty must take at least 50 percent of their courses at FAFS including one FAFS course (2or 3 cr.) in the corresponding major per semester. Students who do not register at least 50 percent of courses required by their major in the first semester will automatically be given the status of majorless in the second semester. A student should transfer after two semesters, if s/he fails to secure acceptance to the desired major by the end of the second semester s/he will be dropped for the faculty.

Transfer of Courses
Transfer of basic science courses taken at AUB with a minimum grade of 60 is allowed if these are also required courses in the core programs of FAFS. A minimum grade of 70 is required for transfer of elective courses. Students wishing to transfer one or more required or elective course should submit a written request to the Academic and Curriculum Committee.

Elective Courses
Candidates for the degree of BS in Agriculture must complete twenty one credits of elective courses: nine credits of elective courses in FAFS and twelve credits in the humanities, six credits in social sciences.

Candidates for the degree of Bachelor of Landscape Architecture (BLA) must complete twenty seven credits of elective courses: nine credits of elective courses in FAFS, twelve credits in humanities and six credits in social sciences.

Candidates for the degrees of BS in Nutrition and Dietetics and BS in Food Sciences and Management must complete a minimum of 51 credits while registered in FAFS, including all NTDT II and NTDT III or FSMT II and FSMT III required core courses listed in this catalogue (of which up to 15 credits can be from transferred course credits).

Candidates for the degree of BS in Agribusiness must complete a minimum of 45 credit hours with a minimum average of 70.

1 Elective Courses are outlined in General University Academic Information.
Management must complete a minimum of twelve credits in humanities.
Candidates for the degree of BS in Agribusiness must complete twelve credits in humanities.

Academic Rules and Regulations
Changes made after the publication of this catalogue will be available through academic advisers or coordinators.

Please refer to pages 49–67 General University Academic Information in this catalogue for information on the following: maximum course loads (under Credit Loads), dismissal from the faculty and readmission, classes and laboratories (under Attendance), incomplete grades (under Incompletes), examinations and quizzes (under Attendance), withdrawal from courses, students not working for a degree (under Categories of Students), repeating courses, placement on academic probation, and removal from academic probation.

Students enrolled in the BS in Nutrition and Diététic (Coordinated Program), should refer to the Nutrition and Diététic Coordinated Program Student Handbook for program’s specified policies and procedures.

Classification and Promotion

BS in Agriculture and Diploma of Ingénieur Agricole
For clear promotion from year I to year II a student must complete a minimum of twenty seven credits. For promotion from year II to year III a student must complete a minimum of fifty eight credits. For promotion from year III to year IV a student must complete a minimum of ninety eight credits. All such credits should be from courses specified in the regular program.

Bachelor of Landscape Architecture (BLA) and Diploma of Ingénieur Agricole
For clear promotion from year I to year II a student must complete a minimum of thirty five credits. For promotion from year II to year III a student must complete a minimum of seventy four credits. For promotion from year III to year IV a student must complete a minimum of one hundred and ten credits. All such credits should be from courses specified in the regular program.

BS in Nutrition and Diététic or in Food Science and Management
For clear promotion from year I to year II a student must complete a minimum of thirty credits. For promotion from year II to year III a student must complete a minimum of sixty three credits. All such credits should be from courses specified in the regular program.

BS in Agribusiness
For clear promotion from year I to year II a student must complete a minimum of thirty credits. For promotion from year II to year III a student must complete a minimum of sixty credits. All such credits should be from courses specified in the regular program.

Eligibility for the Regular AREC Program
To be eligible to enroll in the regular program at AREC during the third year of Agriculture or during the summer of the second year of Landscape Architecture, a student must
- complete a minimum of fifty eight credits by the end of the first semester of Agriculture III with a cumulative grade average > 70
- complete a minimum of sixty five credits by the end of the second semester of LARC II with a cumulative grade average > 70
- not have accumulated more than twelve credits of failed-missed courses (of which no more than six credits are in failed courses) specified in the regular program
- be approved for such action by the Academic and Curriculum Committee

Curricula

Curriculum for the BS Degree in Agriculture and Diploma of Ingénieur Agricole²

Agriculture I

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGSC 201</td>
<td>Orientation to Agriculture and Food Systems</td>
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<tr>
<td>BIOL 200</td>
<td>Diversity for Life</td>
</tr>
<tr>
<td>CHEM 200</td>
<td>Basic Chemistry</td>
</tr>
<tr>
<td>CHEM 205</td>
<td>Introductory Chemistry Laboratory</td>
</tr>
<tr>
<td>CMPS 209</td>
<td>Computers and Programming for the Sciences</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARAB 203</td>
<td>Arabic Communication Skills¹</td>
</tr>
<tr>
<td>CHEM 208</td>
<td>Survey of Organic Chemistry</td>
</tr>
<tr>
<td>ENGL 203</td>
<td>Academic English</td>
</tr>
<tr>
<td>AGSC 212</td>
<td>Microeconomics Theory of Food and Farming¹</td>
</tr>
<tr>
<td>MATH 201 or</td>
<td>Calculus and Analytic Geometry III or</td>
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<tr>
<td>MATH 204</td>
<td>Mathematics for Social Sciences II</td>
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Agriculture II

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<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>AVSC 243</td>
<td>Genetics</td>
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<tr>
<td>AGSC 215</td>
<td>Introduction to Soils</td>
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<tr>
<td>AGSC 241</td>
<td>Farm Management</td>
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</table>

² A minimum of 128 credits required for graduation
¹ The Arabic Placement Test is optional
² Course offered in fall and spring
### Agriculture III

#### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AVSC 271</td>
<td>Animal Nutrition</td>
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<tr>
<td>AVSC 275</td>
<td>Anatomy and Physiology of Farm Animals</td>
<td>3</td>
</tr>
<tr>
<td>AGSC 221</td>
<td>Principles of Entomology</td>
<td>3</td>
</tr>
<tr>
<td>AGSC 232</td>
<td>Principles of Plant Pathology</td>
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</tr>
<tr>
<td>Humanities Elective</td>
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**Total 15**

#### Second Semester (AREC)

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<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>AGSC 222</td>
<td>Farm Practices</td>
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</tr>
<tr>
<td>AVSC 222</td>
<td>General Livestock Production</td>
<td>3</td>
</tr>
<tr>
<td>AGSC 228</td>
<td>Irrigation Principles</td>
<td>3</td>
</tr>
<tr>
<td>AGSC 231</td>
<td>Principles of Agronomy</td>
<td>3</td>
</tr>
<tr>
<td>AGSC 224</td>
<td>General Horticulture</td>
<td>3</td>
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<tr>
<td>AGSC 284</td>
<td>Weed Science</td>
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**Total 15**

#### Summer Session (AREC)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AGSC 223</td>
<td>Agricultural Project</td>
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<td>AVSC 226</td>
<td>Poultry Production</td>
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<tr>
<td>AGSC 226</td>
<td>Farm Power and Machinery</td>
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**Total 8**

### Agriculture IV

#### First Semester

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>AGSC 235</td>
<td>Agricultural Extension in Development</td>
<td>2</td>
</tr>
<tr>
<td>NFSC 221</td>
<td>Basic Nutrition</td>
<td>3</td>
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### Curriculum for the Bachelor of Landscape Architecture and Diploma of Ingénieur Agricole

#### Year I

##### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 202</td>
<td>Landscape Design Fundamentals I</td>
<td>4</td>
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<tr>
<td>LDEM 200</td>
<td>Landscape Technical Drawing</td>
<td>4</td>
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<tr>
<td>GEOL 210</td>
<td>Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 204</td>
<td>Mathematics for Social Sciences II</td>
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<tr>
<td>STAT 210</td>
<td>Elementary Statistics for the Sciences</td>
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</tr>
<tr>
<td>ENGL 203</td>
<td>Academic English</td>
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**Total 17**

##### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>LDEM 216</td>
<td>Site Scale Design: Public Park and Private Garden</td>
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</tr>
<tr>
<td>LDEM 201</td>
<td>Landscape Descriptive Drawing</td>
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</tr>
<tr>
<td>LDEM 207</td>
<td>Landscape Architecture History I</td>
<td>3</td>
</tr>
<tr>
<td>LDEM 291</td>
<td>Surveying and Base Plan Development</td>
<td>3</td>
</tr>
<tr>
<td>LDEM 211</td>
<td>Landscape Horticulture</td>
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**Total 17**

##### Summer Session

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>LDEM 252</td>
<td>AutoCAD</td>
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<tr>
<td>LDEM 219</td>
<td>Plant Material I</td>
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**Total 8**

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* Course offered fall and spring
* Offered interchangeable
* A minimum of 144 credits required for graduation
### Year II

<table>
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<tr>
<th>First Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 246</td>
<td>Site Design I</td>
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<tr>
<td>LDEM 209</td>
<td>Plant Biology</td>
</tr>
<tr>
<td>LDEM 208</td>
<td>Landscape Architecture History II</td>
</tr>
<tr>
<td>LDEM 247</td>
<td>Site Engineering I</td>
</tr>
<tr>
<td>LDEM 220</td>
<td>Plant Material II</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 204</td>
<td>Site Design II</td>
</tr>
<tr>
<td>LDEM 230</td>
<td>Water and the Environment</td>
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<tr>
<td>LDEM 217</td>
<td>Soils in the Landscape</td>
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<tr>
<td>LDEM 248</td>
<td>Site Engineering II - Construction Material</td>
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<tr>
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<tbody>
<tr>
<td>LDEM 249</td>
<td>Site Engineering - Design Implementation</td>
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<td>LDEM 221</td>
<td>Plant Material III</td>
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<td>LDEM 231</td>
<td>Sustainable Water Management Techniques</td>
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### Year III

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<tr>
<th>First Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 228</td>
<td>Site Design in the Urban Context</td>
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<tr>
<td>LDEM 251</td>
<td>Geographic Information System (GIS)</td>
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<tr>
<td>LDEM 218</td>
<td>Landscape Ecology</td>
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<td>ENGL 204</td>
<td>Advanced Academic English</td>
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<table>
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<th>Second Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 222</td>
<td>Planting Design</td>
</tr>
<tr>
<td>LDEM 263</td>
<td>Landscape Appreciation and Site Analysis</td>
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<tr>
<td>Elective Social Science</td>
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<tr>
<td>ARAB</td>
<td>Arabic Communication Skills</td>
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<td>Elective Humanities</td>
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<table>
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<tr>
<th>Summer Session</th>
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<tbody>
<tr>
<td>LDEM 292</td>
<td>Internship (Practicum)</td>
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<td>FAFS Electives</td>
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### Year IV

<table>
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<tr>
<th>First Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 241</td>
<td>Research Project</td>
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<tr>
<td>LDEM 260</td>
<td>Contemporary Issues in Landscape Architecture</td>
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<td>FAFS Elective</td>
<td>Select an Elective Social Science</td>
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<table>
<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>LDEM 242</td>
<td>Advanced Design</td>
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<td>LDEM 290</td>
<td>Professional Practice</td>
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<td>FAFS Electives</td>
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<tr>
<td>Elective Humanities</td>
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### Curriculum for the BS Degree in Nutrition and Dietetics

#### Nutrition and Dietetics I

<table>
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<tr>
<th>First Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 201</td>
<td>General Biology I</td>
</tr>
<tr>
<td>CHEM 208</td>
<td>Survey of Organic Chemistry</td>
</tr>
<tr>
<td>CHEM 209</td>
<td>Introductory Organic Laboratory</td>
</tr>
<tr>
<td>ENGL 203</td>
<td>Academic English</td>
</tr>
<tr>
<td>NFSC 221</td>
<td>Basic Nutrition</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 200</td>
<td>Basic Chemistry</td>
</tr>
<tr>
<td>CHEM 205</td>
<td>Introductory Chemistry Laboratory</td>
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<tr>
<td>NFSC 261</td>
<td>Introductory Biochemistry</td>
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<tr>
<td>PHYL 246</td>
<td>Physiology for Nursing Degree Students and Undergraduates</td>
</tr>
<tr>
<td>SOAN 201</td>
<td>Introduction to the Study of Society</td>
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#### Nutrition and Dietetics II

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<tr>
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<tr>
<td>AGSC 212</td>
<td>Microeconomics Theory of Food and Farming</td>
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<td>ARAB</td>
<td>Arabic Communication Skills</td>
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**Notes:**
- The Arabic Placement Test is optional.
- A minimum of 96 credits required for graduation.
- Course offered in fall and spring.
- Course offered in fall and spring.
- Course offered in fall and spring.
- The Arabic Placement Test is optional.
### Curriculum for the BS Degree in Nutrition and Dietetics (Coordinated Program)

The first three years of the program are similar to those of the Nutrition and Dietetics program. In addition, the fourth year includes the below courses:

#### Nutrition and Dietetics (CP) IV

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>NFSC 283</td>
<td>Nutrition Education and Communication</td>
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<tr>
<td>NFSC 284A</td>
<td>Seminar in Clinical Dietetics</td>
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<tr>
<td>NFSC 298F</td>
<td>Dietetic Practicum (not billed)</td>
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*Total 18*

<table>
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<tbody>
<tr>
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<td>Seminar in Clinical Dietetics</td>
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<tr>
<td>NFSC 298S</td>
<td>Dietetic Practicum (not billed)</td>
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*Total 15*

### Curriculum for the BS Degree in Food Science and Management

#### Food Science and Management I

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<tr>
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</thead>
<tbody>
<tr>
<td>BIOL 200</td>
<td>Diversity of Life</td>
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<tr>
<td>CHEM 208</td>
<td>Brief Survey of Organic Chemistry</td>
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<tr>
<td>CHEM 209</td>
<td>Introductory Organic Laboratory</td>
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<tr>
<td>ENGL 203</td>
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<tr>
<td>MATH 204</td>
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<tbody>
<tr>
<td>CHEM 200</td>
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<td>Introductory Chemistry Laboratory</td>
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<tr>
<td>AGSC 212</td>
<td>Microeconomics Theory of Food and Farming</td>
</tr>
<tr>
<td>NFSC 221</td>
<td>Basic Nutrition</td>
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*Total 17*

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16 Course offered in fall and spring
17 Course offered in fall and spring
18 Course offered in fall and spring
19 Course offered in fall and spring
Food Science and Management II

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<tr>
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<tbody>
<tr>
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<td>MNGT 215</td>
<td>Management of Organizations</td>
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<tr>
<td>NFSC 261</td>
<td>Introductory Biochemistry²⁴</td>
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<td>NFSC 265</td>
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<tr>
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<td>CMPS 209</td>
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<tr>
<td>NFSC 272</td>
<td>Introduction to Food Service and Industries</td>
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<td>NFSC 278</td>
<td>Food Microbiology II</td>
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<td>NFSC 280</td>
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Food Science and Management III

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<tbody>
<tr>
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<td>NFSC 282</td>
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<tr>
<td>MKTG 210</td>
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<tr>
<td>NFSC 287</td>
<td>Food Processing</td>
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<tr>
<td>NFSC 289</td>
<td>Food Processing Lab</td>
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<tr>
<td>NFSC 291</td>
<td>Elements of Food Engineering</td>
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<tr>
<td>NFSC 296</td>
<td>Current Topics in Food Sciences and Nutrition²⁷</td>
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<tr>
<td>NFSC 299</td>
<td>Projects in Nutrition and Food Sciences²⁸</td>
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<tr>
<td>AGSC 256</td>
<td>Summer Internship</td>
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²⁴Course offered in fall and spring
²⁵Course offered in fall and spring
²⁶The Arabic Placement Test is optional
²⁷Course offered in fall and spring
²⁸Course offered in fall and spring

Curriculum for the BS Degree in Agribusiness

Agribusiness I²⁹

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>AGSC 204</td>
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<tr>
<td>AGSC 211</td>
<td>Introduction to Agricultural Issues and Policies</td>
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<td>CMPS 209</td>
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²⁹A minimum of 93 credits required for graduation
³⁰The Arabic Placement Test is optional
³¹Course offered in fall and spring
### Agribusiness III

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<tr>
<th><strong>First Semester</strong></th>
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<tr>
<td>AGSC 236</td>
<td>New Trends in Agricultural and Food Systems 3</td>
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<tr>
<td>AGSC 240</td>
<td>Career Planning Workshop for Agribusiness 0</td>
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<td>FINA 210</td>
<td>Business Finance 3</td>
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<td>DCSN 205</td>
<td>Managerial Decision Making: Models and Techniques 3</td>
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<td>MNGT 215</td>
<td>Principles of Management 3</td>
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**Total 15**

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<tr>
<th><strong>Second Semester</strong></th>
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<tbody>
<tr>
<td>AGSC 213</td>
<td>Legal Aspects of Agribusiness 3</td>
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<td>AGSC 248</td>
<td>Operation Management for Agribusiness 3</td>
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**Total 17**

**Total credits 96**
Department of Animal and Veterinary Sciences (AVSC)

Chairperson: Hamadeh, Shady
Professors: Barbour, Elie; Farran, Mohamad; Hamadeh, Shady
Research Professor: Sleiman, Fawwak

Vision
The department of Animal and Veterinary Sciences strives to be recognized as a center of excellence in animal and veterinary sciences education, research and outreach. The Department works to attract and maintain a diversified and highly qualified student body.

Mission
The main function of the Department of Animal and Veterinary Sciences is to produce qualified graduates capable of serving the region in all areas of animal and veterinary sciences: research, services, business, and education. The Department offers two graduate programs of study leading to MS degrees in Animal Science and Poultry Science that prepare students for lifelong learning and professional advancement in the field. The Department is also engaged to serve the animal and veterinary sector in Lebanon and the region by providing extension work, consultations, and diagnostic support.

Undergraduate Program
The main function of the Animal and Veterinary Sciences Department is to produce qualified graduates capable of serving the region in all areas of animal and veterinary sciences: research, services, business, and education.

The department participates in offering courses within the FAFS undergraduate core programs. Selected senior courses that cover areas of major importance in animal agriculture (i.e., nutrition, physiology, management, production) are also offered to students wishing to select an area of emphasis in animal sciences.

The following courses are offered by the department:
Course Descriptions

Core Courses for the BS Degree in Agriculture

AVSC 222  General Livestock Production  
Modern principles and practices in beef, sheep, and dairy production and reproduction.

AVSC 224  Agricultural Microbiology  
A course that covers basic and applied microbiology. The basic microbiology includes bacteriology, virology, parasitology, and immunology, and the applied microbiology includes veterinary, soil, water, and food microbiology.

AVSC 226  Poultry Production  
Modern principles and practices in poultry production with special emphasis on Middle Eastern conditions. Prerequisite: AVSC 271.

AVSC 243  Genetics  
Principles of inheritance, with an introduction to modern genetics.

AVSC 271  Animal Nutrition  
Structure and functioning of digestive systems of livestock and poultry; bioenergetics, nutritional deficiencies, and nutrient requirements of farm animals. Prerequisite: NFSC 261.

AVSC 275  Anatomy and Physiology of Farm Animals  
Systematic anatomy and physiology of farm animals.

Core Course for the BS Degree in Agribusiness

AVSC 220  Livestock Production  
The course is divided into three main sections. The first section introduces the types and breeds of livestock, terminology, methods, management systems, techniques of animal production and consumer impact. The second section introduces the students to the modern management practices required for the production of economically beneficial avian species including the domestic chickens, turkeys, water fowls, game birds and others. The third section discusses the nature of economic diseases in domestic animals and avian species and the regulations of World Trade Organization in import and export of animals, including rules that prevent the trans boundary transmission of microbes causing economic diseases.

Elective Courses for the BS Degree in Agriculture

AVSC 241  Principles of Dairying  
Management, housing, feeding, breeding, and record-keeping in dairy production.

AVSC 242  Small Ruminant Production in Arid Regions  
Breeding, feeding, and management of sheep and goats under arid conditions.

AVSC 276  Animal Physiology Laboratory  
Pre- or corequisite: AVSC 275.

AVSC 277  Animal Breeding  
Principles of permanent improvement of animal and poultry production. Prerequisite: AVSC 243 or BIOL 223.

AVSC 278  Feeds and Feeding  
Characteristics, conservation, and preparation of feeds; feeding of various classes of livestock.

AVSC 279  Companion Pet Birds and Animals  
Breed and stock selection, equipment, stocking densities, routine management, rearing, feeding, behavior and interaction with humans, optimum production, and health care of pet birds and pet animals. Free elective.

AVSC 280  Aquarium, Marine, and Farming Fish  
A course that covers the different fishing techniques, fish farming, characteristics of fish, comparison of classes of fish, the setup of fresh water and marine aquariums, and the common diseases of fish. Free elective.

AVSC 281  Production of Novel Avian Species  
Management practices in the production of economically beneficial avian species other than the domestic chicken (e.g., ratites, turkey, water fowl, and others.).

AVSC 282  Pet Birds and Animals  
A course that describes the anatomy and physiology of pets belonging to mammalia, reptilia, aves, and osteichthyes. The history, classification, breeds, selection, rearing, feeding, production, and health of sixteen pets will be studied. Prerequisite: BIOL 290.

AVSC 299A  Special Topics in Animal Sciences for Agriculture program  
Directed study. Tutorial. Prerequisites: Fourth year standing and consent of instructor.
Department of Agricultural Sciences (AGSC)

Chairperson: Haidar, Mustafa
Professor Emeritus: Kawar, Nasri
Professors: Abou Jawdah, Youssef; Bashour, Isam; Haidar, Mustafa; Saad, Adib
Research Professor: Nimah, Musa
Visiting Professor: Kantharajah, Arumugam
Assistant Professors: Chaaban, Jad; Chalak, Ali; Jaafar, Hadi
Senior Lecturers: "Abou-Fakhr Hammad, Efat; "Chahine, Hala
Lecturer: "Khalil, Youssef
Instructors: "El Husseini, Hashem; "Ollaik, Rami; "Tawk, Salwa

Undergraduate Program

The Department of Agricultural Sciences offers a multidisciplinary program with the objective of training students in the various theoretical and practical aspects of agricultural sciences and agribusiness. Department graduates are prepared to successfully contribute to the agricultural research, business, and education programs in the region.

The department offers two programs, one leading to BS degree in Agricultural Sciences and the other leading to a BS degree in Agribusiness.

The AGSC program prepares students to address current agricultural issues at the regional and global levels using their scientific knowledge to improve production and protect the environment. The department provides practical and up-to-date knowledge in plant production, plant health, management, and conservation of water and energy, and trains students to become skilled farm operators and managers who are innovative and responsive to the local and regional needs, and capable of adapting to market changes and rising production costs.

Undergraduate courses are offered in the areas of agronomy, agro-chemicals, agricultural machinery, entomology, horticulture, irrigation, plant health management, plant breeding, plant pathology, soils, weed science, agricultural economics and rural development. Introductory courses in these subjects are offered to agriculture students within the framework of a core curriculum. Specialized and advanced courses are also offered as electives to undergraduates.

The Agribusiness (AGBU) program combines the study of management with agricultural science, in order to provide students with an understanding of the economic and business principles that underlie management tools and their application to agricultural and related businesses. The Educational Objectives of the AGBU program are to prepare students to become entrepreneurs, business leaders, skilled farm operators and future policy advisers who are well-grounded in agriculture and food production; capable of communicating and using their skills in order to improve their livelihoods and that of their community.

Course Descriptions

Core Courses for the BS Degree in Agriculture

AGSC 201 Orientation to Agriculture and Food Systems 2.0; 2 cr.
This course provides students with a basic introductory knowledge about the various disciplines and related subjects in the Faculty of Agricultural and Food Sciences. It covers the various aspects of agricultural production and development including natural resources, plant sciences, plant health management, animal production and management, agribusiness, nutrition and food sciences; and landscape design and eco-management.

AGSC 212 Microeconomic Theory of Food and Farming 3.0; 3 cr.
The course introduces economic principles, which are then used to explain the production of goods and services, household behavior, economic equilibrium and the welfare consequences of alternative exchange mechanisms. Special applications will be given to decision-making and the allocation of resources for the agricultural firm, and consumer behavior and demand for agricultural and food products.

AGSC 215 Introduction to Soils 2.3; 3 cr.
Origin, properties, classification, and management of soil with emphasis on soil behavior in relation to irrigated agriculture, ecology, and the environment. Prerequisite: CHEM 200 or equivalent.

AGSC 220 Principles of Plant Physiology 2.3; 3 cr.
An introduction to environmental and physiological factors affecting crop growth and development. Prerequisite: BIOL 200.

AGSC 221 Principles of Entomology 2.3; 3 cr.
Insect morphology, anatomy, classification, and biology in relation to pest control in agroecosystems. Prerequisite: BIOL 200.

AGSC 222 Farm Practices 0.6; 1 cr.
Practical experience in operational activities and management decisions essential in modern agriculture. Prerequisites: AGSC III standing and eligibility for enrollment in the regular program at AREC.

AGSC 223 Agricultural Project 0.6; 2 cr.
Directed study with field and laboratory work. Prerequisites: AGSC III standing and eligibility for enrollment in the regular program at AREC.

AGSC 224 General Horticulture 2.3; 3 cr.
Principles and practices in the production of fruits, ornamentals, and vegetables.

AGSC 225 Rural Social Systems in Agricultural and Rural Development 3.0; 3 cr.
An examination of institutional and sociological problems of rural areas; influence of rural institutions on rural development.

Undergraduate courses are offered in the areas of agriculture, business management and accounting, marketing, agriculture economics, entrepreneurship and rural development. Specialized and advanced courses are also offered as electives to undergraduates.
AGSC 226  Farm Power and Machinery  2.3; 3 cr.
Internal combustion engines, power trains, drawbar performance, stability, and safe operation of tractors; functional requirements, principles of operation, performance evaluation, and selection of farm machinery.

AGSC 227  Surveying and Irrigation Principles 0.3; 1 cr.
Topographic surveying, irrigation methods evaluation, soil physical properties, soil water, and water flow measurement.

AGSC 228  Irrigation Principles 2.3; 3 cr.
Surveying, land preparation, water measurement, conveyance and application, pumping, drainage and soil-water relationships; introduction to farm irrigation methods.

AGSC 231  Principles of Agronomy 2.3; 3 cr.
Principles and cultural practices in the production of field crops.

AGSC 232  Principles of Plant Pathology 2.3; 3 cr.
Fundamentals and practical aspects of plant diseases, their causes, and control.

AGSC 235  Agricultural Extension in Development 2.0; 2 cr.
A comparative study of developmental philosophy, objectives, and adaptation to developing countries; principles and methods of extension and adult teaching. Prerequisite: AGSC 225.

AGSC 241  Farm Management 3.0; 3 cr.
A course that focuses on the application of modern principles and techniques of management to the farm sector. Prerequisite: AGSC 212 or ECON 203.

AGSC 250  Organic Farming 1.2; 3 cr.
Advances in organic farming and growing systems with emphasis on farm planning, certification, marketing, information, and organic farming practices.

AGSC 284  Fundamentals of Weed Science  2.3; 3 cr.
Fundamentals of weed ecology and weed management practices with emphasis on chemical weed control and integrated weed management systems.

AGSC 290  Project Planning and Appraisal 3.0; 3 cr.
Introduces different techniques commonly used in project planning and appraisal.

AGSC 296  Agriculture Project Presentation 1 cr.
Prerequisite: AGSC IV standing.

AGSC 219  Apiculture 2.3; 3 cr.
The course introduces the basics of the honeybee world by exploring the natural history of apiculture, honeybee biogeography and evolution, biology, social structure, natural enemies, hive products and pollination dynamics. It illustrates the ecological aspects of one of nature’s most fascinating creatures under the looming environmental degradation and focuses on hands-on beekeeping activities.

AGSC 251  Vegetable Production 3.0; 3 cr.
The course introduces students in the Agriculture program to a good scientific and hands-on practical knowledge of vegetable production. Students will also gain an understanding of the physiological controls on vegetable crop yield under protective and local environments. They will become familiar with the current sources of information available to produce and develop production management skills through the production of vegetables. Practical sessions will guide the students to understand different vegetable crop production techniques used in Lebanon and worldwide.

AGSC 252  Conservation Agriculture 2.3; 3 cr.
The course is an introduction to conservation agriculture. Options and suitable agricultural techniques which enhance the amount of water and organic matter in the soil and reduce erosion and pests will be discussed. Prerequisites: AGSC 215, AGSC 231 and AGSC 284.

AGSC 262  Introduction to Irrigation Methods 3.0; 3 cr.
Innovative methods for the design of irrigation systems including micro-irrigation, sprinkle irrigation, and surface irrigation. Conceptual and detailed design of irrigation networks and system components from the professional perspective. Prerequisites: AGSC228 or AGSC202.

AGSC 299 Special Topics in Agricultural Science 2 cr.
Directed study. Tutorial. Prerequisites: fourth year standing and consent of instructor.

Core Courses for the BS Degree in Agribusiness

AGSC 202  Introduction to Land and Water Resources 2.3; 3 cr.
Develop an understanding of current issues in land and water resources, including: soil and water conservation and management; land classification and reclamation; soils and environmental quality; sustainable agro-ecosystems. Prerequisite: AGSC 204.

AGSC 203  Crop Production and Protection 2.3; 3 cr.
The course provides an overview of the technologies used in the production of crops. The student will acquire a knowledge and understanding of current crop production systems, the end market requirements for products as well as the quality standards of these products. Students will also learn current techniques in crop protection and yield management.
## AGSC 204 Natural Sciences for Agribusiness 3.0; 3 cr.
This course is an introduction to chemistry and biology designed for first year agribusiness students. It aims to familiarize students with the basic concepts and theoretical principles of modern chemistry and biology. Students will gain an appreciation of the importance that biology and chemistry play in our natural lives.

## AGSC 210 Marketing in Agribusiness 3.0; 3 cr.
An overview of marketing activities in Agro-food industries, including marketing inputs in strategic planning, global marketing, marketing research, analysis of buyer behavior, market segmentation and positioning, and development of the marketing mix elements. **Prerequisite: Junior status standing.**

## AGSC 211 Introduction to Agricultural Issues and Policies 3.0; 3 cr.
Survey of global food and agricultural issues. Covers: role of agriculture in economic development; trade in food and agricultural products; global food production, consumption and marketing patterns; economics of technical change and food assistance; agriculture and the environment.

## AGSC 212 Microeconomic Theory of Food and Farming 3.0; 3 cr.
The course introduces economic principles, which are then used to explain the production of goods and services, household behavior, economic equilibrium and the welfare consequences of alternative exchange mechanisms. Special applications will be given to decision-making and the allocation of resources for the agricultural firm, and consumer behavior and demand for agricultural and food products.

## AGSC 213 Legal Aspects of Agribusiness 3 cr.
The main objective of the course is to help Agribusiness students understand the Lebanese and American legal aspects of common agricultural business activities, as well as the formation and function of Agri-commercial companies and related ethical principles. **Prerequisite: Junior status standing.**

## AGSC 219 Entrepreneurship in Agriculture 3.0; 3 cr.
Integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment into management of agricultural businesses using the compilation by students of agribusiness plans. **Prerequisite: Junior status standing.**

## AGSC 236 New Trends in Agricultural and Food Systems 3.0; 3 cr.
Current trends in agricultural trade; developments in private sector markets and in public policy; the concerns related to the effects of agricultural trade on the environment, food security, and regional development. The course will also address the issue of the challenges to food exporters from developing countries posed by the need to comply with ever-stricter standards. The course will also cover the global market structures of the agricultural products most relevant to the Mediterranean countries and the experience and present thinking about the pros and cons of the spread of genetically modified products, designation of origins and other food labeling mechanisms. **Prerequisite: Senior status in Agribusiness.**

## AGSC 239 Agribusiness Communication Skills Workshop 0 cr.
A ten-hour workshop designed to introduce students to the various communication skills needed in a typical work environment. Mastering these skills plays a profound role in shaping and advancing professional careers in all types of industries and work scopes. The workshop introduces specific guidelines for the effective use of a variety of communication skills in the workplace in an interactive manner, simulating the work environment.

## AGSC 240 Career Planning Workshop for Agribusiness 0 cr.
A ten-hour workshop designed to build awareness of changing career patterns and major personal and professional influences that impact future careers. Issues such as preparation for joining the labor market, basic career guidance, understanding career stages, and practicing self-assessment are emphasized. **Prerequisite: Junior status standing.**

## AGSC 248 Operation Management for Agribusiness 3 cr.
This course covers the essentials of supply chain management and quantitative techniques needed for the planning and implementation of agribusiness operations. This course includes optimization of production and cost minimization. **Prerequisite: Senior status standing.**

## AGSC 253 Harvest and Post-harvest Issues and Strategies 3.0; 3 cr.
Discusses: the structure of the agricultural harvesting and marketing system with emphasis on factors determining farm level prices; emphasizes how markets coordinate consumer desires and producer costs through marketing channels; impact of market structure, grades, information, product form, and advertising on farm prices; International trade impact on producers, consumers, agribusiness, and government. **Prerequisites: AGSC 202, AGSC 203 and AGSC 212.**

## AGSC 255 Field Study of the Rural Agro-economy 3.0; 3 cr.
Tours of agribusiness enterprises and rural farms in Lebanon are organized with the intent to observe the management and marketing practices used in successful operations of different agribusiness structures. Students will also learn how the agriculture value chain is structured within the rural economy. **Prerequisites: AGSC 202 and AGSC 203.**

## AGSC 256 Summer Internship 1 cr.
Milestone course for students in Agribusiness. Application of concepts, tools, and principles within the rural economy.

## AGSC 292 Agribusiness Final Year Project 5.0; 5 cr.
Milestone course for students in Agribusiness. Application of concepts, tools, and principles including management, finance, marketing, economic theory, and quantitative methods to applied agricultural decisions on selected agricultural and agribusiness projects that enhance team-building as well as written, and oral communication skills. **Prerequisite: Senior status in Agribusiness.**
Department of Nutrition and Food Sciences (NFSC)

Chairperson: Kassaify, Zeina
Professor Emeritus: Tannous, Raja
Professors: Hwalla, Nahla; Obeid, Omar; Toufeili, Imad
Associate Professors: Kassaify, Zeina; Olabi, Ammar
Assistant Professors: Abiad, Mohammad; Ghattas, Hala; Naja, Farah; Nasreddine, Lara
Lecturer: PNatour, Jamila
Instructors: Chamieh, Marie Claire; Close, Rachel; El Halabi, Dima, Ghandour, Sara; Habib-Mrad, Carla; Hamadeh, Basma

Undergraduate Program

The mission of the Department of Nutrition and Food Science is to produce qualified graduates capable of serving the region in various areas of food science, nutrition, and dietetics. The department participates in offering courses within the FAFS undergraduate core program and, in addition, offers junior and senior courses that cover areas of major importance in food science, nutrition, and dietetics.

The department offers two three-year programs, one leading to a BS degree in Nutrition and Dietetics, and the other leading to a BS degree in Food Science and Management. Graduates wishing to qualify as licensed dietitians should complete an Internship for a minimum of six months in a recognized medical setting.

In addition, the department offers a Coordinated Program in Nutrition and Dietetics (CP) which combines the didactic three year Nutrition and Dietetics Program with an additional year of supervised practice.

Students who intend ultimately to enter the Faculty of Medicine must complete the premedical requirements as outlined in the AUB catalogue Faculty of Arts and Sciences section titled Premedical Study. Graduates of these programs do not receive the Diploma of Ingénieur Agricole.

The following courses are offered by the department:

Core Courses for the BS Degree in Nutrition and Dietetics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFSC 221</td>
<td>Basic Nutrition</td>
<td>3.0</td>
<td>3 cr.</td>
</tr>
<tr>
<td>FSC 222</td>
<td>Community Nutrition</td>
<td>3.0</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NFSC 240</td>
<td>Nutritional Status Assessment</td>
<td>1.3</td>
<td>2 cr.</td>
</tr>
<tr>
<td>NFSC 261</td>
<td>Introductory Biochemistry</td>
<td>3.0</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NFSC 265</td>
<td>Food Chemistry</td>
<td>3.0</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NFSC 267</td>
<td>Food Analysis</td>
<td>1.3</td>
<td>2 cr.</td>
</tr>
<tr>
<td>NFSC 274</td>
<td>Human Nutrition and Metabolism</td>
<td>3.0</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NFSC 277</td>
<td>Food Microbiology I</td>
<td>3.0</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NFSC 285</td>
<td>Nutrition in the Life Cycle</td>
<td>2.3</td>
<td>3 cr.</td>
</tr>
<tr>
<td>NFSC 287</td>
<td>Food Processing</td>
<td>2.0</td>
<td>2 cr.</td>
</tr>
<tr>
<td>NFSC 289</td>
<td>Food Processing Laboratory</td>
<td>0.3</td>
<td>1 cr.</td>
</tr>
</tbody>
</table>

* Part-time
NFSC 290  Food Service Management  2.3; 3 cr.
Techniques of management of functional operation of food service; field trips, self-study modules, reports, and discussion. Prerequisites: MNGT 215 and NFSC 221. Course offered in fall and spring.

NFSC 292  Medical Nutrition Therapy I  3.0; 3 cr.
Examines selected metabolic diseases, HIV, and cancer by covering their etiology, metabolic pathways, and the importance of medical nutrition therapy. Prerequisites: NFSC 240, NFSC 274 and NFSC 285.

NFSC 293  Medical Nutrition Therapy II  3.0; 3 cr.
A thorough review of the nutrition care process in the treatment of diet-related diseases. The course prepares students to implement the nutrition care process for various conditions, including but not limited to overweight and obesity, diabetes, cardiovascular, gastrointestinal and renal diseases and helps students: 1) understand the pathophysiology of selected diseases in which nutritional intervention plays a major role; 2) identify the nutritional needs of patients with disease; and 3) develop an appropriate patient nutrition care plan. Prerequisites: NFSC 274, NFSC 240 and NFSC 285.

NFSC 294  Medical Nutrition Therapy Laboratory I  0.3; 1 cr.
Self-study modules, case studies, reports, and discussions of NFSC 292 topics. Corequisite: NFSC 292. Prerequisite: NFSC 285.

NFSC 295  Medical Nutrition Therapy Laboratory II  0.3; 1 cr.
Self-study modules, case studies, reports, and discussions of NFSC 293 topics. Corequisite: NFSC 293.

NFSC 296  Current Topics in Food Sciences and Nutrition  1 cr.
Prerequisite: ND III. Course offered in fall and spring.

NFSC 299  Projects in Nutrition and Food Sciences  2 cr.
Directed study. Tutorial. Prerequisite: ND III.

In addition to the requirements for the BS degree in Nutrition and Dietetics, students accepted in the Coordinated Program should complete the following:

NFSC 283  Nutrition Education and Communication  3 cr.
Focuses on principles of health behavior, learning theories and their application to nutrition education and nutrition counseling practice. Equips students with the necessary communication tools and techniques to help prevent nutrition-related disease and promote health.

NFSC 284  Seminar in Clinical Dietetics  1 cr.
This course focuses on developing the communication and research skills as well as strengthening the critical thinking capacities of CP students undergoing an intensive internship program, by providing them the opportunity to present and discuss all interesting nutritional issues arising during their CP practicum. It is divided into NFSC 284A and 284B.

NFSC 298  Dietetic Practicum  28 cr.
Training for nine months at an affiliated medical facility.
NFSC 291  Elements of Food Engineering  3.0; 3 cr.
Basic concepts and principles of food engineering; emphasis on food handling and unit operations utilized in food processing. Prerequisites: MATH 204, FSM III.

NFSC 296  Current Topics in Food Sciences and Nutrition  1 cr.
Prerequisite: ND III or FSM III. Course offered in fall and spring.

NFSC 299  Projects in Nutrition and Food Sciences  2 cr.
Directed study. Tutorial. Prerequisite: ND III or FSM III.

Core Course for the BS Degree in Agribusiness

NFSC 252  Food Processing  3.0; 3 cr.
Technology and processing of foods; includes processing of food products and field visits to local food companies. Prerequisite: Junior status standing.

Elective Course not for Nutrition and Dietetics or Food Science and Management

NFSC 220  Food and Nutrition Awareness  3.0; 3 cr.
Introduces the discipline of nutrition and assists students in making optimal food choices for better health. Free elective.
Department of Landscape Design and Ecosystem Management (LDEM)\(^1\)

Chairperson: Talhouk, Salma N.
Professors: Bengs, Christer; Talhouk, Salma; Zurayk, Rami
Associate Professor: Farajalla, Nadim
Assistant Professors: Abunnasr, Yaser; Trovato, Maria Gabriella
Senior Lecturers:
  \(^\circ\)Battikha, George; \(^\circ\)Yazbek, Mariana
Lecturers:
  Al Akl, Nayla; \(^\circ\)El-Amine, Bachar; \(^\circ\)Hage, Sara; \(^\circ\)Halim, Nader;
  \(^\circ\)Melhem, Wissam; \(^\circ\)Mezher, Ramzi; \(^\circ\)Shibli, Rabih
Instructor: Fabian, Monika
Associate: Makhzoumi, Jala

Undergraduate Program

The mission of the department is that graduate students adopt a holistic view of the landscape and the environment; and become equipped with cutting edge scientific knowledge and creative, flexible skills for the design and management of natural and cultural resources. The essence of the department lies in its interdisciplinarity and equally in teaching and in research with applications in the Middle East region. To this end the Department builds on the strong linkages established with other academic units within and outside FAFS.

The following design courses are part of the program requirement. There is a grade average requirement for: LDEM 202, LDEM 216, LDEM 246, LDEM 204, LDEM 228, LDEM 222, LDEM 241 and LDEM 242. A student should maintain a combined average of 70 in two consecutive design studios within a given year. Failure to achieve this will result in repeating the design studio with the lower grade.

\(^1\) Pending final approval of New York Board of Education (NYSE)
\(^\circ\) Part time
Course Descriptions

Core Courses for the Bachelor of Landscape Architecture (BLA)

LDEM 200  Landscape Technical Drawing  4 cr.
This is a course in descriptive geometry and graphic communication in landscape architecture. Students learn to use drawing tools. They acquire techniques of representation of 3D and space on 2D surfaces, including orthogonal (plans, sections, and elevations), paraline (axonometrics and isometrics), and perspective drawings. Applications cover construction of shades and shadows, representation of open space, trees, and elements of the natural and built landscapes. Students are introduced to the basics of manual and digital drawing techniques.

LDEM 201  Landscape Descriptive Drawing  4 cr.
The focus of the studio is to emphasize visual thinking techniques and graphical information representation. Through the use of multiple media to sketch and draw the landscape, students learn to understand their environment through developing skills in mapping information, understanding their relationships and graphically representing it.

LDEM 202  Landscape Design Fundamentals I  4 cr.
The LDEM 202 is the first of two fundamental design courses (the second is LDEM 203). It is a foundation for subsequent design courses. It introduces students to theories of design through readings, analysis and hands-on projects. The course is structured as series of short exercises and is divided into two parts:

Part 1: Fundamental Elements of Landscape Design
An exploration into the modes of space: two-dimensional surfaces, three-dimensional objects, spatial enclosure, and the open continuous landscape. The emphasis is on the media of landform, water, plants, and structures as defining agents of human space in the garden and the landscape at large. The form and character of the space is further determined by the context of the site and, the nature of spatial geometry with studies of form, pattern, texture, tone, and color.

Part 2: Basics of Design
This studio introduces students to reading and responding to the site. Goals include learning to experience and record the landscape, to design in response to the site, to think creatively, to generate design ideas and understand design as a process, to gain knowledge of design precedents and principles, and to learn tools and techniques of visual expression. Students will learn through in-class exercises, reading assignments, and design projects. Studio time is divided between lectures, field trips, studio design work, desk critiques, pin-ups and presentations.

LDEM 204  Site Design II  6 cr.
Part 1: Cultural Landscapes
The cultural landscape studio introduces students to the process of research, planning, design, and management of historically and culturally significant landscapes through selected real world site projects. Part one introduces methods of assessment, approaches and policies (local and international), case studies of similar projects as well as historical analysis of the study area.

Part 2: Historic Preservation and Design
Landscape design proposals for sites within historically significant areas. Emphasis is on methods of analysis and design development. Graphic and photographic documentation of existing built forms serve as the basis for design proposals. Students engage in the following five steps in the process of their study: 1. Investigating a landscape’s site history using primary and secondary resources; 2. Analyzing, documenting, and evaluating existing conditions; 3. Interpreting the significance of the natural, historic and cultural importance of the landscape site; 4. Recommending appropriate treatment strategies; and 5. Presenting the findings of this research process. Prerequisite: LDEM 246.

LDEM 216  Site Scale Design: Public Park and Private Garden  4 cr.
LDEM 216 is the second of two design introductory courses. It is a foundation for subsequent courses that explore project design in varied contexts and scales. It introduces students to theory and practice of landscape design and site planning by doing, observing, reading and reflecting. Students apply knowledge acquired from LDEM 202 on real site contexts with an emphasis on site design. Focus is on two dominant landscape design types: the park (public) and the garden (private). Students will analyze case studies and relevant readings pertaining to both landscape typologies.

Part 1: The Park
The focus is on the application of spatial theory and design process to a specific site context. Work will develop map-reading skills at various scales; strengthen drawing, lettering, and cross-section representation skills. Emphasis is on landform design in a public park setting (urban and non-urban).

Part 2: The Garden
The garden is a personal, direct and intimate expression of landscape architecture. It is explored here as a contemporary art primarily through the design of individual sites; and, secondarily, through guided research and discussion sessions which explore important works and design theory in the genre. The emphasis is on developing an informed and creative personal approach that inspires while solving practical problems on real sites. Focus here is on residential gardens or gardens pertaining to institutions. Prerequisite: LDEM 202.

LDEM 207  Landscape Architecture History I  3 cr.
The course surveys the evolution of structures, settlements and landscapes in the western world and the Mediterranean region including the Arab world. The period spans from origins of human societies, to the end of the medieval period. Students will be assessed on written exams, research papers and an individual project. Examination of the history of landscape architecture since Frederick Law Olmsted and of the evolution of the landscape architecture status with emphasis on environmental planning and activism; town planning and the design of infrastructure, park design and garden design. Introduction to the discipline of landscape architecture and architecture in the built environment, concepts and themes in design focusing on historical examples.

LDEM 208  Landscape Architecture History II  3 cr.
The course surveys the evolution of structures, settlements and landscapes in the western world and the Mediterranean region including the Arab world. The period spans the Renaissance to the present. Students will be assessed on written exams, research papers and a project of individual interest. Examination of the history of landscape architecture since Frederick Law Olmsted and of the evolution of the landscape architecture status with emphasis on environmental planning and activism; town planning and the design of infrastructure, park design and garden design. Introduction to the discipline of landscape architecture and architecture in the built environment, concepts and themes in design focusing on historical examples.

LDEM 211  Landscape Horticulture  2,3; 3 cr.
This course covers basic principles of selection and management of landscape plants. Students will learn how to select plants appropriate to site and purpose, and will be introduced to concepts and applications of environmental horticulture and its contribution to the well-being of humans and nature. The course relies on hands on field projects, site visits, essays, and photo-documentation.
LDEM 210 Plant Biology 2,3; 3 cr.
An introduction to botany and to the general principles of plant biology. The course material is aimed at developing an understanding and appreciation of the interaction of plants with their environment, and at providing applications and insights relevant to landscape students.

LDEM 217 Soils in the Landscape 2,3; 3 cr.
This course will examine soils as integral components of the landscape and as a medium for landscaping activities. It is designed to help students acquire a good understanding of the relationship between geology, landform, soil, vegetation and landscape, and to implement management actions essential in landscaping, such as soil preparation, soil amendment and fertilization. Emphasis will be placed on soils as a component of Mediterranean ecosystems and land mosaics with special focus on soil resources in Lebanon. Labs and field trips will be organized in order to observe and analyze soils in the environment, and to manipulate soil substrates for optimizing plant growth.

LDEM 218 Landscape Ecology 3 cr.
Students will be introduced to the discipline of landscape ecology. The course will focus on the interplay between spatial patterns and ecological processes. It also focuses on detecting and characterizing social and natural patterns of influence on landscapes and landscape dynamics. Implications of landscape pattern and landscape management will also be covered.

LDEM 219 Plant Material I 0,3; 1 cr.
This course will concentrate on the study of landscape plants for urban contexts in Mediterranean climates. Basic taxonomic identification techniques will be introduced and applied to trees, shrubs, vines and herbaceous plants:
- Plants for parks
- Street (narrow/wide) plants
- Container plants for plazas, balconies and intensive roof gardens
- Plants for extensive green-roofs
- Plants for vertical walls and façades
- Edible Landscapes (greens and vegetables)

LDEM 220 Plant Material II 0,3; 1 cr.
This course will concentrate on the study of landscape plants (native and ecologically adapted) in Mediterranean climates. Basic taxonomic identification techniques will be introduced and used on trees, shrubs, vines and herbaceous plants:
- Native Mediterranean trees and shrubs
- Native Mediterranean herbaceous plants
- Naturalized and ecologically adapted trees and shrubs for the Mediterranean climate
- Naturalized and ecologically adapted herbaceous plants for the Mediterranean climate
- Invasive plants in the Mediterranean climate
- Turf species for the Mediterranean climate

LDEM 221 Plant Material III (AREC) 0,3; 1 cr.
This course will concentrate on the study of landscape plants for urban contexts in Mediterranean climates. Basic taxonomic identification techniques will be introduced and used on trees, shrubs, vines and herbaceous plants:
- Native trees and shrubs for arid and semi-arid climate
- Native herbaceous plants for arid and semi-arid climate
- Naturalized and ecologically adapted trees and shrubs for arid and semi-arid climate
- Naturalized and ecologically adapted herbaceous plants for arid and semi-arid climate

- Edible landscape (fruit trees)
- Turf species for arid and semi-arid climate

LDEM 222 Planting Design 2,3; 4 cr.
The course introduces students to the basic principles of designing with plants. Landscape Architecture combines elements of art and science to create a functional, aesthetic and spatial experience of the outdoor space. One initial purpose of designing with plants is to understand how to blend technology (the built environment) into the natural surroundings and to bring natural elements into the built environment. In order to work toward a desirable landscape design and hence successful planting plan, the student will develop a working knowledge of artistic elements, design principles and basic horticultural knowledge of plants. Successful plant composition and layout is obtained with acknowledgement of the importance of plants as a design material that enhances the definition and spatial experience of outdoor spaces. Prerequisites: LDEM 209, LDEM 218, LDEM 219 and LDEM 220.

LDEM 228 Site Design in the Urban Context 6 cr.
The focus of this studio is “site design in the urban context;” as such, it will enable students to explore the particular challenges of designing in complex urban environments. By their nature, urban environments have multiple layers and meanings and are influenced by an array of forces. Urban landscapes are an amalgam of a myriad of social, cultural, political, economic and ecological processes on physical space. Designing in the urban context therefore requires sensitivity to these many layers and influences. Creative response to the challenges of urban environments means careful attention to the landscape narratives students choose to tell, and how users of a space learn and discover new things from a site.
Part 1: Understanding and Analyzing Urban Landscape Systems
The purpose here is to briefly overview basic concepts of urbanism (transportation, infrastructure, zoning laws, real estate markets, economic development, social issues, and so on) with a strong emphasis on understanding urban open spaces and networks through readings. Students will analyze case studies of similar contexts and analyze urban landscape systems pertaining to the study area.
Part 2: Study Area
Application of urban design theories to various scales of urban design, with special focus on civic scale design elements and spatial and functional requirements. The end goal is to design a landscape system or site with an urban context. Prerequisite: LDEM 204.

LDEM 230 Water and the Environment 3 cr.
This is an introductory course in water resources management emphasizing physical hydrological processes and the interactions between these and the natural environment and the role of human activities in these interactions. This course covers a broad range of topics: e.g. the hydrologic cycle, watershed hydrology, runoff generation, groundwater, point and nonpoint sources of pollution, best management practices and a multitude of water quality issues. Local, regional and international case studies will be covered along with short field trips to foster a better understanding of water quality and quantity concepts, applications, and principles.

LDEM 231 Sustainable Water Management Techniques (AREC) 3 cr.
The course will focus on water as a scarce resource in Lebanon and the region. Students will be exposed to theoretical and practical aspects of sustainable water resources management as related to landscape design namely in the areas of demand efficient water use and management. Students will learn about efficient indigenous and exotic landscape irrigation, surface and subsurface drainage design, rainwater harvesting, and water conservation.
LDEM 241 Research Project 4 cr.
This course is intended to assist students in selecting an individual capstone project, finding and organizing appropriate information needed for the project, and establishing parameters and questions for the design and development of the project. The studio focuses on an approved design problem requiring individual work, which will serve as a comprehensive examination. Preparation and presentation include a written and graphic problem statement, analysis, and detailed plans, or other approaches approved by instructor. Prerequisite: LDEM 206.

LDEM 242 Advanced Design 6 cr.
The Final Year Project (FYP), conducted with a faculty advisor, includes collection, analysis, and interpretation of project information. The final studio covers a variety of projects that may include landscape design projects involving fine arts, urban design, and town planning. Students are expected to achieve a comprehensive understanding of ideas, processes, and concepts. This is the capstone project where students demonstrate their acquired design skills and knowledge. They are expected to develop their design, produce presentation drawings and defend their ideas orally at a professional level. Students are assessed by department faculty. Note: fulfills the capstone writing intensive requirement for the Landscape Architecture major. Prerequisite: LDEM 241.

LDEM 246 Site Design I 6 cr.
Sustainability is a pivotal, evolving paradigm of central importance to landscape architecture. It has profound implications on how we think, plan and design landscapes. The studio explores the theory and application of sustainability principles to a broad region (watershed, city) as well as at finer, scales relating to the larger context. The emphasis is on environmental and physical sustainability and understanding connections to social and economic patterns. The overall goal of this studio is to teach students how to plan and implement open space protection at a landscape scale. This will require the ability to synthesize information about natural features, cultural landscapes and development patterns to create spatial landscape strategies (such as greenway networks, ecological networks, green infrastructure) that address the unique problems and opportunities of a chosen study area. Prerequisite: LDEM 216.

LDEM 247 Site Engineering I 3 cr.
Study of techniques essential to the horizontal and vertical development of site designs; emphasis on grading, cut and fill calculation, storm-water drainage and management, erosion control, road alignments and earthwork. This is a lecture course with intensive exercises for engineering calculation and drawing techniques.

LDEM 248 Site Engineering II - Construction Material 1,3; 3 cr.
This studio course will serve as a capstone to Landscape Architectural Construction with emphasis on understanding and preparing complete sets of construction documents for landscape architecture projects. It includes methods and procedures necessary for transforming a design idea into a set of construction drawings that are accurate, precise, and clearly understood; and the principles, processes, and techniques of site engineering for the “hard” and “soft” elements of landscape architecture and surfaces, including wood construction, free-standing and retaining walls, pavement, steps, decks, lighting, and planting irrigation. Students will also implement their designs through hands on experience. Prerequisite: LDEM 247.

LDEM 249 Site Engineering III - Design Implementation (AREC) 1,3; 4 cr.
This course includes presentation and classification of landscape construction and materials; material types and measurement standards of construction elements. Floor elements: paving materials, pedestrian ways, stairs and ramps. Border and enclosure elements: walls, fences. Shelter elements: pergolas and gazebos. Water elements: ponds, waterfalls, pools and fountains. Outdoor space, furniture and ornaments: benches, litterbins, lighting elements, pedestrian bridges, decks. Interactions between: materials, buildings, spaces, and humans. Research studies and case studies: for designing original landscape constructions and materials. This studio course will focus on lectures, exercises and projects dealing with landscape equipment, and design methods. In addition, students have exposure to measuring quantities and defining specifications. Prerequisite: LDEM 248.

LDEM 251 Geographic Information System (GIS) 2,3; 3 cr.
The goal of this course is to explore various approaches to modeling landscape pattern and change. The focus is on the design and use of computerized geographic information systems for land planning and design decisions and in understanding, describing, and predicting land-use and land-cover. The course will move between social and ecological processes and applications of the models. Students will learn to evaluate the trade-offs associated with use of a particular modeling approach within a given situation, and to implement (at least minimally) several of the approaches discussed.

LDEM 252 AutoCAD 2,3; 3 cr.
This is an introductory course that covers Computer Aided Design digital drawings to develop skills for Landscape Architects to communicate, create, and implement. The course includes lectures and computer labs focused on learning the basic commands for drawing in two dimensions including: absolute and relative coordinates, working in layers, paper and model space, manipulation of text, and plotting. Focus on understanding the software environment and basic applications of, AutoCAD and using relevant tools of this graphic design software to develop high quality landscape design graphic outputs, such as diagrams, perspectives, sections, plans and 3D models. These skills will enable students to employ computer graphic design tools in landscape architecture studios throughout the rest of their degree courses.

LDEM 260 Contemporary Issues in Landscape Architecture 3 cr.
This course addresses recent trends in landscape architecture that cover the multitude of approaches, in order to broaden the students’ theoretical knowledge, to encourage their critical and analytical abilities, their understanding of systems and of the landscape as a cultural expression. The course discusses recent interventions by Landscape Architects in different parts of the world and assesses them in relation to their natural, cultural and socio-economic contexts. At the same time students are asked to critically evaluate the current open space situation in Beirut and discuss ideas and approaches related to it.

LDEM 263 Landscape Appreciation and Site Analysis 3 cr.
This course introduces students to specific landscapes of Lebanon and teaches them how to read the spaces by analyzing the interrelationship between natural conditions and human settlement, and land use over time. Prerequisite: LDEM 291.

LDEM 290 Professional Practice 3 cr.
The course discusses the professional practice of landscape architecture. It is structured to give students an overview of the professional opportunities, roles and responsibilities within which graduates of the program will most likely practice their trade. The course will be structured as a series of lectures, workshops, discussions and presentations from practicing landscape architects, engineers, and other professionals who will expose the students to the different aspects of the trade. It introduces basic issues in the practice and the profession of landscape architecture, challenging the student to critically examine professional, ethical, economic, political, social and other issues in the current practice. It covers the different typologies of landscape projects, firms and clients and introduces the full cycle of a landscape project from award and conception to construction and site supervision.
Undergraduate Catalogue 2013–14

LDEM 261 Spatial Structure and Movement 3 cr.
The course is concerned with the experience of outdoor and indoor spaces, and the direct influence the placement of any object has on the perception of the latter and the movement within. The course is based on the assumption that the notion of movement and body proportion for mankind has been a primary design tool throughout history, and will try to reevaluate this tool for contemporary design.

LDEM 262 Healing Gardens: Theoretical Perspectives and Applications 3 cr.
This course is offered relative to the current view that an outdoor garden at health care facility is an essential supplement to medical interventions. Introducing the concepts of healing environments in terms of medical geography and environmental psychology, the course proceeds to examine prevailing approaches to the design of healing gardens at medical settings in the present day. Theoretical perspectives from social sciences are used to interpret these healing places as well as those associated with historic precedents for healing - The Japanese garden and the landscape traditions of medieval Christianity and Islam.

LDEM 264 Interior Landscaping 2,3; 3 cr.
An introduction to the principles and practices of interior landscaping with an emphasis on plant selection and handling, environmental conditions, specifying and maintaining healthy plant materials, developing portfolios of interior landscape designs for proper installation of drainage and irrigation.

LDEM 270 Ornamental Plants for Dry Landscapes 2 cr.
A survey of native, wild, and domesticated plants adapted to dry areas with potential use in dry landscapes, with an overview of the different environmental and physiological factors that determine plant growth and developments under such dry conditions.

 Elective Courses for the Bachelor of Landscape Architecture

LDEM 224 The Environment and Sustainable Development 3.0, 3 cr.
An introduction to sustainable development: concepts, goals, and economic and social aspects; environmental issues associated with development: natural resource management, population, food production, and energy; institutional framework; standards and policies; emerging technological applications and their impacts; resolution of environmental conflicts; and future trends.

LDEM 229 Turfgrass Culture, Machinery, and Management 2; 3 cr.
An introduction to turfgrass use, establishment, and management. This course focuses on the environmental impact of turfgrass landscapes in arid regions. Students are introduced to the machinery used in landscape management.

LDEM 251 Regional and Community Studies 1, 3 cr.
Up to 10 landscape design students will be selected to be part of this course. The Department will identify a community-driven project in which local and possible international students will participate. The target community will be selected at least 6 months prior to the start of the summer semester. The selection process will depend on input from outreach activities performed by the department and by other academic units with which the department coordinates closely with, such as IBSAR and CCECS. This course focuses on applied knowledge and is thus taught by doing i.e., creating a design that is ready to be applied and a full proposal. Landscape designed elements are thus, site/context dependent therefore, applied ecology and cultural landscape history are important to concept development. Students enrolled in the course will work fourteen days on-site with community partners and will stay with local families during that period and spend 1 week working on the design and proposal on campus. Working together in groups, students will create a practical design. Using a combination of lectures, discussions, interactions with nature, hands-on projects, and community immersion, students will analyze the local environment and design holistic systems that meet the needs of people while respecting the needs of nature.
Faculty of Arts and Sciences (FAS)
Mission

The Faculty of Arts and Sciences embodies AUB’s core commitment to the liberal arts and sciences. It offers undergraduate and graduate programs in the arts, humanities, and social, natural, and mathematical sciences, and is dedicated to advanced research in all of these domains. Through its freshmen and general education programs, it is the University’s principal gateway to higher studies and professional education. The faculty, through its teaching and research, promotes free inquiry, critical thinking, academic integrity, and respect for diversity and equality.

Vision

Building upon its rich tradition, the Faculty of Arts and Sciences is determined to position itself at the heart of free inquiry in the Middle East. Free and critical thinking is central to the faculty’s teaching, its research, its engagements with the wider community, and its commitment to the thoughtful transformation of all of its activities and structures. The faculty’s enhanced undergraduate programs will graduate innovators with a breadth of vision who can be agents of positive change wherever they live and work. The faculty will strategically expand its graduate offerings, especially in areas where it can make a distinctive contribution, and it will educate graduate students who are themselves producers of knowledge. The faculty will be recognized internationally for the quality of its research and creative activities in the humanities, social sciences, natural sciences, mathematical sciences, and interdisciplinary areas, whether undertaken in response to regional and global needs or to human curiosity and imagination. The faculty will provide a vital forum for open discussion and engage contemporary issues in ways that resonate far beyond our campus walls.

Undergraduate Programs

Students entering the Faculty of Arts and Sciences as freshmen, except those admitted as special students or auditors, select one of the following programs:

• Preparation for majors offered in Arts and Sciences
• Preparation for Business Administration, Health Sciences, Engineering and Architecture, or Agricultural and Food Sciences

Students entering the Faculty of Arts and Sciences as sophomores select one of the following two programs, for each program a period of three years of study is normally required:

• Bachelor of Arts
• Bachelor of Science

There are three major categories of disciplines in the Faculty of Arts and Sciences. Their distribution according to degree-offering departments is as follows:

• Humanities: Arabic, English, Fine Arts and Art History, History and Archaeology, and Philosophy
• Social Sciences: Economics, Education, Political Studies and Public Administration, Psychology and Sociology, Anthropology and Media Studies.
• Sciences: Biology, Chemistry, Computer Science, Geology, Mathematics, and Physics
Admission
For complete and detailed information regarding admission to the University, including certificates recognized, see the Admission section of this catalogue. The specific requirements for admission to the freshman or sophomore class are found on pages 35–36.

Classification of Students
An undergraduate student shall be considered to have completed a class when s/he has taken and passed 30 or more credits beyond the requirements for the previous class. A student will not be granted a certificate stating that s/he has completed a class until s/he has completed the specified courses in the regular program for that class and has acquired the requisite number of credits. The credit requirements are as follows:

<table>
<thead>
<tr>
<th>Major and Faculty</th>
<th>Freshman Standing</th>
<th>Sophomore Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the completion of the freshman class</td>
<td>30 credits</td>
<td>–</td>
</tr>
<tr>
<td>For the completion of the sophomore class</td>
<td>60 credits Cumulative</td>
<td>30 credits</td>
</tr>
<tr>
<td>For the completion of the junior class</td>
<td>90 credits Cumulative</td>
<td>60 credits Cumulative</td>
</tr>
</tbody>
</table>

Full-time Students and Maximum Credit Loads
To be considered full-time a student must carry a minimum load of 12 credits per semester. A full-time student who, for compelling reasons, is forced to reduce his/her load to fewer than 12 credits must first petition the Student Academic Affairs Committee for permission to do so. This should be done no later than 10 weeks after the start of the semester (five weeks in the case of summer school). Students in their first semester at AUB may be allowed to reduce their load to fewer than 12 credits by requesting permission from the Student Academic Affairs Committee. Requests are handled on a case-by-case basis.

Students can normally register for up to 17 credits per semester and 9 credits during the summer term. English course requirements must be taken as of the first semester at the Faculty of Arts and Sciences. Students in their first semester at AUB may be allowed to reduce their load to fewer than 12 credits by requesting permission from the Student Academic Affairs Committee. Requests are handled on a case-by-case basis.

Students can normally register for up to 17 credits per semester and 9 credits during the summer term. English course requirements must be taken as of the first semester at the Faculty of Arts and Sciences. Students in their first semester at AUB may be allowed to reduce their load to fewer than 12 credits by requesting permission from the Student Academic Affairs Committee. Requests are handled on a case-by-case basis.

Full-time Students and Maximum Credit Loads
To be considered full-time a student must carry a minimum load of 12 credits per semester. A full-time student who, for compelling reasons, is forced to reduce his/her load to fewer than 12 credits must first petition the Student Academic Affairs Committee for permission to do so. This should be done no later than 10 weeks after the start of the semester (five weeks in the case of summer school). Students in their first semester at AUB may be allowed to reduce their load to fewer than 12 credits by requesting permission from the Student Academic Affairs Committee. Requests are handled on a case-by-case basis.

Students can normally register for up to 17 credits per semester and 9 credits during the summer term. English course requirements must be taken as of the first semester at the Faculty of Arts and Sciences. Students in their first semester at AUB may be allowed to reduce their load to fewer than 12 credits by requesting permission from the Student Academic Affairs Committee. Requests are handled on a case-by-case basis.

Requirements for Premedical Study
Faculty of Arts and Sciences students who intend ultimately to enter the Faculty of Medicine must select and complete one of the regular degree programs given as Bachelor of Arts (four years including the Freshman year) or Bachelor of Science (four years including the Freshman year). Please refer to the Admission section in the Faculty of Medicine in the 2013–14 graduate catalogue, pages 373–75.

Academic Rules and Regulations
For information on Academic Advisers, Categories of Students, Correct Use of Language, Grading System, and Graduation with Distinction and High Distinction see pages 49–67 for General University Academic Information in this catalogue.

Regular Freshman Program
The freshman program requires the completion of 30 credits, whether or not the student remains in the Faculty of Arts and Sciences or transfers to another faculty. Students intending to major in a subject within the Faculty of Arts and Sciences may be accepted as provisional majors upon completion of 24 credits.

University Requirements
General Education
All FAS students must take a minimum of 33–36 credits of general education courses. Please refer to the General Education section pages 51–53 in the General University Academic Information in this catalogue.

English: All new students at AUB are placed in one of the English communication skills courses (ENGL 102, ENGL 203, or ENGL 204) on the basis of their score on the TOEFL or the AUB-EN (EEE) or the SAT Writing. A student placed in one of the courses in the sequence has to complete that course and all following courses. During the freshman year students are required to take a minimum of three credits in English at level 200 or above (either ENGL 203 or ENGL 204, depending on placement). English 102 and ENGL 204 may be considered electives for freshman students to complete their Freshman program in addition to ENGL 203.

Arabic: All students who have been admitted to the Faculty of Arts and Sciences and whose native language is Arabic must satisfy the Arabic Language Requirement (ALR)—except for those students who have completed their secondary education in a non-Arabic medium program and who receive exemption from the Office of Admissions. Students may apply for exemption to the Office of Admissions any time before pre-registration. Non-exempted students entering the freshman class must take three credits of Arabic at the 100 level, and the performance in this course (or in the two freshman Arabic courses, if taken) determines the required Arabic course at the sophomore level. Students who are exempted from the Arabic Language Requirement should replace this requirement by taking any 3-credit course in Humanities or any language course including Arabic as a foreign language.

Lebanese students must also satisfy the requirements listed on pages 46–48 of this catalogue in order for their freshman year to be granted the equivalency of the Lebanese Baccalaureate Part II.

Faculty Requirements
In order to complete 30 credits for the freshman class, every freshman student must take at least one course in each of the following areas of study: humanities, mathematics, natural sciences, social sciences, plus the departmental requirements that will allow him/her to qualify for a
major beginning in the sophomore year. See Table 1 for the distribution of these requirements in the various academic units of the Faculty of Arts and Sciences and other faculties.

## Freshman Courses

Students are recommended to take their electives from the following list of courses. Most of these courses have been specifically designed for, and are only open to, freshman students. Students who wish to take courses numbered 200 and above (not listed below) may do so, as exceptions with the approval of their advisers. The freshman level courses listed below are arranged according to the areas of study.

### Humanities:
- ARAB 101, ARAB 102, AROL 101, CVSP 110, CVSP 111, CVSP 112, ENGL 103, ENGL 104, ENGL 105, ENGL 106, ENGL 108, FAAH 150, HIST 101, HIST 102, HIST 200, PHIL 101, PHIL 102, SOAN 103

### Mathematics:
- MATH 101, MATH 102, MATH 203

### Natural Sciences:
- BIOL 101, BIOL 105, BIOL 106, CHEM 101, CHEM 101L, CHEM 102, CHEM 102L, GEOL 101, GEOL 102, GEOL 103, GEOL 104, PHYS 101, PHYS 101L, PHYS 103, PHYS 103L, PHYS 200, and ENHL 200 from the Faculty of Health Sciences.

### Social Sciences:
- ECON 101, ECON 102, PSPA 101, SOAN 101, PSYC 101

### Electives:
As necessary to add up to a 30 credit total (e.g., CMPS 101). See Tables 2 and 3 for requirements to transfer into a major.

### Lebanese freshman students:
Lebanese students who are admitted to the freshman class should check with their advisers at registration time to ensure that the number of credits and the types of subjects that they take during their freshman year are in compliance with the specifications of the Equivalence Committee of the Lebanese Ministry of Education. The equivalence committee requires that out of the thirty (30) freshman credits nine (9) must be in the humanities and social sciences with at least three (3) credits in each of these two areas. The committee further requires that the thirty (30) freshman credits should include six (6) credits in the natural sciences and mathematics with at least three (3) credits in the natural sciences.

### Courses Numbered 200 and Above

Some courses numbered 200 and above are suitable for freshman students. Note, however, that these courses are also open to sophomores, juniors, and seniors and therefore may be more competitive than courses offered at the 100 level. Such courses include those that are freshman requirements (see above) and those that are listed in Tables 1 and 2 (see pages 131, 132).

### Transfer to a Major

Any student in his/her freshman year who is not on probation at the time of application may transfer into a major within the Faculty of Arts and Sciences upon completion of 24 credits and the departmental requirements as shown in Table 2.

### Transfer to other Faculties

Any freshman student who wishes to transfer to another faculty must complete the freshman program and the faculty requirements, as shown in Table 3. Students who successfully complete the freshman year are eligible to apply for admission to professional schools when the conditions listed in Table 3 are satisfied.

### Table 1 Credit Requirements for Completion of the Freshman program

<table>
<thead>
<tr>
<th>Major</th>
<th>English Level 200</th>
<th>Arabic</th>
<th>Humanities</th>
<th>Math¹</th>
<th>Natural Sciences</th>
<th>Social Sciences</th>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

¹ The required math courses for science students are MATH 101 and MATH 102
² It is recommended that elective courses numbered 200 and above be taken in the third semester

Lebanese applicants to the freshman class, pages 42–43
Table 2 Requirements to Join a Major in FAS from the Freshman Class

<table>
<thead>
<tr>
<th>Department</th>
<th>Requirements</th>
<th>Some Useful Electives¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Mathematics</td>
<td>a minimum cumulative average of 70 in MATH 101 and 102, and a minimum grade of 70 in MATH 102</td>
<td>MATH 201</td>
</tr>
<tr>
<td>Arabic</td>
<td>a minimum cumulative average of 70 in ARAB 101 (and 102 if taken)</td>
<td></td>
</tr>
<tr>
<td>Archaeology</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>AROL 101, AROL 201</td>
</tr>
<tr>
<td>Art History</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>FAAH 150</td>
</tr>
<tr>
<td>Biology</td>
<td>A minimum grade of 75 in each of the following: BIOL 101, CHEM 101, CHEM 101L, PHYS 103, and completion of MATH 101, and MATH 102, and a minimum overall average of 70 in the freshman year</td>
<td>STAT 210 and CMPS 209</td>
</tr>
<tr>
<td>Chemistry</td>
<td>a minimum cumulative average of 70 in CHEM 101, CHEM 101L and CHEM 102, CHEM 102L and a minimum cumulative average of 70 in MATH 101 and 102, and a completion of PHYS 101 and PHYS 101L</td>
<td>CMPS 200 and MATH 211</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Completion of PHYS 101 and 101L, and a minimum cumulative average of 70 in MATH 101 and 102</td>
<td>ECON 101, 102, 103, ECON 211, ECON 212, and CMPS 209</td>
</tr>
<tr>
<td>Economics</td>
<td>a minimum cumulative average of 70 in MATH 101 and MATH 102, and a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>CAMPS 200 and MATH 209</td>
</tr>
<tr>
<td>Education</td>
<td>a minimum cumulative average of 70 in the freshman year</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>ENGL 103, 104, 105, 106, 107, 108, 203, 207, 227 and 229</td>
</tr>
<tr>
<td>Geology</td>
<td>completion of MATH 101, CHEM 101, CHEM 101L, GEOL 101, a third science course, and a minimum cumulative average of 70 in the freshman year</td>
<td>GEOI 101, 102, 201, and 203</td>
</tr>
<tr>
<td>History</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>HIST 101, HIST 102</td>
</tr>
<tr>
<td>Mathematics</td>
<td>a minimum cumulative average of 70 in MATH 101 and 102, and a minimum grade of 70 in MATH 102</td>
<td>MATH 201</td>
</tr>
<tr>
<td>Petroleum Studies</td>
<td>completion of MATH 101, 102, CHEM 101, 101L, 102, 102L, GEOI 101, and a minimum cumulative average of 70 in the freshman year</td>
<td>GEOI 101, 102, 201, 203, ECON 101, 102, 103, 203, and SOAN 201</td>
</tr>
<tr>
<td>Philosophy</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>PHL 101 and PHL 102</td>
</tr>
<tr>
<td>Physics</td>
<td>a minimum cumulative average of 70 in PHYS 101 and 101L, and a minimum cumulative average of 70 in MATH 101 and 102</td>
<td>CMPS 200</td>
</tr>
<tr>
<td>Political Studies</td>
<td>a minimum cumulative average of 70 in the freshman year, and a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>PSAI 101, ECON 103, and PSYI 101</td>
</tr>
<tr>
<td>Psychology</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>PSYI 101, PSYI 101, 201, 202, PHL 201, CMPS 206, ECON 203, and one of SIM 201 or EDUC 227</td>
</tr>
<tr>
<td>Public Administration</td>
<td>a minimum cumulative average of 70 in the freshman year, and a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>PSIN 101 and PSYI 101</td>
</tr>
<tr>
<td>Sociology- Anthropology -Media Studies</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>SOAN 101, PSAI 101, 201, 202, PHL 201, CMPS 206, ECON 203, and one of SIM 201 or EDUC 227</td>
</tr>
<tr>
<td>Statistics</td>
<td>a minimum cumulative average of 70 in MATH 101 and 102, and a minimum grade of 70 in MATH 102</td>
<td>MATH 201</td>
</tr>
<tr>
<td>Studio Arts</td>
<td>a minimum cumulative average of 70 in English courses taken in the freshman year</td>
<td>FAAH 150</td>
</tr>
<tr>
<td>Media and Communication</td>
<td>A minimum cumulative average of 70 in the freshman year, a minimum cumulative average of 70 in English courses taken in the Freshman year, and a minimum cumulative average of 70 in MCOM courses taken in the Freshman year.</td>
<td>Some useful electives: MCOM 201, 202, 203</td>
</tr>
</tbody>
</table>

¹ It is recommended that elective courses numbered 200 and above be taken in the third semester

Table 3 Requirements to Join a Major in another Faculty from the Freshman Class

<table>
<thead>
<tr>
<th>Major/Faculty</th>
<th>Requirements</th>
<th>Some Useful Electives¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>completion of MATH 101, MATH 102, CHEM 101L and CHEM 102L, CHEM 102L, and MATH 203</td>
<td>CHEM 207, MATH 204 and courses in the humanities</td>
</tr>
<tr>
<td>Architecture¹</td>
<td>completion of MATH 101 and 102, any combination of science courses totaling nine credits, and a cumulative average of at least 80 in the freshman year</td>
<td>CHEM 207, MATH 204, and courses in the humanities</td>
</tr>
<tr>
<td>Business</td>
<td>a minimum cumulative average of 77 in at least 24 credits during the freshman year, and a minimum grade of 70 in MATH 101 and/or MATH 102 and/or MATH 203</td>
<td>ECON 101, 102 and ECON 211 or 212</td>
</tr>
<tr>
<td>Chemical Engineering¹</td>
<td>completion of MATH 101 and 102, CHEM 101L and CHEM 101L, and a cumulative average of at least 80 in the freshman year</td>
<td>An elective in the Social Sciences</td>
</tr>
<tr>
<td>Engineering</td>
<td>completion of MATH 101 and 102, CHEM 101L and CHEM 101L, PHYS 101 and PHYS 101L, and a cumulative average of at least 80 in the freshman year</td>
<td>An elective in the humanities or social sciences¹</td>
</tr>
<tr>
<td>Environmental Health</td>
<td>completion of MATH 101 and 102, CHEM 101L, CHEM 102L and CHEM 102L</td>
<td>BIOL 200 and courses in the humanities or social sciences</td>
</tr>
<tr>
<td>Food Science and Management</td>
<td>completion of MATH 101, MATH 102, CHEM 101L and CHEM 102L, and SOAN 201</td>
<td>CHEM 207, MATH 204, and courses in the humanities or social sciences</td>
</tr>
<tr>
<td>Graphic Design¹</td>
<td>completion of the freshman program and a cumulative average of at least 80 in the freshman year²</td>
<td>CSPS 229, 233, ECON 203, EDUC 211, ENGL 213, PHI 211, SOAN 201, and PSYC 202</td>
</tr>
<tr>
<td>Landscape Design and Ecosystem Management</td>
<td>completion of MATH 101, MATH 102, CHEM 101L, CHEM 102L, GEOI 101, and BIOL 101</td>
<td>CHEM 207, MATH 204, and courses in the humanities or social science</td>
</tr>
<tr>
<td>Medical Laboratory Sciences</td>
<td>completion of MATH 101 and 102, CHEM 101L, CHEM 102L, and BIOL 101</td>
<td>BIOL 200 and courses in the humanities or social science</td>
</tr>
<tr>
<td>Nursing</td>
<td>completion of MATH 101 and 102, or MATH 203, 204, CHEM 101L and CHEM 102L and BIOL 101</td>
<td>courses open to freshman students other than SOAN 201 and PSYC 201</td>
</tr>
<tr>
<td>Nutrition and Dietetics</td>
<td>completion of MATH 101, MATH 102, CHEM 101L, CHEM 102L and BIOL 101</td>
<td>CHEM 207, SOAN 201, and courses in the humanities</td>
</tr>
</tbody>
</table>

¹ Students cannot receive credit for both CHEM 200 and CHEM 201
² See section on the Faculty of Engineering and Architecture in this catalogue
³ An average of 80 is required for your application to be considered for admission, however an average of 80 does not guarantee acceptance. Acceptance to the faculty of Engineering and Architecture is very competitive and the pool of applicants differs each term
Graduation Requirements

Degrees of Bachelor of Arts and Bachelor of Science

The following are the graduation requirements for the degrees of BA and BS:

Residency and Total Credit Requirements

- A maximum of eight calendar years is allowed for graduation of students who begin with the freshman class; six calendar years for sophomores; four calendar years for juniors; and two calendar years for seniors. A student who fails to complete his/her degree program within these specified times must petition the Student Academic Affairs Committee for an extension of time.
- A minimum of seven semesters of residence beginning with the freshman class, or five semesters beginning with the sophomore class. For purposes of this requirement two summer sessions shall be considered equivalent to one semester.
- Regular FAS students (non-transfer students) who wish to spend time at other recognized institutions of higher learning abroad may do so at any time before graduation provided they secure the permission of the Dean of FAS. Transfer of credits will be considered on a course by course basis. At least 45 credits should be completed at AUB after the freshman year.
- Transfer students from other recognized institutions of higher learning must spend the final three semesters and complete at least 45 credits at AUB. For purposes of this requirement two summer sessions shall be considered equivalent to one semester.
- A minimum of 120 credits for students who enter as freshmen (90 of which should be courses numbered 200 or above) and 90 credits (in courses numbered 200 or above) for students who enter as sophomores.

Departmental Requirements

- A minimum of 36 credits in the major department, in courses numbered 200 or above, of which a minimum of 30 credits must be numbered 210 or above; and a cumulative average of 70 in the major, plus any additional requirements set by the department. For the distribution of the requirements according to discipline, consult the matrices of the departments in each department entry.
- A student must spend a minimum of one semester in a department as a major before s/he graduates in that major field.

Repeating Courses

A student may repeat any course irrespective of the grade s/he has received. A student who fails a required course must repeat the course at the earliest opportunity. No course may be taken more than three times without permission of the Student Academic Affairs Committee. When a course is repeated, the highest grade is considered in the calculation of the cumulative average. All course grades remain part of the student’s permanent record.

Faculty Requirements

General Education Requirements

In implementation of the General Education Requirements for all faculties, all FAS students should show competence in the basic intellectual approaches of fields of learning in four major disciplinary fields and should take: 6 credits in Natural Science, 12 credits in Humanities1, 6 credits in Social Science2 and 3 credits in Quantitative Thought. In addition, all FAS students are required to take 3-6 credits in English Communication Skills and 3 credits in Arabic Communication Skills. Please refer to the General Education section pages 51–53 in the General University Academic Information section in this catalogue for the list of approved General Education courses.

All students in the Faculty of Arts and Sciences must take 3 to 6 credits of English communication skills courses as determined by their placement. A student must enroll in the required course in their first term and continue without interruption until s/he has completed through ENGL 204. For example, a student placed in ENGL 102 must take three consecutive semesters of English (ENGL 102, ENGL 203, and ENGL 204: 9 credits of English); a student placed in ENGL 203 must take two consecutive semesters (ENGL 203 and ENGL 204: 6 credits). A student placed in ENGL 204 is not required to enroll in any additional communication skills courses offered by the English department. Students whose test scores do not qualify them to be placed in ENGL 102 are required to take the intensive English Course (IEC); for more information on the IEC, refer to page 38.

All Arabic-speaking students in the Faculty of Arts and Sciences (except those officially exempted) must fulfill the Arabic language requirement. These students are required to take, in addition to the Arabic course required of freshmen, one Arabic language or literature course. The Arabic Placement Test (APT) is optional. Students who opt not to sit for the APT will have to register in any approved General Education Arabic Communication skills course. The option of taking the APT will be open to students who think they may be too weak to follow coursework higher than the basic language course (ARAB 201A). Such students may sit for the APT to ascertain if their level of proficiency in Arabic is not appropriate for a higher course. This will be further ascertained during the course itself. Students exempted from the Arabic Language Requirement should replace this requirement by taking any 3-credit course in Humanities or any language course including Arabic as a foreign language.

All students in the FAS are required to take twelve credits of General Education Humanities courses. All students who wish to register in these courses should have demonstrated English language skills which placed them in ENGL 203 or above. A minimum of six credits must be taken in the Civilization Sequence Program (CVSP 201–208). For details refer to the Civilization Sequence Program section pages 171–175 and General Education Requirements section pages 51–53 and for a current list of General Education courses see the Registrar’s website.

Other Requirements

- A student must complete a minimum of 18 additional credits outside their major department, exclusive of the university course requirements stated above and of the normal freshman program.
- Grades of 70 or above in at least 50 credits of courses numbered 200 or above for students entering at the sophomore level. Students entering at the freshman level must obtain grades of 70 or above in at least 12 additional credits of courses numbered 100 or above.

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1 No more than two courses from the student’s major may fulfill this requirement (Archaeology, English, Fine Arts and Art History, History, Philosophy).
2 No more than two courses from the student’s major may fulfill this requirement (Economics, Education, Political Studies, Psychology, Public Administration, Sociology-Anthropology-Media Studies).
Transfers

Students may transfer to majors within the Faculty of Arts and Sciences from outside the University, from another faculty within the University, or from one department to another within the Faculty of Arts and Sciences.

Applicants from outside AUB wishing to transfer to a major in FAS with junior standing should note the following conditions and requirements:

- The applicant must have completed the equivalent of 24 sophomore credits at the university from which they are transferring.
- The applicant must submit an application to the University's Admissions Office along with all the course syllabi taken at their previous university or universities.
- Transfer admission is competitive and limited by the number of spaces available. Normally, successful applicants will have earned a minimum GPA of 3.0 or its equivalent.
- Courses successfully completed at a previous university or universities are transferred provided they earned a grade equivalent to the AUB grade of 70 in each of the courses for which transfer credit is requested.
- For placement in (or exemption from) the Communication Skills Program, a student may petition for course equivalence by presenting relevant documents to the Department of English. If a student has not taken any courses equivalent to those offered within the Communication Skills Program, the student should be placed in the appropriate course based on his/her test scores (EEE, TOEFL, or SAT Writing), according to the same guidelines normally followed for newly admitted non-transfer students.
- Students who have transferred must complete at least 45 credits at AUB out of which a minimum of 21 credits should be in their major department for fulfillment of graduation requirements.

AUB students from other faculties wishing to transfer to a major in FAS should note the following conditions and requirements:

- The applicant must have completed at least two full semesters (minimum 24 credits) of coursework at AUB.
- The applicant must have attained a minimum cumulative average of 70.
- The applicant also must have attained a minimum average of 70 in all courses taken in FAS (must be at least 15 credits).
- The applicant must have met the requirements for their prospective major (see the table of requirements on page 138).

AUB students wishing to transfer from one major to another in FAS should note the following conditions and requirements:

- The applicant must have completed two full semesters of work in their current major.
- The applicant must have met the requirements for their prospective major (see the table of requirements on Table 4 page 138).

AUB Non-Degree Students (NDS) wishing to apply for regular status should note the following conditions and requirements:

- The applicant must submit an application to the Office of Admissions.
- The applicant must have completed the equivalent of the sophomore year at the college or university from which they are transferring (24 credits or the equivalent).
- Grade requirements for transferred courses offered by other faculties at AUB follow the guidelines set by the relevant faculty. All final admissions decisions will depend on the availability of places in the major to which the student applies.
- Grades received during enrollment as non-degree students at AUB will be considered in the assessment of the transfer application. As the minimum required GPA to be accepted as NDS is 3.0 or its equivalent, the courses taken at AUB will add to the applicant’s profile for the assessment of the application for admission as a regular student.
- Courses successfully completed at AUB by a non-degree student maybe considered for admissions purposes. Once the student is admitted, the credits for those completed courses may be transferable towards the student's regular degree (required courses with a minimum grade of 70 and elective courses with a minimum grade of 60).
- Courses successfully completed at their previous university or universities are transferred provided they earned a grade equivalent to the AUB grade of 70 in each of the courses for which transfer credit is requested.

Double Major

A student may earn a double major if the two majors fall within the same degree structure (that is, both are BA majors or both are BS majors) and if the graduation requirements for both majors are met simultaneously. The student must also satisfy requirements of both majors and must satisfy at least 15 credit hours over and above the requirements of the first major. Note that both majors must lead to the same Bachelor's degree and one diploma will be issued, with both majors indicated. Students who wish to double major should note the following conditions and requirements for admission:

- The student must have completed at least 24 sophomore credits.
- The student must be on good academic standing (not on probation).

Dual Degree

A student may earn two different degrees (BA and BS) simultaneously. The student must also satisfy the full requirements of both degrees and complete at least 30 credit hours over and above the requirements of the greater credit hours required for either degree. Note that two separate diplomas will be issued for each degree program. Students who wish to earn a dual degree should note the following conditions and requirements for admission:

- The student must have completed at least 24 sophomore credits.
- The student must be on good academic standing (not on probation).
- The student must have achieved a minimum overall cumulative average of 70.

Second Degrees

An applicant from outside AUB may earn a second degree after completion of a first Bachelor's degree provided that the first degree was earned from an accredited institution of higher education recognized by AUB. For admissions purposes the applicant will be considered as a new applicant for junior standing, which follows the requirements for students applying from outside the University, as noted above.
An AUB student may wish to earn more than one degree with two separate times of graduation. The student must submit an internal application form posted on the Registrar’s website if the student is in the last year of study of the first degree or if the date of application is within two years of the first Bachelor’s degree.

For applicants already holding a Bachelor’s degree from AUB awarded more than two years prior to the date of application for the second degree, an application for advanced standing must be submitted. Applicants will be exempted from SAT I and English Language proficiency requirements. The applicant must meet all faculty and departmental requirements for the degree and must complete a minimum of 30 credit hours in the second degree program.

## Majorless Status

A student in good academic standing, who has not yet chosen a major or is in the process of selecting a new major, will be given the status of majorless. A department who opts to drop a student from his/her major must communicate this decision to the Student Services Officer in the Office of the Dean. A student who opts to change his/her major must communicate this decision to the Student Services Officer in the Office of the Dean through his/her academic adviser and/or department chair. All students should be admitted to a major by the end of their junior year. A student who wishes to join a new major must also complete the Departmental Transfer Form and submit it to the Office of the Dean, provided the student meets the requirements for admission to the new major.

## Table 4 Requirements for Interdepartmental Transfer within FAS

<table>
<thead>
<tr>
<th>Major</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Mathematics</td>
<td>a minimum cumulative average of 70 in MATH 201, and other math courses if taken</td>
</tr>
<tr>
<td>Arabic</td>
<td>a minimum grade of 70 in ARAB 201 or any other upper level ARAB course</td>
</tr>
<tr>
<td>Archaeology</td>
<td>a minimum grade of 70 in any two humanities courses excluding communication skills requirements in Arabic and English</td>
</tr>
<tr>
<td>Art History</td>
<td>a minimum grade of 70 in any two humanities courses</td>
</tr>
<tr>
<td>Biology</td>
<td>a grade of 75 or above in each of BIOL 210 and BIOL 241 and a cumulative BIOL average of 75 if additional courses are taken (excluding FR courses). A grade of 70 or above in CHEM 201 and a minimum overall average of 75. The aforementioned requirements should be completed in 3 consecutive semesters. Transfer to Biology from other departments within the Faculty of Arts and Sciences is competitive and requires departmental approval.</td>
</tr>
<tr>
<td>Chemistry</td>
<td>a minimum grade of 70 in CHEM 201; a cumulative average of 70 in or more in any one of the following three combinations: MATH 201 and MATH 202 or MATH 201 and PHYS 211/221 or MATH 201 and CHEM 211</td>
</tr>
<tr>
<td>Computer Science</td>
<td>a minimum cumulative average of 70 in CMPS 200, 211, 212, and other computer science courses, if taken; and a minimum grade of 70 in CMPS 200</td>
</tr>
<tr>
<td>Economics</td>
<td>a cumulative average of 70 or more; a minimum grade of 70 in each of ECON 211, ECON 212, and ENGL 203; a minimum average of 70 in MATH 201 and MATH 202</td>
</tr>
<tr>
<td>Education</td>
<td>a minimum cumulative average of 70 in ENGL 203 and/or ENGL 204; a minimum cumulative average of 70 in any of the following four introductory courses: ENGL 201, 205, 207, and 227</td>
</tr>
<tr>
<td>Geology</td>
<td>a minimum grade of 70 in GEOL 201 and GEOL 203</td>
</tr>
<tr>
<td>History and Archaeology</td>
<td>a minimum grade of 70 in any two humanities courses excluding communication skills requirements in Arabic and English</td>
</tr>
<tr>
<td>Mathematics</td>
<td>a minimum cumulative average of 70 in MATH 201, and other math courses if taken</td>
</tr>
<tr>
<td>Petroleum Studies</td>
<td>a minimum grade of 70 in GEOL 201 and GEOL 203</td>
</tr>
<tr>
<td>Philosophy</td>
<td>a minimum grade of 70 in any two humanities courses excluding communication skills requirements in Arabic and English</td>
</tr>
<tr>
<td>Physics</td>
<td>a cumulative average of 70 in PHYS 210, 210L, and 212, and a cumulative average of 70 in MATH 201 and MATH 202</td>
</tr>
</tbody>
</table>

For further details concerning individual departmental requirements see the relevant sections of this catalogue.

## Minors

Minor University general requirements are as follows:

- A minimum of 15 to 21 credit hours completed on basis of regular graded courses (not tutorial or special project type courses) is required for a minor.
- At least 9 credit hours of course work must be completed at AUB.
- At least 9 credit hours of course work may not be used to satisfy a requirement for another major or minor.

Most departments in the Faculty of Arts and Sciences offer minors, which require the completion of a number of courses before graduation as specified below:

### American Studies requires 15 credits:

- AMST 215, one course from AMST 220, 230, 240, 265/266, 298, HIST 200, 271, 272, 273, 274, 278/279, PSPA 251, SOAN 215; plus one course from AMST 275/276, 299, CVSP 260A, ENGL 201, 224, 225, 226; plus two additional courses chosen from any of the above or from the following (with the stipulation that no more than one from the following list may be counted): ARCH 023, CVSP 208E, ENGL 215, 216, 218, 219, 222, 241, 242, PHIL 249, 263A, PSPA 234, 237.

### Arabic and Near Eastern Languages requires 15 credits:

- ARAB 211 or ARAB 212 (or an equivalent language course), at least one course in classical Arabic literature, at least one course in modern Arabic literature, plus two other courses in the department.

### Biology requires 15 credits of BIOL courses.

- The courses are BIOL 201 (6 credits), BIOL 202 (4 credits), plus at least two courses (provided the prerequisites of these courses are satisfied) to complete the 15 credits required for the minor except BIOL 200, BIOL 209, BIOL 210, and BIOL 293.

### Chemistry requires 18 or 19 credits:

- CHEM 201, CHEM 206/215, CHEM 211, CHEM 212, CHEM 228, and one course from CHEM 217 or CHEM 218. MATH 201 is a prerequisite.

### Computational Sciences

(Interdisciplinary, involving courses from more than one FAS department) requires 16 credits (excluding prerequisite courses): CMPS 212, CMPS 251, CMPS 281; plus six credits from the following: MATH 211, CMPS 255, CMPS 256, DCSN 200, PHYS 222, or a tutorial course in either PHYS 231 or PHYS 232, or a Chemistry course which has computational contents. New computational courses will be introduced by various departments as future electives for this minor.

1 Freshman students who have taken PSYC 101 or SOAN 101 and received a grade of 70 or above do not need to take PSYC 201 or SOAN 201.
Computer Science requires 18 credits: CMPS 200, CMPS 211, CMPS 212, CMPS 256, and six additional credits in CMPS courses numbered 230 or above. [Note: if EECE 230 is completed, a student can get credit for only one of CMPS 200 or EECE 230.]

Economics requires 18 credits: ECON 211, ECON 212, ECON 214, plus three elective courses other than ECON 213 to be chosen from available economics offerings provided the prerequisites or their equivalents have been completed.

Education requires 15 credits: EDUC 211 or EDUC 216, EDUC 215 or EDUC 225, EDUC 230, and one elective from the following courses: EDUC 219, EDUC 221, EDUC 223, plus a general elective in education (3 credits).

English
- English Literature requires 15 credits: two core courses from ENGL 201, ENGL 205, ENGL 207, plus three other courses: one period course, and any two courses from the different categories of the literature curriculum.
- English Language requires 15 credits: ENGL 227 and four other courses chosen from ENGL 224–238 and/or ENGL 245–294.
- Creative Writing requires 15 credits: ENGL 236, two courses chosen from ENGL 237, ENGL 239, ENGL 249, ENGL 250, or ENGL 251, one 200-level course chosen from the offerings in Literature, and one course chosen either from the Literature offerings or from ENGL 217, ENGL 239, ENGL 249, ENGL 250, ENGL 251, or ENGL 253.

Environmental and Aquatic Sciences requires in addition to BIOL 202 or BIOL 200, a total of 15 credits chosen from the following three lists: one course from BIOL 252, BIOL 250, BIOL 256; one course from BIOL 266, BIOL 246, BIOL 267, BIOL 255; the remaining credits are completed by choosing from the following: CHEM 202, PHIL 209, PSPA 288F, BIOL 240, BIOL 241, BIOL 245, BIOL 246, BIOL 250, BIOL 252, BIOL 254, BIOL 255, BIOL 256, BIOL 258, BIOL 259, BIOL 266, BIOL 267, BIOL 281, BIOL 286, AGSC 215, LDEM 230, AGSC 284, AGSC 295, LDEM 211, LDEM 215, LDEM 203, ENHL 220, CIVE 350, CIVE 450.

A minimum of three courses should be taken outside the student’s major field of study and should be chosen from two different disciplines.

Fine Arts and Art History requires 15 credits each:
- Art History requires 9 credits chosen from FAAH 221, FAAH 222, FAAH 223, FAAH 224 or equivalents, and three credits from any Special Topics in Art History course (courses numbered FAAH 225A, FAAH 225B, FAAH 225C, FAAH 226A, FAAH 226B, FAAH 226C, FAAH 227A, FAAH 227B, FAAH 227C, FAAH 228A, FAAH 228B, FAAH 228C, FAAH 229A, FAAH 229B, FAAH 229C, FAAH 229D, FAAH 229E, FAAH 229F, FAAH 229G and three credits from the following group: FAAH 229D, FAAH 232, FAAH 235, FAAH 238 (or approved alternate).
- Studio Art requires fifteen credits: FAAH 200, FAAH 205; six credits taken from any studio courses; and one course from FAAH 229A, B, C, D, or E or FAAH 224 or equivalent, or FAAH 235 or FAAH 238 or equivalent.
- Theater requires 15 credits: FAAH/Theatre 267, CVSP 212, FAAH/Theatre 265 or 270, FAAH/Theatre 283 or 284, and one course from the following group FAAH/Theatre 274, FAAH 286, ARAB 240, ENGL 212, ENGL 216, ENGL 251, or other theatre elective and approved by the Department.
- Music requires 15 credits: Three credits from the following group: FAAH 242, FAAH 242A, FAAH 242B, FAAH 263, FAAH 263A, FAAH 263B; FAAH 240 or FAAH 241; FAAH 247; FAAH 262; and one from the following: FAAH 240, FAAH 241, FAAH 244, FAAH 249, FAAH 260, FAAH 261, or other music elective as approved by the Department. Note that FAAH 245 is NOT approved as an elective for the minor.

Gender Studies (Interdisciplinary) requires 15 credits from the following courses: BIOL 290 (Gender Biology), HIST 262, EDUC 290 (Gender Issues in Education), PHIL 249, CVSP 207G (Gender and Society), CVSP 230, CVSP 295 (Arab Feminism).

Geology requires 16 credits: core courses GEOL 201, GEOL 202, GEOL 203 and GEOL 205, plus any two of the following elective courses: GEOL 210, GEOL 211, and GEOL 222.

History and Archaeology require 15 credits each:
- History: five courses numbered 200 and above. All minors, especially those considering graduate work in history, are encouraged to take HIST 287 as one of the five courses.
- Archaeology: five courses numbered 200 and above, including one of the following: AROL 211, AROL 212, AROL 233, AROL 234, AROL 291, or AROL 292.

Human Rights and Transitional Justice requires 15 credits: SOAN 245, SOAN 240 or PSPA 235, and three electives from the following: SOAN 221, MCOM 250, MCOM 251, SOAN 232, SOAN 242, PSYC 212, PHIL 216, PHIL 252, PSPA 222, PSPA 232 any special topics course in SOAN, PSYC, PHIL, PSPA, which will fit with the minor topic, upon the approval of the respective department chair and the coordinator of the minor program. Students majoring in sociology-anthropology should take at least three courses other than SOAN courses.

Mathematics requires 18 credits each:
- Mathematics requires 18 credits: MATH 201, MATH 210, either MATH 218 or MATH 219; and nine more credits in mathematics courses numbered 202, 211, or above; and statistics courses numbered 230 or above.
- Statistics requires 18 credits: MATH 201, MATH 210, and STAT 233; and 9 credits in statistics courses numbered 211 or above, excluding STAT 230.
- Applied Mathematics requires 18 credits: MATH 201, MATH 210; either MATH 218 or MATH 219; and nine more credits in mathematics courses numbered MATH 202, MATH 211 or above, and statistics courses numbered 230 or above.

Philosophy requires 15 credits from courses numbered 200 and above, including two of the following: PHIL 210, PHIL 211, PHIL 213, and PHIL 214.

Physics requires 17 credits: PHYS 210, PHYS 211, PHYS 212, PHYS 221L or (PHYS 210 and PHYS 211L) and six more credits in physics selected from the following: PHYS 217, PHYS 220, PHYS 223, PHYS 222, PHYS 231, PHYS 235, PHYS 236.

Political Studies and Public Administration requires 15 credits each:
- Minors for PSPA Majors
  - Political Studies majors choosing to minor in Public Administration are required to take a minimum of 15 credits. The requirements are PSPA 212; plus four upper-level courses from the following list: PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 273, PSPA 275, PSPA 277, PSPA 278, PSPA 289, or PSPA 297. No courses taken for a major may be counted toward a minor; and vice versa.
• Political Studies majors choosing to minor in Public Policy are required to take a minimum of 15 credits. The requirements are PSPA 260 and PSPA 276; plus three upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, or PSPA 278. No courses taken for a major may be counted toward a minor; and vice versa.

• Public Administration majors choosing to minor in Political Studies are required to take a minimum of 15 credits. The requirements are one of the following: PSPA 210, PSPA 211 or PSPA 213; and any four upper-level courses from the following list: PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 222, PSPA 223, PSPA 225, PSPA 228, PSPA 229, PSPA 231, PSPA 232, PSPA 233, PSPA 234, PSPA 235, PSPA 236, PSPA 237, PSPA 238, PSPA 239, PSPA 250, PSPA 251, PSPA 252, PSPA 253, PSPA 254, PSPA 255, PSPA 256 or PSPA 288. No courses taken for a major may be counted toward a minor; and vice versa.

Minors for Non-PSPA Majors

• Political Studies: PSPA 201; one of the following three: PSPA 210, PSPA 211, or PSPA 213; and any three upper level courses from the following list: PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 222, PSPA 223, PSPA 225, PSPA 228, PSPA 229, PSPA 231, PSPA 232, PSPA 233, PSPA 234, PSPA 235, PSPA 236, PSPA 237, PSPA 238, PSPA 239, PSPA 250, PSPA 251, PSPA 252, PSPA 253, PSPA 254, PSPA 255, PSPA 256 or PSPA 288. No courses taken for a major may be counted toward a minor; and vice versa.

Sociology, Anthropology and Media Studies (offers three minors) requires 15 credits each:

• Anthropology: SOAN 203 or SOAN 212, SOAN 222 or SOAN 225, and SOAN 221 or 227; plus two of the following: SOAN 210, SOAN 211 or SOAN 213, SOAN 213, SOAN 214, SOAN 215–217, SOAN 218–227, SOAN 223, SOAN 224, SOAN 225, SOAN 226, SOAN 228, SOAN 229, SOAN 231, SOAN 232, SOAN 233, SOAN 234, SOAN 235, SOAN 236, SOAN 237, SOAN 238, SOAN 239, SOAN 250, SOAN 251, SOAN 252, SOAN 253, SOAN 254, SOAN 255, SOAN 256, SOAN 257, SOAN 258, SOAN 259, SOAN 260, SOAN 261, SOAN 262, SOAN 263, SOAN 277, SOAN 278, SOAN 279 or SOAN 298.

• Communication: three core courses (MCOM 202, MCOM 203, MCOM 220) and any two MCOM electives.

• Sociology: SOAN 101 or SOAN 201, SOAN 213, SOAN 214, plus two electives from the following: SOAN 210, SOAN 220, SOAN 222, SOAN 223, SOAN 224, SOAN 225, SOAN 226, SOAN 228, SOAN 229, SOAN 230, SOAN 231, SOAN 232, SOAN 233, SOAN 234, SOAN 235, SOAN 236, SOAN 237, SOAN 238, SOAN 239, SOAN 240, SOAN 241, SOAN 242, SOAN 243, SOAN 244, SOAN 245 and SOAN 290 (if selected topic in Sociology).

Psychology offers two minors requiring 15 credits each:

– Psychology: PSYC 101 or PSYC 201, PSYC 280, plus three electives from PSYC 210–236.

– Cognitive Science: PSYC 228 is required. PSYC 228 cannot be counted as a psychology course for the purpose of this requirement. The remaining 12 credits must be chosen from the following courses: PSYC 220, PSYC 224, PSYC 226, PSYC 280, and PSYC 290; PHIL 221, PHIL 222, PHIL 223, PHIL 257, PHIL 258; ENGL 227, ENGL 230, ENGL 232, ENGL 246; EDUC 215, EDUC 221, EDUC 225, EDUC 290, EDUC 290F, CMPS 287; and BIOL 243, BIOL 290F, BIOL 290AF, BIOL 290T-1, on condition that the 12 credits chosen span three of the five disciplines. Only 3 credits of the 15 credits taken for the minor may count toward the student’s major.

Social and Political Thought requires 15 credits: PSPA 210 or PHIL 216, one senior seminar, and three courses from: ENG 222, ENG 240, ENG 243, ENG 247, PHIL 210, PHIL 225, PHIL 251, PHIL 252, PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 290A, PSPA 290B, PSPA 290C, SOAN 213, SOAN 221, SOAN 223, SOAN 290 (after securing the approval of the SPT Committee), ARCH 021, ARCH 022, ARCH 037, ARCH 039 and GRDS 020. No more than 9 credits can be taken from the same department; no more than 3 credits can be counted toward the student’s major; no more than 6 credits can be taken from the student’s home department

Translation requires 15 credits: ARAB 225, ARAB 226, ENGL 233; plus two of the following courses: ARAB 211, ARAB 212, ENGL 231 or 294, and ENGL 247.

Students who opt for a minor (one or more) must do so while working toward their undergraduate degree at AUB. To graduate with a minor a student must attain an average of 70 or more in 6 or more in courses taken to satisfy the requirements of that minor.

Students who have completed the requirements for a minor in any department should complete the Certificate of Fulfillment of the Requirements for a Minor and submit it to the Office of the Dean. Copies of this form are available in the departments offering minors and on the FAS website. The transcript of the student shall indicate the minor(s) chosen.

FAS Diplomas

• Teaching Diploma: See Department of Education in this catalogue.

• Diploma Program in Media Communication: See Department of Social and Behavioral Sciences in this catalogue.

Directed Study

A student with an average of at least 85 in his/her major at the beginning of the senior year may elect to pursue a course of directed study. Students with averages below 85 may be admitted to directed study at the discretion of the department.

Students who elect a course of directed study choose their courses in consultation with a faculty member selected by the student with the department’s approval. These courses may include a three- or six-credit tutorial directed by the faculty member. This tutorial may consist of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis.

Tutorials

A student can register for a single tutorial of up to 3 credits during his/her final year at AUB, after securing the permission of his department. Grades for tutorials are either P (Pass) or F (Fail).
Dean's Honor List
To be placed on the dean's honor list at the end of the semester, a student must
• be carrying at least 12 credits
• not be on probation
• have passed all courses and attained an overall average of 85 or be ranked in the top 10 percent of the class and have an overall average of 80
• have no failing or incomplete grades in courses that carry credits
• not have been subjected to any disciplinary action within the University during the semester
• be deemed worthy by the dean to be on the honor list.

Attendance and Withdrawal from Courses
• Students are expected to attend all classes, laboratories, or required fieldwork. All missed laboratory or fieldwork must be made up. A student is responsible for work done, and for any announcements made, during his/her absence.
• Students who, during a semester, miss more than one-fifth of the sessions of any course in the first ten weeks of the semester (five weeks in the case of the summer term) can be dropped from the course. A faculty member who drops a student from the course for this reason must have stated in the syllabus that attendance will be taken.
• Individual instructors may, at their discretion, keep attendance records. Instructors who drop students for excessive absence are requested to submit the attendance record for the whole class as well as the attendance policy which has been announced in the syllabus of the course distributed to students at the beginning of the semester and kept on record in the department.
• Students who withdraw or are dropped for excessive absence from a course will receive a grade of “W”.
• Students who do not withdraw or cannot be dropped for excessive absence from a course will receive a grade of 40.
• Students can withdraw from registered courses, not later than 10 weeks (five weeks in the summer term) from the start of the semester, provided that their credit load during the semester does not drop below 12 credits.
• A student cannot withdraw, or be withdrawn, from a course after the deadline for withdrawal from courses mentioned above, unless approved by the Student Academic Affairs Committee.
• Students cannot withdraw, or be withdrawn, from a course if this results in the student being registered for less than 12 credits without prior approval of the Student Academic Affairs Committee.

Examinations and Quizzes
Students who miss an announced examination or quiz must present an excuse considered valid by the instructor of the course. Unless stated otherwise in the course syllabus, the course instructor should then require the student to take a make-up examination. Make-ups for quizzes and mid-terms as well as class assignments must be completed BEFORE the final grade of the course is issued at the end of the semester. Only medical reports and/or qualified professional opinions issued by an AUB employee, AUB Medical Center (AUBMC) doctor, or by the University Health Services will be accepted. Should there be a question about the validity of any excuse presented by the student, the matter should be referred to the Student Academic Affairs Committee. Instructors should make sure that there is no time conflict between an exam and a regularly scheduled course.

Grading Policies, Incomplete Grades and Make-up Examinations
For information on the Grading System, see General University Academic Information.
All faculty members in FAS are to submit their final course grades electronically no later than 72 hours after the final examination.

The work for a course in FAS must be completed by the date on which the semester ends. Students who have completed all the course work but missed the final exam, or failed to submit papers or projects in lieu of the final exam (depending on course requirements), may be given an incomplete grade upon submission of a valid excuse to the course instructor. The procedures related to such cases are as follows.

Incomplete course work is reported with an “I” followed by a numerical grade that reflects the evaluation of the student by the end of the semester. This evaluation should be based on a grade of zero for all missed work and reported in units of five. Typically an incomplete grade ranges from I40 to I70. The “W” option is not available to faculty members; all course withdrawals should be entered by the Office of the Registrar. The grades “X”, “blank” or “I” without a numerical grade should not be reported. Only the Student Academic Affairs Committee can grant permission to make up for missed final exams, papers or projects in lieu of the final exam. To obtain permission to complete the work in a course, a student must submit a valid excuse to the instructor of the course. Whenever possible, medical excuses should be issued by the University Health Services (UHS) or the AUB Medical Center (AUBMC). If the reason for the incomplete work is considered valid by the course instructor, the latter should then submit to the Student Academic Affairs Committee, a “Request for Make Up for Incomplete Work” (Form 1, downloadable from the FAS website under “Academic Forms”). This request must be submitted within two weeks of the scheduled date of the missed final exam. Late requests will not be entertained without a valid justification. The Student Academic Affairs Committee will promptly inform the course instructor whether the request is approved or not. If the request is approved by the Student Academic Affairs Committee, the student will be permitted to complete work for the course and must do so within four weeks of the start of the next regular semester (excluding summer, since the summer session is NOT considered a regular semester). The time and date of make-ups, within the period specified above, are set by the course instructor after consulting with the student involved. It is the responsibility of the student to find out from his/her instructor the specific dates by which the work should be completed. After the course work is completed and evaluated by the instructor, the latter should report the new course grade on the “Authorized Change of Grade” (Form 2, downloadable from the FAS website under “Academic Forms”). This form should be sent along with the approved Form 1 to the Student Academic Affairs Committee within 72 hours after the student has completed the course work. The grade change will be considered by the Dean of the Faculty (upon the recommendation of the Student Academic Affairs Committee) and the new grade will be reported to the Office of the Registrar. Failure to complete incomplete work within the period of four weeks will result in dropping the “I” on the reported course grade, and the available numerical grade becomes the final grade in the course. If Form 1 is not submitted in due time (two weeks after the scheduled date of the final exam), or if the request is turned down by the Student Academic Affairs Committee, the “I” on the reported course grade will be dropped. The available numerical grade becomes the final grade in the course.
The procedure to be followed in requesting a change of a grade that was erroneously reported on the AUB SIS is as follows. The “Request for change of grade” Form 3 (downloadable from the FAS website under “Academic Forms”) should be completed by the course instructor immediately when the error is found. The form should then be signed by the Chair of the Department offering the course and submitted to the Student Academic Affairs Committee along with a copy of the original class list with all grades given and the detailed course grading scheme. The course instructor should specify on the form the nature of the error made. The Student Academic Affairs Committee will take note of this change of grade which will be immediately reported to the Office of the Registrar. Requests for change of grade will not be considered after a period of four weeks from the beginning of the next regular semester.

Academic Probation

Departmental Probation and Dismissal from a Department

Students will be placed on departmental probation if their average in major courses drops below 70 in their first two semesters in the major. Departments will drop students from their major in case they have an average below 70 in the major courses at the end of their third regular semester in the major.

Placement on Academic Probation

• Students entering AUB at the freshman level are placed on academic probation if their overall average is less than 67 at the end of their second regular semester, if their semester average is less than 68 at the end of their third or fourth regular semester, 69 at the end of their fifth or sixth regular semester, or if it is less than 70 in any subsequent semester excluding the summer term.

• Students entering FAS at the sophomore level are placed on academic probation if their overall average is less than 68 at the end of their second regular semester, if the semester average is less than 69 at the end of their third or fourth regular semester, or less than 70 in any subsequent semester excluding the summer term.

• Students entering FAS as transfers from other recognized institutions of higher learning are placed on academic probation if their cumulative average is less than 69 at the end of their second regular semester in FAS, or if their semester average is less than 70 in any subsequent semester excluding the summer term.

• It is to be understood that the semester in which the student is considered to be ‘on probation’ is the semester that immediately follows the semester in which the student has earned the grades leading to that placement.

• For evaluation purposes, the minimum number of credits at the end of the second regular semester at the University should be 24 including all repeated courses, and 12 in each subsequent fall or spring semester including all repeated courses. Students carrying a reduced schedule of less than 12 credits are not subject to probation regulations until they have accumulated a minimum of 12 credits including the summer session.

• Courses/credits taken during a summer term are counted toward the semester average of the next regular semester. If the number of credits taken in any one regular semester is less than 12 (for approved reasons), courses/credits taken during that semester are counted toward the semester average of the next regular semester (the highest grade for repeated courses is considered in computing the average).

• Credit for incomplete courses will be included in the semester in which the incomplete courses were taken. The evaluation for that semester will be carried out as soon as the grades for the incomplete courses have been finalized.

• If a student on probation drops the entire semester, then that semester is not counted for continued probation purposes.

• Students who register in intensive English for one semester are not subject to probation during that semester.

Removal of Probation

Probation is removed when the student attains a semester average that exceeds the applicable averages indicated above. The student is off probation during the semester following the one in which such grades are earned.

Probation Duration: Probation should be removed within two regular semesters, excluding summer, after the student is placed on probation, or when the student completes his or her graduation requirements (see Graduation Requirements on page 134). Students on probation are advised to repeat courses for which they have obtained failing or low grades.

Credit Load for Students on Academic Probation: The load of a student who is in his/her first semester on probation shall not be fewer than 12 or more than 17 credit hours. The load of a student who continues on probation beyond one semester shall neither be fewer than 12 nor more than 13 credit hours. During a summer session, all students on probation shall carry loads of not more than 7 credits.

Dismissal from the Faculty

A student is dismissed from the faculty for any of the following reasons:

• if the student’s overall average is less than 60 at the end of the second regular semester

• if the student fails to clear academic probation within two regular semesters, excluding the summer term, after being placed on probation

• if the student is placed on academic probation for a total of four regular semesters (a student can be dropped for this reason even if s/he is in the final year at AUB)

• if the student is deemed unworthy by the faculty to continue for professional or ethical reasons

Application for Readmission

When, in accordance with university regulations, a student is dropped, the implication is that s/he is not qualified to continue his/her education at AUB. Consideration for readmission is given only if, after spending at least one year at another recognized institution of higher education, the student is able to present a satisfactory record with no failure. The student must have achieved a grade equivalent to the AUB grade of 70 in each of the courses for which transfer credit is requested. Transfer credit is considered after departmental evaluation of a student’s coursework.

The foregoing regulations on readmission also apply to students dropped from other AUB faculties who apply for admission to the Faculty of Arts and Sciences.

Readmission of students dropped from the Faculty of Arts and Sciences by the Student Academic Affairs Committee requires the approval of the latter committee, whereas readmission of students dropped from other AUB faculties to Arts and Sciences requires the approval of the Arts and Sciences Undergraduate Admissions Committee. Before action is taken on any
application for readmission, the committee concerned will seek the recommendation of the prospective department.

Students who withdraw voluntarily for more than two years are required to submit a readmission form with all necessary documents for approval by the Undergraduate Admissions Committee.

Students who were dropped from the faculty for poor academic performance and who have spent one year at another University will be readmitted on strict academic probation and upon securing the consent of the department. Failure to meet any of the conditions above will lead the student to be permanently dropped from the faculty.

### Failure

If a student fails a course, no re-examination is permitted. If a course is required for graduation, a student failing the course must repeat it.

A student may not register for a course more than three times, including withdrawals; for the third registration, the permission of the student's academic adviser, and the academic unit concerned, is required.

The Arts and Sciences Student Academic Affairs Committee may consider a fourth registration under special circumstances. A student who at the end of his/her senior year fails to attain a cumulative average of 70 in his/her major field is required to take additional courses in that field, or to repeat courses in which the student has scored low grades, provided s/he is permitted to continue at the University.

### Summer Session

#### Maximum Load

The maximum academic load during a regular summer session is nine credits (seven credits for students on probation).

#### Degree Courses

The degree courses offered during the summer session are identical in standard and content to those offered during the fall and spring semesters.

For information on Non-Degree Courses and Summer Orientation Programs see the sections on Department of Education and AUB Extension Programs in this catalogue.

### Courses

#### FAS Numbers Preceding Course Titles

- **Freshman Courses:** numbered from 101 to 199 are ordinarily taken during the freshman year and may be counted toward graduation but only as part of the freshman program.

- **Introductory Courses:** are from 200 to 209 and may be counted toward graduation whenever taken but cannot be considered as part of the 30 credits above 210 required in the major field.

- **Advanced Undergraduate Courses:** are from 210 to 299 and may be counted as credits in the major field.

- **Graduate Courses:** are from 300 to 499 (available to senior undergraduates in good standing and upon securing the consent of the department). Odd-numbered courses are normally offered during the fall semester whereas even-numbered courses are normally offered during the spring semester.

#### Numbers Following Titles of Courses

- The first number following the title of a course indicates the number of class hours given each week.

- The second number indicates the laboratory or practice hours required each week. The third number indicates the number of credit hours applied toward graduation. The credit assigned to each course is stated for the semester. Each hour of laboratory is considered a 1/3 to 1/2 credit hour.

- Courses marked annually are offered at least once during each academic year. Other courses marked alternate years and each semester are given accordingly. When frequency of offering is not indicated, the course is offered at the discretion of the department.

#### Course Descriptions

For those requiring additional information, more detailed course descriptions are available in the individual department sections of this catalogue.

#### Courses Offered by Other Faculties

Students in the Faculty of Arts and Sciences may also take, for credit, elective courses offered in the Faculties of Medicine, Engineering and Architecture, Agricultural and Food Sciences, and Health Sciences. However, FAS students cannot be given academic credit for the following courses: NFSC 220, AVSC 279, AVSC 280, and AGSC 288. With regard to courses taken in other Faculties, all prerequisites must be satisfied. Some courses may require prior approval from the Faculty concerned.
Department of Arabic and Near Eastern Languages

Chairperson: Khairallah, Assaad I.
Professors: Agha, Saleh S.; Baalbaki, Ramzi M. (Margaret Weyerhaeuser Jewett Professor of Arabic); Jarrar, Maher Z.; Khairallah, Assaad I.; Naimy, Nadeem N.; Tuqan, Fawwaz A.
Associate Professor: Wilmsen, David E.
Assistant Professor: Orfali, Bilal W.
Senior Lecturers: El-Zein, Abdulfattah H.; Kattourah, George B.
Lecturers: Abu-Jawdeh, Siham E.; El Daif, Rachid; Jeha, George E.; Kozah, Mario K.
Instructors: Hajjar, Olga A.; Semaan, Rima; Zein, Raghida M.

In addition to the BA degree in Arabic, the Department of Arabic and Near Eastern Languages provides service courses for all Arabic-speaking students at AUB. ARAB 101 and ARAB 102 must be taken in the freshman year; and, one more Arabic language or literature course (i.e., ARAB 201A, ARAB 201B, or any other course numbered ARAB 211 or above [ARAB 213, ARAB 215, ARAB 216, ARAB 217, and ARAB 218 excluded]). ARAB 201A requires a placement test (see section on Admissions).

BA in Arabic

Mission Statement

The Department of Arabic and Near Eastern Languages has always possessed a leading role in its own field of learning in the Arab World, while being the only one maintaining a liberal tradition of education and research. The impressive number of diverse prominent scholars, writers and intellectuals who passed through the Department testifies to this remarkable historical achievement. The Department has always sought to train students in the basic tools of the discipline, namely language and research skills, while exposing them to the essentials of the field, and subjecting everything to the curiosity of the inquiring mind.

Degree Requirements

Major Requirements

Requirements for the BA degree in Arabic are as follows: ARAB 211, ARAB 212, ARAB 221, ARAB 231, ARAB 232, ARAB 233, ARAB 237, ARAB 239, ARAB 241, ARAB 243, and ARAB 245 (total 33 credits). In addition, the student must select one course from within the other courses in the department (grand total 36 credits).

University General Education Requirements

Students choosing a minor in Arabic are required to take 15 credits of Arabic courses (ARAB 201A does not count as one of them). These courses should include ARAB 211 or ARAB 212 (or an equivalent language course), one course in classical Arabic literature, one course in modern Arabic literature, and any two courses in the department.

When a required course is not available, it may be replaced by another course within the department provided the student’s adviser gives consent.

University General Education Requirements

English Communication Skills 6, Arabic Communication Skills 3 Humanities 12 (Required) + 9 (Electives), Social Sciences 6, Natural Sciences 6, Quantitative Thought 3

Course Descriptions

ARAB 101/102 Readings in Arabic Heritage I and II 3.0; 3 cr. (each)
A freshman level survey that traces the intellectual, literary, and cultural development of the Arabs from pre-Islamic times up to the age of Ibn Khaldun. Annually.

ARAB 200 Special Arabic 3.0; 3 cr.
A course designed for native speakers of Arabic who had limited pre-college formal study of the Arabic language in Lebanon or abroad. Open to students who are exempted from Arabic. Annually.

ARAB 201A Basic Arabic Grammar and Syntax 3.0; 3 cr.
A training course in the basic elements of Arabic grammar, syntax and morphology with special emphasis on oral and writing skills. Each semester.

ARAB 201B Readings in Arabic Literature 3.0; 3 cr.
A close textual and analytical study of a wide variety of selections from modern Arabic literature and thought designed to evoke aesthetic and intellectual discussions of issues of Arab culture. Each semester.

ARAB 203/204 Beginners’ Arabic as a Foreign Language I and II 5.0; 5 cr. (each)
A thorough course in basic literary Arabic with emphasis on the vocabulary of modern literature, the press, and current affairs. This course teaches grammar and structure to enable students to read, understand, and translate, from and into Arabic, within a tightly controlled syntactical milieu. Annually.

ARAB 205/206 Intermediate Arabic as a Foreign Language III and IV 5.0; 5 cr. (each)
A continuation of the carefully graded approach begun in ARAB 203 and ARAB 204, and culminating with the exposition of the derivation system. This course empowers students to use lexica, and to read, understand, and translate, unhampered by any loopholes in their knowledge of basic Arabic syntax and morphology. Prerequisites: ARAB 203 and ARAB 204, or equivalent. Annually.

ARAB 207/208 Advanced Arabic as a Foreign Language I and II 3.0; 3 cr. (each)
The main goal for this level is to reach a superior level of proficiency. Reading texts that contain opinions, hypotheses, and intellectual discussions, in addition to selections from classical Arabic literature. Grammar consists largely of details, such as the full conjugation of irregular verb classes and fine points of complex sentence structure. Instruction is totally in Arabic. Prerequisites: ARAB 205 and ARAB 206, or equivalent. Annually.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARAB 211/212</td>
<td>Survey of Arabic Grammar</td>
<td>3.0; 3 cr. (each)</td>
<td>A year-long course on Arabic morphology and grammar. It is comprised of readings from a classical grammatical text and training in sentence structure through 'Irab. Alternate years.</td>
</tr>
<tr>
<td>ARAB 213/214</td>
<td>Introductory Biblical Hebrew</td>
<td>3.0; 3 cr. (each)</td>
<td>A general survey of Biblical Hebrew grammar, with special emphasis on the relation between Arabic and Hebrew within the Semitic group of languages. Alternate years.</td>
</tr>
<tr>
<td>ARAB 215</td>
<td>Introductory Syriac</td>
<td>3.0; 3 cr.</td>
<td>The course provides students with a working knowledge of Syriac language and grammar. With the help of a lexicon, students will be expected to read and translate simple Syriac texts. Alternate years.</td>
</tr>
<tr>
<td>ARAB 216</td>
<td>Introduction to Syriac Literature</td>
<td>3.0; 3 cr.</td>
<td>The aim of this introductory course is to provide the student with an overview of Syriac literature from its origins to the present day. Alternate years.</td>
</tr>
<tr>
<td>ARAB 217/218</td>
<td>Introductory Persian</td>
<td>3.0; 3 cr. (each)</td>
<td>A year-long course introducing students to the Persian language. After surveying the grammar, students are given intensive training in reading Persian texts. Alternate years.</td>
</tr>
<tr>
<td>ARAB 221</td>
<td>Arabic Stylistics and Metrics</td>
<td>3.0; 3 cr.</td>
<td>A detailed study of stylistics balagha and metrics 'arud. This course surveys the contribution of the Arabs to stylistic studies and introduces their theory of versification. Annually.</td>
</tr>
<tr>
<td>ARAB 225/226</td>
<td>Translation</td>
<td>3.0; 3 cr. (each)</td>
<td>A year-long course divided into a brief introduction and an extended segment in applied translation. In the introduction, theoretical problems and issues of translation are discussed; then the course is transformed into an extended workshop where students will be preoccupied with their own translation exercises from and into both Arabic and English. Annually.</td>
</tr>
<tr>
<td>ARAB 227/228</td>
<td>Arabic Linguistics</td>
<td>3.0; 3 cr. (each)</td>
<td>These two courses deal with various topics of Arabic linguistic sciences, mainly phonetics, semantics, and lexicology. Offered occasionally.</td>
</tr>
<tr>
<td>ARAB 229</td>
<td>Background to the Study of Classical Arabic Literature</td>
<td>3.0; 3 cr.</td>
<td>A course dealing with the impact of Greek culture on classical Arabic literature and thought, and the rise and development of Arab intellectualism. Alternate years.</td>
</tr>
<tr>
<td>ARAB 230</td>
<td>Themes and Genres of Arabic Literature</td>
<td>3.0; 3 cr.</td>
<td>A broad overview of Arabic literature throughout the ages. This course primarily emphasizes the literary production embodied in the works that give Arabic literature its unique character in different periods, while concentrating on the major themes and genres around which this literature revolves. Alternate years.</td>
</tr>
<tr>
<td>ARAB 231</td>
<td>Arabic Poetry: The Heroic Age</td>
<td>3.0; 3 cr.</td>
<td>A course highlighting characteristic elements of Arabian life in its heroic age prior to Islam, while considering its individual, tribal, and mythical codes. Main problems, sources, and strains of the poetry of this age are surveyed. The substantial component of the course is comprised of critical analysis of representative poems. Alternate years.</td>
</tr>
<tr>
<td>ARAB 232</td>
<td>Arabic Poetry: The Age of Conquest, Love, and Nostalgia</td>
<td>3.0; 3 cr.</td>
<td>A survey of new genres of poetry that blossomed when desert Arabs were deployed outside their peninsula following the conquests. This is examined through a compact probe of the economic, social, and political factors that affected Arabian life, from the advent of Islam to the end of the Arabian (Umayyad) era. The substantial component of the course is comprised of critical analysis of representative poems. Alternate years.</td>
</tr>
<tr>
<td>ARAB 233/234</td>
<td>Abbasid Poetry</td>
<td>3.0; 3 cr. (each)</td>
<td>A survey of Arabic poetry during the Abbasid period while considering the historical, political, and social background. The first part of the course deals with the major poets of the early Abbasid era, which ends during the reign of al-Mut'asim; while the second part surveys the poetry of the latter Abbasid age up to the fall of Baghdad. Alternate years.</td>
</tr>
<tr>
<td>ARAB 235</td>
<td>Andalusian Literature</td>
<td>3.0; 3 cr.</td>
<td>An introduction to Arabic literature in Islamic Spain. Students read and analyze Andalusian poetry and prose, with special emphasis on the new literary forms that appeared in al-Andalus. Alternate years.</td>
</tr>
<tr>
<td>ARAB 236</td>
<td>Qur'anic Studies</td>
<td>3.0; 3 cr.</td>
<td>An introduction to major Qur'anic issues, such as the collection of the Qur'an, Qur'anic imagery, and the various trends in Qur'anic exegesis. Alternate years.</td>
</tr>
<tr>
<td>ARAB 237/238</td>
<td>Modern Arabic Poetry</td>
<td>3.0; 3 cr. (each)</td>
<td>A year-long course studying the factors that shaped modern Arabic poetry, tracing the phases of its development, and analyzing in detail its various characteristics. Alternate years.</td>
</tr>
<tr>
<td>ARAB 239</td>
<td>Modern Arabic Novel</td>
<td>3.0; 3 cr.</td>
<td>A course on the development of the Arabic novel, along with a survey focusing on the main factors that led to the rise of the novel. Students will thoroughly analyze a number of works by prominent Arab novelists. Alternate years.</td>
</tr>
<tr>
<td>ARAB 240</td>
<td>Modern Arabic Drama</td>
<td>3.0; 3 cr.</td>
<td>A survey of the rise and development of the dramatic literary genre in modern Arabic, with a focus on the main factors that led to the rise of drama. Students will thoroughly analyze a number of selected works by prominent Arab playwrights. Alternate years.</td>
</tr>
<tr>
<td>ARAB 241</td>
<td>Literary Theory and Criticism</td>
<td>3.0; 3 cr.</td>
<td>A course on the development of Arab literary theory and criticism from the classical period to the present. This course is structured according to the main themes that concerned Arab critics throughout the ages, as well as the major critical trends and their prominent representatives. Alternate years.</td>
</tr>
<tr>
<td>ARAB 243</td>
<td>Classical Arabic Prose</td>
<td>3.0; 3 cr.</td>
<td>A course in which students read and analyze extracts from the works of major prose writers representing the main trends in classical Arabic prose, beginning with pre-Islamic times up to the age of al-Ma'arri. Alternate years.</td>
</tr>
<tr>
<td>ARAB 244</td>
<td>Muslim Schools of Theology</td>
<td>3.0; 3 cr.</td>
<td>A survey of the main doctrines, terms, and modes of expression that are peculiar to the major Muslim sects (firaq) in the medieval age, and the impact they had on literature. Mu'tazila, Ash'ariyya, and Imamiyya, constitute the focal point of the course, which includes readings in selected representative texts. Alternate years.</td>
</tr>
</tbody>
</table>
ARAB 246 Background to the Study of Modern Arabic Literature 3.0; 3 cr. (each)
A two-semester course dealing with the Arab cultural renaissance of 1800–1940. Special emphasis is placed on the impact of the West on the making of the modern Arab literary culture. Annually.

ARAB 247 Arabic Classical Folk Literature 3.0; 3 cr.
A course covering the following topics: folktales, the novella in The Arabian Nights, and the hero sagas such as Sirat Bani Hilal. This course aims at studying the textual history of this special genre, its language, motives, and structures. Students are also exposed to various methodological approaches to folk literature. Alternate years.

ARAB 249 Sufi Literature 3.0; 3 cr.
A course aiming to acquaint the student with Sufi literature as one of the major aspects in Arabic literature. Alternate years.

ARAB 251/252 Special Topics in Arabic Language and Literature 3.0; 3 cr. (each)
A course that varies in content and focuses on selected topics in language and literature. May be repeated for credit. Offered occasionally.

ARAB 290 Undergraduate Seminar on al-Mutanabbi 3.0; 3 cr.
A seminar on the times, life, and poetry of this major Arab poet. It combines the historical and the literary analytical-critical methodologies. Its substantial component comprises close textual analysis of poetry from the different phases of the poet's intertwined private and public life. Alternate years.

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### 33 + 3 Credits in Arabic

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12 + 33 + 3 + 9)</th>
<th>Social Sciences (6)</th>
<th>Natural Sciences</th>
<th>Quantitative Thought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture courses</td>
<td>(9+12+33+3+9+6+3)</td>
<td>- Required Arabic course: ARAB 201A or any General Education Arabic communication skills (3)</td>
<td>- Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>- Required Arabic courses (3): ARAB 211(3), 212(3), 221(3), 231(3), 232(3), 233(3), 234(3), 235(3), 244(3), 245(3)</td>
<td>- 3 (Recommended: a course in computer literacy)</td>
</tr>
<tr>
<td>Seminar (0–6)</td>
<td></td>
<td>- One elective course from the following or a seminar course (3): ARAB 213(3), 214(3), 221(3), 223(3), 225(3), 226(3), 227(3), 228(3), 229(3), 230(3), 234(3), 235(3), 244(3), 245(3), 246(3), 247(3), 249(3)</td>
<td>Electives: 9 credits in other humanities departments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory (3)</td>
<td></td>
<td>- Elective Arabic courses: ARAB 251(3), 252(3)</td>
<td></td>
<td>Computer Lab (3)</td>
<td></td>
</tr>
<tr>
<td>Research project</td>
<td>(63)</td>
<td></td>
<td>ARAB 201–211, 243–247, 249</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Department of Biology

Chairperson: Knio, Khuzama M.
Professors: Baydoun, Elias H.; Gali-Muhtasib, Hala U.; Knio, Khuzama M.; Kreydiyyeh, Sawsan I.; Talhouk, Rabih S.
Associate Professors: Bariche, Michel J.; Saoud, Imad P.; Smith, Colin A.
Assistant Professors: Ghanem, Noel D.; Jaalouk, Diana E.; Kambris, Zakaria S.; Osta, Mike A.; Sadek, Riyad A.; zu Dohna, Heinrich
Lecturers: Rizkallah, Hind D.; Sinno-Saoud, Nada; Tarraf, Charbel G.
Instructor: Hajjar, Layane A.M.

BS in Biology

Mission Statement
The BS program in Biology prepares students for advanced study and careers in research, education, and service in Biology-related disciplines. Students will acquire descriptive, experimental, quantitative, and conceptual abilities spanning molecular, cellular, organismal, and ecological levels. Lecture and laboratory courses will emphasize model systems, the role of evolution, diversity of living systems, hypothesis-based reasoning, and communication skills. Science, social science, and humanities coursework will foster creativity, free thought, interdisciplinary skills, and commitment to ethical scholarship.

Degree Requirements
All students admitted as sophomores are eligible to continue in the program provided they obtain, by the end of their third regular semester at AUB, a minimum average of 70 in their biology courses. Students will be considered for transfer to Biology provided they obtain a minimum grade of 75 in BIOL 201 and 75 in BIOL 202 or BIOL 200. A transfer student must be 75 or above (excluding Freshman courses). Transfer to Biology from other departments must be 75 or above (excluding Freshman courses). Transfer to Biology from other departments will be added and removed as new discoveries are made and news changes. The minor in biology requires 15 credits of BIOL courses. The courses are BIOL 201 (4 credits), BIOL 202 (4 credits), plus at least two courses (provided the prerequisites of these courses are satisfied) to complete the 15 credits required for the minor.

University General Education Requirements
6 credits in English Communication Skills and 3 credits in Arabic Communication Skills; 12 credits in the humanities including six credits of CVSP; 6 credits in the Social Sciences; (37+15) credits in the Natural Sciences; 3 credits in Quantitative Thought; STAT 210.

Major Requirements
- 37 credits of Biology: BIOL 201, 202, 220, 223; two of the following four courses: BIOL 224, 252, 260, 270; BIOL 293 (these courses are offered every semester); and a minimum of 13 credits in biology elective courses, including a minimum of one 4 credit course.
- 15 credits of Natural Sciences. CHEM 201, 210, 211, 212; PHYS 204 with PHYS 204L, or PHYS 205 with PHYS 205L.
- The minor in biology requires 15 credits of BIOL courses. The courses are BIOL 201 (4 credits), BIOL 202 (4 credits), plus at least two courses (provided the prerequisites of these courses are satisfied) to complete the 15 credits required for the minor.
- Unless otherwise stated, only senior undergraduate biology majors with an average of 80 or above can register in biology graduate courses with consent of instructor.

Students from any field can minor in aquatic and environmental sciences by completing, in addition to BIOL 202 or BIOL 200, a total of 15 credits chosen from the following three lists:
- **List 1**: BIOL 252, BIOL 250, BIOL 256.
- **List 2**: BIOL 266, BIOL 246, BIOL 267, BIOL 255.

One course from each of lists 1 and 2 is required. All students should take at least three of the total required courses in a field outside their major field of study, and these courses should be from at least two different disciplines. Only one of the courses taken from lists 1 and 2 by biology majors minoring in environmental and aquatic studies is counted toward the major.

Course Descriptions

**BIOL 101 Basic Concepts in Biology** 3.0; 3 cr.
A course that deals with the basic concepts in biology, and prepares students for BIOL 201 and BIOL 202. This course introduces the student to the forms and functions of plants and animals, and to the principles of genetics, evolution, and ecology. Each semester.

**BIOL 105 Introductory Biology** 3.3; 4 cr.
An introduction to the fundamental principles of biology. This course covers the basis of life, the structure and function of cells and systems, the general classification and diversity of plants and animals, as well as genetics and ecology. Occasionally.

**BIOL 106 Contemporary Issues in Biology** 3.0; 3 cr.
A course designed to provide freshman students with the scientific background to some of the current topics in biology today. The course introduces students to the general concepts of biology, including origins of life, evolution and organic building blocks. Moreover, the course will cover socially important contemporary topics such as human evolution, fresh water issues, ecology, environmental conservation, cloning, stem cell research, GMOs, diseases and nutrition. Topics will be added and removed as new discoveries are made and news changes. Each semester.
Biology Courses

**Biol 200 Diversity of Life** 3.3; 4 cr.
A course that deals with the basic aspects of cell structure and function, heredity, diversity, classification, evolution and interrelationships of living things, and briefly covers organs and systems in animals and plants. Laboratory activity reflects the contents of the course. Not open to biology majors and minors. Sophomore standing is required. Each semester.

**Biol 201 General Biology I** 3.3; 4 cr.
An integrated approach to the biology of organisms covering the organization of life, energy transfer through living systems, perpetuation of life, and diversity of life. Each semester.

**Biol 202 General Biology II** 3.3; 4 cr.
A study of the anatomy and physiology of plants and animals covering their structure, growth, nutrition, transport, reproduction, development, and control systems. This course focuses also on the relationships between structure and function, and stresses the evolutionary adaptation and changes in the different systems of the major plant and animal groups. Prerequisite: Biol 201. Each semester.

**Biol 209 Concepts and Connections** 3.0; 3 cr.
A course that covers the basic aspects of cell structure and function. An overview of heredity, diversity and evolution. Interrelationships of living things and a brief coverage of organs and systems in animals. Not open to biology majors and minors. Sophomore standing is required. Each semester. Satisfies 3 credits of General Education Natural Science requirement.

**Biol 210 Human Biology** 3.0; 3 cr.
A course that covers the fundamental principles of cell biology, genetics, and human biology, with emphasis on the morphology, physiology, and disorder of body systems. Not open to biology majors and minors. Students cannot receive credit for all three of the following: Biol 201, Biol 202, Biol 210. Each semester.

**Biol 220 Introductory Biochemistry** 3.0; 3 cr.

**Biol 223 Genetics** 3.3; 4 cr.
A course that deals with the basic principles of classical and modern genetics with emphasis on the analysis of genetic material and genetic processes at the molecular level. Prerequisite: Biol 202. Each semester.

**Biol 224 Microbiology** 3.3; 4 cr.
A course that deals with micro-organisms, especially bacteria, and in particular those of pathogenic and industrial importance. Basic knowledge on isolation, classification, and the various metabolic processes is included in this course. Prerequisite: Biol 223. Each semester.

**Biol 225 Molecular Biology** 3.0; 3 cr.
A course that introduces the different techniques of molecular biology and recombinant DNA technology, and discusses the most recent advances in the field. Prerequisite: Biol 223. Occasionally.

**Biol 230 Plant Morphology** 3.3; 4 cr.
A study of the form and structure of the different plant divisions on the basis of similarity of plan and origin. Both reproductive and non-reproductive organs are studied. Prerequisite: Biol 202. Occasionally.

**Biol 233 Non-Vascular Autotrophs and Fungi** 2.3; 3 cr.
A survey of the biology and classification of bacteria, algae, bryophytes, lichens, and fungi. Life cycles, anatomy, morphology, physiology, and ecology of each group are covered, and their role in diseases and production of food and antibiotics is emphasized. Prerequisite: Biol 202. Occasionally.

**Biol 234 Vascular Plants** 2.3; 3 cr.
A course that deals with the structure, life history, and classification of vascular plants, including psilophytes, club mosses, horsetails, ferns, conifers, and flowering plants, emphasizing their evolutionary relationships. Prerequisite: Biol 202. Occasionally.

**Biol 235 Plant Anatomy** 2.3; 3 cr.
A course that deals with the structure and function of tissues and organs of higher plants, their origin, and differentiation. Prerequisite: Biol 202. Occasionally.

**Biol 236 Plant Systematics** 2.3; 3 cr.
A course that deals with the relationships between and among vascular plants based on evolutionary principles as expressed by systematics. The underlying principles of systematics, including modern molecular technological approaches are provided. Students deal with plant identification, and classification of the major families of local vascular plants. Prerequisite: Biol 202. Occasionally.

**Biol 240 Animal Behavior** 3.0; 3 cr.
A course that covers the basic concepts of animal behavior including physiological, genetic, ecological, and evolutionary aspects, as well as exploration of the controversial ideas of sociobiology. Prerequisite: Biol 202. Occasionally.

**Biol 241 Biology of Invertebrates** 3.3; 4 cr.
A study of invertebrates, excluding insects, emphasizing their morphological and functional diversity, phylogenetic relationships, classification, development, and adaptation. Prerequisite: Biol 202. Annually.

**Biol 242 Comparative Vertebrate Anatomy** 3.4; 3 cr.
A comparative study of the structure and function of selected examples of chordate animals with a presentation of the history of structural organization and association of structural changes with functional adaptations. Prerequisite: Biol 202. Annually.

**Biol 243 Behavioral Neuroscience** 3.0; 3 cr.
An introduction to the neural basis of behavior. The course surveys the structure and organization of the human brain and how complex behavior arises from it. Prerequisite: Psych 102 or Psych 202. Annually.

**Biol 244 Introduction to Neurobiology** 3.0; 3 cr.
A comprehensive introduction to neural signaling, brain development and regeneration in the adult brain. The course covers molecular to higher organizational level of neural functions. It emphasizes the fundamental principles and mechanisms associated with brain development and physiology including nerve communication, neurogenesis, patterning and regionalization as well as neural stem cells function. Prerequisite: Biol 202. Annually.

**Biol 245 Environmental Physiology of Aquatic Organisms** 3.0; 3 cr.
A course that describes the strategies used by aquatic animals to deal with environmental variations. Various animal physiological systems are covered with an emphasis on aquatic adaptations. Some topics such as air bladder control, electrical generation and reception, and gill excretion are specific to aquatic organisms and are introduced herein. Prerequisite: Biol 200 or Biol 202. Annually.
BIOL 246  Marine Biology  3.3; 4 cr.
A course that introduces the biology of life in the marine environment (microbial world, seaweeds and plants, marine animals) as well as the structure and function of the marine ecosystem (e.g., coral reefs, the ocean depths, estuaries). The impact of humans on the marine environment is also covered. Prerequisite: BIOL 202. Each semester.

BIOL 247  Animal Physiology  3.0; 3 cr.
A study of the fundamental principles and mechanisms that govern body functions in animals, with an emphasis on the molecular aspects. Prerequisites: BIOL 202 and senior standing. Annually.

BIOL 249  Parasitology  3.3; 4 cr.
A general overview on the classification, morphology, development, and physiology of human and animal parasites. Prerequisite: BIOL 202. Annually.

BIOL 250  Biosphere  3.0; 3 cr.
A course that focuses on defining global environmental problems such as global warming, acid rain, deforestation, and loss of biodiversity, and introduces methods that can help eliminate or reduce these problems. Annually.

BIOL 252  Ecology  3.3; 4 cr.
A study of organisms in relation to their biotic and abiotic environment. This course deals with population growth and regulation, species diversity, age structure, succession, food chains, energy flow, and recycling of nutrients. Prerequisite: BIOL 202 or LDEM 209. Each semester.

BIOL 254  Evolution  3.0; 3 cr.
A study of the processes that bring about evolutionary changes in organisms, evolutionary trends, patterns of adaptations, and principal factors that influence the patterns of speciation. Prerequisite: BIOL 223. Annually.

BIOL 255  Marine Ecology  3.0; 3 cr.
An introduction to the ecology of marine and brackish water ecosystems, structures and processes, with special attention to the eastern Mediterranean Sea. Interrelationships among animals, plants, and chemical and physical aspects of the environment are studied, as well as the unique adaptations for survival in these habitats. Prerequisite: BIOL 200 or BIOL 202. Occasionally.

BIOL 256  Conservation Biology  3.0; 3 cr.
A course that deals with various environmental issues in the world today; introduces the science of conservation; and describes typical methods of conservation, restoration, and restocking. Students are trained in proper research techniques, proper scientific writing, effective presentation delivery using PowerPoint, and are required to research a conservation topic of contemporary importance to the world and present their findings to the class. Prerequisite: BIOL 200 or BIOL 202. Annually.

BIOL 258  Introduction to Aquaculture  3.0; 3 cr.
An introduction to the general concepts of aquaculture. Topics such as culture species, culture methods, water quality, filtration, feeding, and harvesting are discussed. Uses of aquaculture for food production, biomedical research, ornamentals, or restocking programs are also introduced. Pre- or corequisite: BIOL 200 or BIOL 202. Occasionally.

BIOL 258L  Aquaculture Laboratory  0.3; 1 cr.
The course will introduce students to the practical side of aquaculture. Students will get their hands wet. They will set up fish maintenance systems, evaluate progressive changes in water chemistry, evaluate effects of water chemistry on fish health and most importantly learn techniques used to maintain fish in healthy and sustainable environments. Students will be expected to keep a detailed log of their activities and that will be part of assessment. Prereq. or coreq.: BIOL 258. Annually.

BIOL 259  Microbes and the Environment  3.0; 3 cr.
A course that explores the various habitats of micro-organisms in nature and the interactions within. Microbial metabolic activities and their impact on the environment are discussed. The course explores the role of microbes as pathogens, particularly environmentally transmitted ones. The beneficial role of microbes in the biodegradation of pollutants is also discussed, in addition to public health topics in microbiology. The course includes a substantial component of reading and analysis of primary research papers in environmental microbiology, in addition to presenting a poster session. Prerequisite: BIOL 202. Annually.

BIOL 260  Cell Biology  3.3; 4 cr.
A course that provides an understanding of the structure and function of cellular organelles and components, and the functional interaction of the cell with its microenvironment. Prerequisites: BIOL 220 and BIOL 223. Each semester.

BIOL 261  Biology of Cancer  3.0; 3 cr.
This course covers the basic biology of normal versus the malignant neoplastic state and provides a comprehensive over-view of the basic biology of cancer. Prerequisite: BIOL 223. Annually.

BIOL 262  Virology  3.0; 3 cr.
A general overview on the classification, biophysical, and biochemical characteristics of DNA- and RNA-containing bacterial, plant, and animal viruses. Prerequisite: BIOL 202. Annually.

BIOL 263  Immunology  3.0; 3 cr.
An introduction to basic immunology, types of immune responses, and basic aspects of the specific and non-specific body defense mechanisms, as well as primary immunological diseases and disorders. Prerequisite: BIOL 202. Annually.

BIOL 264  Biology of Retroviruses  3.0; 3 cr.
A course that provides an understanding of the composition, genomic organization, and life cycle of animal RNA-containing retroviruses, with special emphasis on HIV, the etiological agent of AIDS. An overview of other sexually transmitted diseases and of animal viruses of pathological significance is also provided. Prerequisite: BIOL 223. Annually.

BIOL 266  Oceanography  3.0; 3 cr.
An introduction to the basic concepts of oceanography and marine science. The course focuses on the chemical, physical, and geological processes that affect life in the oceans and on planet earth in general. Additional topics such as environmental science, conservation, world fisheries, marine resources, and effects of coastal development on life in the oceans are discussed. Annually.

BIOL 266L  Oceanography Lab  0.3; 1 cr.
A course that introduces students to the basic concepts of oceanographic science applications. The course focuses on the chemical, physical, and geological processes that affect life in the oceans and on planet earth in general. Methods of research used by oceanographers past and present are introduced and demonstrated. Annually.
BIOL 267 Limnology 3.0; 3 cr.
A course that introduces students to the basic concepts of freshwater riverine and limnetic systems. The course focuses on the chemical, physical, and nutrient cycling processes that affect life in freshwater bodies. It introduces various freshwater life forms, including kingdoms and phyla, and gives examples of various families. Physiological adaptations of various animals are discussed. Additional topics such as environmental science, conservation, fisheries, aquatic resources, and effects of development on life in streams, rivers, and lakes are discussed when relevant. Annually.

BIOL 268 Introduction to Biotechnology 3.0; 3 cr.
An introduction of both the principles and the applications of molecular biology methods with an emphasis on the application of recombinant DNA technology to animals, plants, and microbial organisms. This course describes the use of genetically engineered products to solve environmental problems and cure human diseases. Prerequisite: BIOL 223. Annually.

BIOL 270 Plant Physiology 3.3; 4 cr.
A study of the vital processes that occur in flowering plants, including biophysical and metabolic processes, with emphasis on photosynthesis, growth, and development. This course also deals with plant responses to the physical environment. Prerequisite: BIOL 220. Each semester.

BIOL 271 Economic Plants 3.0; 3 cr.
A course that deals with man’s relationship to plants and their economic interest, including their diversity of use in industry and production of food and medicine. Prerequisite: BIOL 202. Each semester.

BIOL 280 Endocrinology 3.0; 3 cr.
A study of the role of chemical messengers in the control of physiological and metabolic processes. This course deals with the biosynthesis, chemistry, and secretion of hormones, as well as their mechanism of action. Prerequisite: BIOL 202. Annually.

BIOL 281 Ichthyology 3.0; 3 cr.
A study of the different types of fish, their natural history, and environmental and ecological adaptations. It also deals with methods of conserving and culturing fish of economic value, as well as the effect of pollution on fish fauna. Prerequisite: BIOL 202. Annually.

BIOL 282 Reproductive Physiology 3.0; 3 cr.
An examination of the mechanisms of all major aspects of male and female mammalian reproductive physiology. Emphasis is also given to species variation with regard to reproductive function and to a detailed examination of key reproductive events in both sexes. Prerequisite: BIOL 202. Annually.

BIOL 283 Developmental Biology 3.3; 4 cr.
A study of basic mechanisms and molecular basis that control embryonic development in both Vertebrates and Invertebrates with special emphasis on early development and axis formation. Animal models covered include chicken, frog, mouse, drosophila, sea urchin, C. elegans and zebrafish. Prerequisite: BIOL 202. Annually.

BIOL 286 Entomology 3.3; 4 cr.
An introduction to the study of insects, their diversity, classification, morphology, biology, behavior; and their medical, ecological, and agricultural importance. Prerequisite: BIOL 202. Annually.

BIOL 290 Special Topics in Biology 1, 2, 3, or 4 cr.
Topics in biology that warrant an extensive coverage in a separate course not typically offered by the department. May be repeated for credit. Each semester.

BIOL 291 Undergraduate Tutorial 2 or 3 cr.
Prerequisites: senior standing, a minimum average of 80 in the major, and consent of instructor. Each semester.

BIOL 292 Undergraduate Seminar 1 cr.
Prerequisite: senior standing. Each semester.

BIOL 295 Summer Undergraduate Research 4 cr.
A course intended to train and recruit well-prepared students for graduate work in biology at AUB. Students will conduct a research project during the summer term, and then present and defend their findings. Prerequisites: completion of 80/120 credits, a minimum average of 75 in the major, consent of instructor and approval of the department. Each summer.

BIOL 296 Exit Survey 0.0; 0 cr.
A computer-based exit exam taken in the last semester in the BS in Biology program. Prerequisite: completion of graduation requirements for BS in Biology by the end of semester. Graded Pass/ Fail. Each semester.

37 Credits in Biology1

<table>
<thead>
<tr>
<th>Mode of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (6)</th>
<th>Natural Sciences (37+15)2</th>
<th>Quantitative Thought (3)</th>
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<tbody>
<tr>
<td>Lecture courses</td>
<td>(9+12+6+30+12+3)</td>
<td>Required Arabic: course: 201A or any General Education Arabic communication skills (3)</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Required biology (18): BIOL 201(4), 202(4), 223(4), and two from the following four courses: 224(4), 240(4), 270(4), 252(4)</td>
<td>Required mathematics (3): MATH 110(3)</td>
</tr>
<tr>
<td>Research Project</td>
<td>(0, 2, or 3)</td>
<td>Required biology (1): BIOL 201(4), 202(4), 223(4), and two from the following four courses: BIOL 224(4), BIOL 252(4), 260(4), 270(4)</td>
<td>Required biology (1): minimum of one 4-credit course</td>
<td>Required chemistry (2): CHEM 210(2)</td>
<td>Required physics (1): PHYS 204(1) or PHYS 205(1)</td>
</tr>
<tr>
<td>Seminar (1)</td>
<td>Required: BIOL 293(1)</td>
<td>Required biology (1): BIOL 201(4), 202(4), 223(4), and two from the following four courses: BIOL 224(4), BIOL 252(4), 260(4), 270(4)</td>
<td>Required biology (1): minimum of one 4-credit course</td>
<td>Required chemistry (2): CHEM 210(2)</td>
<td>Required physics (1): PHYS 204(1) or PHYS 205(1)</td>
</tr>
</tbody>
</table>

1 Plus 8 free elective credits
2 At least 37 credits in biology, and 15 credits in the sciences
3 These courses include 1-credit laboratory component and have been listed both under lecture and laboratory courses.
Department of Chemistry

Chairperson: Al-Ghoul, Mazen H.
Professors: Al-Ghoul, Mazen H.; Haddadin, Makhloul J.; Halalou, Lara I.; Saliba, Najat I.; Sultan, Rabih F.
Associate Professors: Bouhadir, Kamal I.; El-Rassy, Houssam T.; Ghaddar, Tarek H.; Ghauch, Antoine R.; Hasanayn, Faraj A.; Kaafarani, Bilal R.
Assistant Professors: Karam, Pierre M.; Patra, Digambara G.
Lecturers: BouBou, Kheir; Dakdouki, Saada
Instructors: Abi Rafii, Randa R.; Deeb, Hana H.; El-Batlouni, Hazer; Jaafar, Amer; Ramadan, Hiba; Sadek, Samar A.
Assistant Instructor: Dakik, Rajaa

BS in Chemistry

Mission Statement

The Chemistry Department provides liberal arts and professional education in chemistry. The undergraduate program at the Department is dedicated to teaching, scholarship, research and creative endeavors. Through this program, the Department delivers a strong theoretical course of study and practical training in the chemical sciences to assure the success of its students in graduate schools, professional schools and employment. Undergraduate students are able to explain the essential facts, principles and theories across the four major areas of chemistry, i.e. analytical, organic, inorganic and physical, and are strongly encouraged to be engaged in research in these aforementioned areas. The program also plays a central role in the education of students of other majors, including students of Medicine, Health Sciences, Engineering, and Agriculture.

Students accepted as chemistry majors must maintain an average of 70 or above in their first three semesters in major courses, in order to remain in the program. The student must complete the following minimum requirements: CHEM 201, CHEM 210, CHEM 211, CHEM 212, CHEM 225, and CHEM 230; at least two elective courses of the following five courses: CHEM 217, CHEM 218, CHEM 220, CMPS 209 or CMPS 200; at least one course from CHEM 217 or CHEM 218, for a total of 18 or 19 credits. MATH 201 is a prerequisite for a major in chemistry.

Freshman students who intend to major in chemistry should complete the following minimum requirements: CHEM 101, CHEM 101L, CHEM 102, CHEM 102L, MATH 101 and MATH 102, PHYS 101 and PHYS 101L.

Students who intend to minor in chemistry should complete the following requirements:

- CHEM 201, one course from CHEM 206 or CHEM 215, CHEM 211, CHEM 228, and one course from CHEM 217 or CHEM 218, for a total of 18 or 19 credits. MATH 201 is a prerequisite for a minor in chemistry.

- For a premedical chemistry student the core premedical chemistry courses are CHEM 101 + CHEM 101L (or equivalent), CHEM 201, CHEM 211, CHEM 212, and CHEM 225. The biology premedical courses are BIOL 101 (or equivalent) and BIOL 200 or BIOL 201. The physics requirements for a premedical chemistry student are PHYS 211 and PHYS 211L.

- The chemistry core courses for non-chemistry major premedical students are CHEM 101 + CHEM 101L (or equivalent), CHEM 201, CHEM 210, CHEM 211, and CHEM 212.

Degree Requirements

- Major courses: 40 credits in Chemistry courses (33 credits as required courses; 6 credits as elective courses; 1 credit seminar course).
- Natural Sciences courses: 4 credits of Physics.
- Quantitative Thought courses: 9 credits (6 credits in Math and 3 credits in CMPS).
- University General Education requirements that include 6 credits in English Communication Skills; 3 credits in Arabic Communication Skills; 12 credits in the Humanities including 6 credits of CVSP; 6 credits in the Social Sciences.
- Elective courses: 10 credits in free electives.

Course Descriptions

CHEM 101 General Chemistry I 3.0; 3 cr.
An introductory course that covers atomic structure, chemical reactions, stoichiometry, gas laws, thermochemistry, periodic relationships among the elements, chemical bonding, and other basic concepts. Each semester. (Prior to Fall semester 2011-12, Chemistry 101 was a 4-credit course with laboratory component.)

CHEM 101L General Chemistry Laboratory I 1.3; 1cr.
A laboratory course to accompany CHEM 101. The experiments explore some of the fundamental concepts which deal with measurements, percent composition, chemical reactions, stoichiometry, volumetric analysis, gas laws, and calorimetry. Pre- or corequisite CHEM 101. Each semester.

CHEM 102 General Chemistry II 3.0; 3 cr.
A course that covers solutions, chemical equilibrium, kinetics, acid-base and solubility equilibria, introductory thermodynamics and electrochemistry; surveys common groups in the periodic table; provides an introduction to organic chemistry and nuclear chemistry. Prerequisite: CHEM 101. Each semester. (Prior to Fall semester 2011-12, Chemistry 102 was a 4-credit course with laboratory component.)

CHEM 102L General Chemistry Laboratory II 1.3; 1cr.
A laboratory course to accompany CHEM 102. The experiments explore some of the fundamental concepts which deal with physical properties of solutions, chemical equilibrium, acids and bases, solubility equilibria, kinetics and electrochemistry. Pre- or corequisite: CHEM 102 and Prerequisite: CHEM 101L. Each semester.
CHEM 200  Basic Chemistry and Applications  3.0; 3 cr.
Introduces basic chemical principles and concepts and uses them to discuss selected contemporary applications and problems from the areas of materials, environmental, medicinal or biological chemistry. Introductory topics include the electronic structure of the atom, bonding and molecular geometry, stoichiometry, and reaction energies. Selection of modern applications in Chemistry. Students cannot receive credit for both CHEM 200 and CHEM 201. Prerequisites: CHEM 101 and CHEM 101L or equivalent. Each semester.

CHEM 201  Chemical Principles  3.0; 3 cr.
A theoretical introduction to chemical principles, stressing atomic structure, bonding, stoichiometry, gases, solutions, acids and bases, solution equilibria. Designed for students with a background in chemistry equivalent to CHEM 101 and CHEM 101L. Students cannot receive credit for both CHEM 200 and CHEM 201. Each semester.

CHEM 202  Introduction to Environmental Chemistry  3.0; 3 cr.
An introduction to the fundamentals of physical, inorganic, and organic chemistry, with applications to environmental problems. This course surveys atomic and molecular structure, solutions, equilibrium, acids and bases, oxidation-reduction, reaction kinetics with emphasis on mechanisms of organic free radical reactions, and basic radioactivity. Students can receive credit for CHEM 201 and CHEM 202. Prerequisites: CHEM 101 and CHEM 101L or equivalent. Each semester.

CHEM 203  Introductory Chemical Techniques  1.3; 2 cr.
A laboratory course on the methods of quantitative analysis, physical chemistry measurements, and inorganic semi-micro qualitative analysis, with applications to environmental problems. Not open to chemistry majors. Pre- or corequisite: CHEM 200, CHEM 201, or CHEM 202. Annually.

CHEM 204  Physical Chemistry for Chemical Engineers  2.0; 2 cr.
An introduction to the basic principles of chemical kinetics, surface phenomena and colloids: reaction rates and mechanism; theories of reaction rates; catalysis; photochemistry; colloids; adsorption on surfaces; surface analytical techniques. Prerequisites: CHEM 102 and CHEM 102L. Not open to chemistry students. Each Summer.

CHEM 205  Introductory Chemistry Laboratory  1.4; 2 cr.
A laboratory course on the methods of quantitative analysis, physical chemistry measurements, and inorganic semi-micro qualitative analysis. Not open to chemistry majors. Pre- or corequisite: CHEM 200, CHEM 201, or CHEM 202. Each semester.

CHEM 206  Quantitative Analysis  3.4; 4 cr.
A course that covers gravimetric and volumetric techniques; acid/base, complex formation, and redox titrations; electrochemistry and an introduction to chromatography and spectrophotometric analysis. This course is designed for biology majors. Not open to chemistry majors. Students cannot receive credit for both CHEM 206 and CHEM 215–216. Prerequisite: CHEM 201. Each semester.

CHEM 207  Survey of Organic Chemistry and Petrochemicals  4.0; 4 cr.
A course of basic experiments in organic chemistry, including synthesis and techniques of separation and purification of organic compounds. Students cannot receive credit for more than one course among CHEM 209 and CHEM 210. Pre- or corequisite: CHEM 208. Each semester.

CHEM 208  Brief Survey of Organic Chemistry  3.0; 3 cr.
A brief survey designed for students majoring in agriculture or public health that covers the following topics: hydrocarbons, stereoisomerism, organo halogens, oxygen containing groups, alkenes, alkanes, cycloalkanes, alcohols and ethers, aldehydes and ketones, carboxylic acids and derivatives, amines, phenols and ary halides. This course surveys polymers, petrochemicals and their general uses in industry. Designed for chemical engineering students. Students cannot receive credit for both CHEM 208 and CHEM 211. Prerequisites: CHEM 102 and CHEM 102L or equivalent. Each semester.

CHEM 209  Introductory Organic Laboratory  1.4; 2 cr.
A course of basic experiments in organic chemistry, including synthesis and techniques of separation and purification of organic compounds. Designed for chemistry majors and premedical study. Students cannot receive credit for more than one course among CHEM 209 and CHEM 210. Pre- or corequisite: CHEM 208. Each semester.

CHEM 210  Organic Laboratory for Non-Majors  1.4; 2 cr.
Basic experimental techniques in organic analytical chemistry (melting and boiling point, chromatography, distillation, extraction, recrystallization), performing reactions in synthetic organic chemistry. Students cannot receive credit for more than one course between CHEM 209 and CHEM 210. Pre- or corequisite: CHEM 212. Each semester.

CHEM 211  Organic Chemistry I  3.0; 3 cr.
An introduction to organic chemistry organized according to functional groups. This course covers synthesis, properties, and reactions of aliphatic and aromatic hydrocarbons and alkyl halides, with emphasis on mechanistic and stereochemical aspects of organic reactions. Designed for chemistry majors and premed study. Students cannot receive credit for both CHEM 208 and CHEM 211. Prerequisite: CHEM 201. Each semester.

CHEM 212  Organic Chemistry II  3.0; 3 cr.
Synthesis, properties, and reactions of organic functional groups, including alcohols and ethers, aldehydes and ketones, carboxylic acids and derivatives, amines, phenols, and ary halides; chemistry of difunctional compounds and of molecules of biological importance, including carbohydrates, proteins, and nucleic acids; and organic structure determination by spectroscopic methods. Emphasis is placed on reaction mechanism and stereochemistry, as well as on the design of multi-step syntheses. Designed for chemistry majors and premed study. Prerequisite: CHEM 211. Each semester.

CHEM 215  Analytical Chemistry  3.0; 3 cr.
A course that covers fundamental analytical processes, including solution equilibria, titrations, electrochemical theory and applications, chromatography and spectrophotometric techniques. Students cannot receive credit for both CHEM 215 and CHEM 206. Prerequisite: CHEM 201. Annually.

CHEM 216  Analytical Chemistry Laboratory  1.4; 2 cr.
Experimental work in related areas of chemical analysis and instrumentation; acid/base titrations, pH measurements, complexometric analysis, electrochemical determination of electrode potentials and ion activities; ion-selective electrodes; spectrophotometric analysis. Pre- or corequisite: CHEM 215. Annually.
CHEM 217 Thermodynamics and Chemical Dynamics 3.0; 3 cr.
A course that covers the basic principles of chemical thermodynamics and chemical dynamics; mathematical machinery of the laws of thermodynamics; heat, work, and energy; first, second, and third laws of thermodynamics; thermodynamics of chemical reactions; thermodynamics of solutions; transport properties: diffusion, viscosity, ion transport, thermal conductivity; chemical kinetics; collision theory; activated complex theory. Prerequisites: CHEM 201 and MATH 201. Annually.

CHEM 218 Molecular Structure 3.0; 3 cr.
Failures of classical physics, quantum theory, Schrödinger equation, particle in a box, harmonic oscillator, rotational motion, hydrogen atom, atomic orbitals, spin, Pauli exclusion principle, complex atoms, term symbols, molecular structure, hybridization, Hückel theory, rotation, vibration, and electronic spectra. Students cannot receive credit for both PHYS 212 and CHEM 218. Prerequisites: CHEM 201 and MATH 201. Annually.

Chemistry 219 Analytical and Instrumental Chemistry for Chemical Engineers 3.0; 3 cr.
An introduction to chemical measurements and modern instrumental methods of chemical analysis: sample preparation; error analysis; chemical separations; chromatographic; spectroscopic; electrochemical, and surface analysis techniques. Prerequisite: Not open to chemistry students. Prerequisites: CHEM 102 and CHEM 102L. Annually.

CHEM 220 Physical Chemistry Laboratory 1.6; 3 cr.
Experiments in thermodynamics, kinetics, electrochemistry, spectroscopy, and exercise in computational chemistry. Prerequisite: CHEM 217, pre- or corequisite: CHEM 218. Annually.

CHEM 225 Organic Structure Determination 1.6, 3 cr.
Experiments in the techniques of purification, separation, and synthesis of derivatives of organic compounds; theory and practice in the analysis of organic compounds by infrared, ultraviolet-visible spectrophotometry, mass spectrometry, and nuclear magnetic resonance; identification of pure compounds and of components of mixtures of organic compounds by chemical and spectral methods. Prerequisite: CHEM 212. Annually.

CHEM 227 Technical Analysis 1.4, 3 cr.
Applications of chemical analysis to the analysis of natural and industrial products such as water, milk, textiles, liquors, oils, petroleum. Industrial techniques such as sample preparation and preconcentration. Separation and identification techniques: extraction, chromatography, and spectroscopy. Prerequisite: CHEM 215. Alternate years.

CHEM 228 Inorganic Chemistry 3.0; 3 cr.
Atomic structure, molecular structure (VBT, MOT), molecular shape (VSEPR), symmetry and group theory, the structure of solids (metals, ionic), acids and bases (Brønsted, Lewis, HSAB, solvents). Prerequisite: CHEM 201. Annually.

CHEM 229 Coordination Compounds 3.0; 3 cr.
A course that covers d-metal complexes (structures and symmetries, bonding and electronic structure, reactions of complexes); electronic spectra of complexes; reaction mechanisms of d-block complexes (ligand substitution reactions in square-planar and octahedral complexes, redox reactions, photochemical reactions). Prerequisite: CHEM 228. Annually.

CHEM 230 Senior Seminar 1 cr.
A literature search of a specific topic in chemistry. A written report and oral presentation in a seminar form. Prerequisite: Senior standing. Each semester.

CHEM 231 Organic Synthesis 1.4; 3 cr.
Experiments in multistep synthesis of organic compounds, with an emphasis on methods used for synthesis and isolation, and characterization of intermediates and products. Pre- or corequisite: CHEM 212. Annually.

CHEM 232 Inorganic Synthesis 1.4; 3 cr.
Experiments in synthesis, separation, purification, and characterization of inorganic main-group and transition metal compounds by IR, UV-Vis, NMR, and ESR spectroscopy. Prerequisite: CHEM 228. Annually.

CHEM 233 Topics in Physical Chemistry 3.0; 3 cr.
A course that covers a selection of topics in thermodynamics, advanced kinetics, and techniques in physical analysis; thermodynamics of phase transformation; theoretical and experimental aspects of rates of reactions; rate laws of complex reactions, catalysis, adsorption isotherms, spectroscopic techniques (e.g., laser spectroscopy, NMR, EPR); surface analysis and imaging techniques; X-ray crystallography. Prerequisite: CHEM 217; and pre- or corequisite: CHEM 218. Annually.

CHEM 234 Instrumental Analytical Chemistry 3.0; 3 cr.
A course that provides students with a solid knowledge in the chemistry of separation and identification. It introduces chemistry students to many analytical techniques and instruments that are widely used in different laboratories in the fields of chemistry, chemical engineering, environmental health, biochemistry, forensic science, toxicology, industrial hygiene, medicine, pharmacology, pharmacy, geology, agriculture, and other industrial applications. It includes chemometry and detailed description of sample preparation techniques; electroanalytical techniques (potentiometry, electrogravimetry, coulometry and voltammetry); spectroscopic methods (components of optical instruments, optical atomic spectrometry, atomic absorption and atomic fluorescence spectrometry, atomic emission spectrometry, molecular luminescence spectrometry); separation methods (liquid, gas, supercritical-fluid, chiral and capillary electrophoresis chromatography) and related hyphenated (coupled) techniques (GC/MS, HPLC/APCI-APPI-ESI/MS). Prerequisite: CHEM 215, Pre or corequisite CHEM 216; Annually.

CHEM 235 Special Topics in Chemistry 3.0; 3 cr.
Prerequisite: senior standing in chemistry. Alternate Years.

CHEM 299 Independent Study 3 cr.
Independent chemical research carried out under the direction of a faculty member, including presentation of the results in the form of a senior thesis. Offered to senior students in good standing, by arrangement with the project director. Each semester.
### 34 + 6 credits in Chemistry

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences</th>
<th>Natural Sciences (44-47)</th>
<th>Quantitative Thought (9)</th>
</tr>
</thead>
</table>
| Lecture Courses (57–63) | • Required Arabic course: 201A or any General Education Arabic communication skills (3)  
• Required English courses: 203(3), 204(3) | • Required credits in the humanities: 12 credits including 6 credits from CVSP | • 6 credits required¹ | • Chemistry courses (24–30)  
Core: CHEM 201(3), 211(3), 212(3), 215(3), 217(3), 218(3), 228(3), 229(3)  
Electives¹: CHEM 233(3), CHEM 234(3), BIOL 220(3)  
• Science courses (12 cr.): PHYS 211(3) | • Math and Computer Science courses: MATH 201(3), MATH 202(3), CMPS 209 or 200(3) |
| Seminar (1) | | | | CHEM 230(1) |
| Laboratory (13–19) | | • Chemistry courses (9–15)  
Core: CHEM 201L(1), CHEM 216(2), 220(3), 225(3) Electives²  
CHEM 231(3), 232(3)  
• Science courses (1): PHYS 211L | | • Computer Science (3): CMPS 209 or 200(3)³ |
| Research project (0 or 3) | | | | • CHEM 299(3)⁴ |

¹ The number of free elective credits totals 10. Students can fulfill the economics and social sciences requirements in the various modes of analysis from these credits.

² Students take, in addition to the 33 credits of core chemistry courses and the seminar course (230) 6 credits of the following elective courses of chemistry or biochemistry: CHEM 231, CHEM 232, CHEM 233, BIOL 220.

³ CMPS 209 is counted only once in the science credits above (53-56). It is, however, included and counted in both lecture and lab modes of analysis.

⁴ Not a requirement, could be taken as part of the 10 credits.
Civilization Sequence Program (CVSP)

Director: Jarrar, Maher Z.
Professors: Bornedal, Peter H.; Jarrar, Maher Z.; Meloy, John L.; Myers, Robert; Saumarez Smith, Richard W.
Associate Professors: El-Bizri, Nader; Genz, Hermann P.; Harb, Sirene H.; Hout, Syrine S.; Nassar, Christopher S.; Wrisley, David J.
Assistant Professors: Currell David A.; Fugate, Courtney; Gallagher, Robert L.; Hartwiger, Alexander G.; Mejcher-Atassi, Sonja H.; Newson, Paul G.; Wick, Alexis N.
Senior Lecturers: Amyuni, Mona T.; Shebaya, Peter H.
Lecturers: Bualuan, Hayat H.; Maktabi, Hadi; Rihan, Mohamed A.; Sabra, George F.; Sharif, Malek
Instructors: Abdelsater Hussein; Abou Zaki, Said; Arasoghli, Aida A.; Bu-Ali, Nadia; Dibo, Amal G.; Hassan, Hani R.; Khoury, Samira N.; Merrifield, William D.; Tomeh, Edmond J.
Visiting Instructor: Kuang, Yafeng

The Civilization Sequence Program (CVSP) at the American University of Beirut is a unique, interdisciplinary space for critical inquiry into ideas that inform civilization.

Mission Statement

The mission of the Civilization Sequence Program is to provide undergraduate courses in the humanities that support the American University of Beirut’s goals in general education and the advancement of knowledge. CVSP is committed to engaging students from all the faculties of the University in the study of primary texts. The three major goals of the program are to develop critical skills and creative, flexible thinking; to promote an awareness of different civilizations; and to uphold dialogue as an essential skill of life.

Requirements

According to the General Education requirements at AUB, all students in the Faculty of Arts and Sciences are required to take a total of twelve credits in the humanities.

A minimum of six credits of those twelve must be taken from CVSP courses 201-208. Students must complete one course from each of the following two sequences; that is, one course from Sequence I and to be followed prior to graduation by one course from Sequence II. (Any Sequence I course is prerequisite for all Sequence II courses.)

\(^{\text{a}}\) Part time
Civilization Sequence Program (CVSP)

Sequence I
CVSP 201 (each semester): Ancient Near East and Classical Civilizations (3 hrs)
CVSP 202 (each semester): Medieval, Islamic, and Renaissance Civilizations (3 hrs)
CVSP 205 (annually): Ancient, Medieval, Islamic, and Renaissance Civilizations (3 hrs)
CVSP 207 (annually): Ancient, Medieval, Islamic, and Renaissance Civilizations (Thematic) (3 hrs)

Sequence II
CVSP 203 (each semester): Enlightenment and Modernity (3 hrs)
CVSP 204 (each semester): Contemporary Studies (3 hrs)
CVSP 206 (annually): Modern and Contemporary Studies (3 hrs)
CVSP 208 (annually): Modern and Contemporary Studies (Thematic) (3 hrs)

The remaining six credits may be taken by choosing any two courses from the approved list of General Education humanities courses offered in FAS departments/programs.

The following CVSP courses are included among the General Education humanities courses: CVSP 201, 202, 203, 204, 205, 206, 207, 208, 212, 215, 216, 217, 250 and 251.

The following CVSP courses are not included among the General Education humanities courses: CVSP 230, FREN 201, 202, CHIN 201, 202, 203.

Explanation
- Since the critical skills built into the Sequence I courses significantly help the student succeed in Sequence II, students are required to take a Sequence I course before taking a Sequence II course.
- Students must have sophomore status or above to take a Sequence I course, and late sophomore status or above to take a Sequence II course. Students have late sophomore status if they have at least 26 sophomore credits already on their record.
- Sequence I and Sequence II courses may not be taken simultaneously unless a Sequence I course has already been completed.

Restrictions
- CVSP 205 overlaps with 201 and 202. Thus, CVSP 205 cannot be taken if the student has taken either 201 or 202, and vice versa.
- CVSP 206 overlaps with 203 and 204. Thus, CVSP 206 cannot be taken if the student has taken either 203 or 204, and vice versa.
- The above restrictions do not apply to CVSP 207 and 208, as they do not overlap with any other core course (201-206).

Prerequisites
- ENGL 102 or its equivalent is a prerequisite for all CVSP courses 200 and above.
- Freshman students who have not completed two semesters may not enroll in CVSP courses numbered 201–208. They will not receive credit for these courses. For all other CVSP courses numbered 200 and above, freshman students may enroll only with prior consent of the instructor.

Sequence I and Sequence II Course Offerings

CVSP 201 Ancient Near East and Classical Civilizations 3.0; 3 cr.
An introduction to fundamental elements of Ancient Mesopotamian, Greek, and Roman world views that continue to influence us today. Starting with the Epic of Gilgamesh, the course moves on to explore the Greek and Roman worlds through epic, drama, history, and philosophy, in some of the most influential texts from that period of human history. CVSP 201 cannot be taken if the student has taken CVSP 205. Each semester.

CVSP 202 Medieval, Islamic, and Renaissance Civilizations 3.0; 3 cr.
An introduction to fundamental elements of late Classical, Medieval, Islamic, and Renaissance worldviews that continue to influence us today. This course focuses particularly on Christian and Islamic thought as presented in texts such as those of Augustine, Al Ghazali, Ibn Tufayl, Ibn Rushd, Aquinas, Dante, Ibn Khaldun, and Luther. Selected texts from the Renaissance period round off the course. CVSP 202 cannot be taken if the student has taken CVSP 205. Each semester.

CVSP 203 Modernity and Enlightenment 3.0; 3 cr.
An introduction to fundamental elements of what has come to be termed the epochs of Modernity and the Enlightenment. This course explores the emerging elements of an age of exploration, scientific advancement, and radical new ideas, through selections from authors such as Shakespeare (The Tempest), Bacon, Descartes, Hobbes, Locke, Hume, Adam Smith, Diderot, Bentham, Kant, Goethe, Shelley, Marx, and Mill. CVSP 203 cannot be taken if the student has taken CVSP 206. Prerequisite: any Sequence I course. Each semester.

CVSP 204 Contemporary Studies 3.0; 3 cr.
An introduction to some of the most seminal influences in thought that have shaped our contemporary world from the late 19th century to the present time. This course typically explores themes and developments such as evolutionary theory, Nietzschean radical critique, depth-psychology, astrophysics, philosophy of science, revolution, the absurd, existentialism, gender issues, and postcolonial literature and criticism, from both the Western and the Arab worlds. CVSP 204 cannot be taken if the student has taken CVSP 206. Prerequisite: any Sequence I course. Each semester.

CVSP 205 Ancient, Medieval, and Renaissance Civilizations 3.0; 3 cr.
A composite of CVSP 201 and 202, covering selected works from the periods described above. CVSP 205 cannot be taken if the student has taken either CVSP 201 or CVSP 202. Annually.

CVSP 206 Modern and Contemporary Studies 3.0; 3 cr.
A composite of CVSP 203 and 204, covering selected works from the periods described above. CVSP 206 cannot be taken if the student has taken either CVSP 203 or CVSP 204. Prerequisite: any Sequence I course. Annually.

CVSP 207 Ancient, Medieval, and Renaissance Civilizations (Thematic) 3.0; 3 cr.
Individualized courses designed to explore the periods covered in CVSP 201 and 202, utilizing a thematic approach. Examples of themes: Epics; Text and Context; Human Nature; Ancient, Medieval and Renaissance texts; Love: Human and Divine; Religion as Text and Tradition; Utopian Thought. May be repeated for credit on different topics. Annually.
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVSP 208</td>
<td>Modern and Contemporary Studies (Thematic)</td>
<td>3.0</td>
<td>Individualized courses designed to explore the periods covered in CVSP 203 and 204, utilizing a thematic approach. Examples of themes: Epics; Text and Context; Faith, Culture, and Modernity; Folly; Four Theories that Shaped the Twentieth Century; Gender and Cultural Production; Human Nature; Modern and Contemporary; Language, Imagination, and Poetry; Love in the Modern and Contemporary Worlds; Monstrosities in European Modernity; Science and Society; Utopian Thought. May be repeated for credit on different topics. Prerequisite: any Sequence I course. Annually.</td>
</tr>
<tr>
<td>CVSP 110</td>
<td>Gods and Creation: East and West</td>
<td>3.0</td>
<td>A course that examines different literary understandings of the origins of the universe as found in texts from a variety of world cultures. Annually.</td>
</tr>
<tr>
<td>CVSP 111</td>
<td>Youth and Rebellion in Modern Literature</td>
<td>3.0</td>
<td>An introduction to the themes and challenges of autonomy and independence as experienced by youth, studied through major literary works of the past centuries. Annually.</td>
</tr>
<tr>
<td>CVSP 112</td>
<td>Contemporary Arab Identity</td>
<td>3.0</td>
<td>An examination of literary, historical, and socio-political texts that express contemporary Arab self-awareness. Annually.</td>
</tr>
<tr>
<td>CVSP 212</td>
<td>Modern and Contemporary World Theatre</td>
<td>3.0</td>
<td>This course examines a number of plays from across different artistic, cultural and linguistic traditions. The focus will be on reading and analyzing these plays for an appreciation of aesthetic innovations; modes of theatrical expression; and their place within particular social or cultural contexts. Course materials may include filmed versions of the plays for comparison. Annually.</td>
</tr>
<tr>
<td>CVSP 215</td>
<td>A Survey of Nineteenth-Century French Literature</td>
<td>3.0</td>
<td>A survey of the major French poets and novelists of the nineteenth century with selected readings from Hugo, Lamartine, Baudelaire, and Rimbaud to Stendhal, Balzac and Zola. Prerequisite: Junior status or consent of instructor. Annually.</td>
</tr>
<tr>
<td>CVSP 216</td>
<td>A Survey of Twentieth-Century French Literature</td>
<td>3.0</td>
<td>A survey of the major French poets and novelists of the twentieth century with an emphasis on the main artistic currents from Proust, Colette, Gide, Sartre, and Camus, to surrealism in poetry and the New Novel by Robe-Grillet, Nathalie Sarraute, and Marguerite Duras. Prerequisite: Junior status or consent of instructor. Annually.</td>
</tr>
<tr>
<td>CVSP 217</td>
<td>Modern Russian Literature</td>
<td>3.0</td>
<td>Russian short stories, novels and plays have had a major impact on world literature. The course offers a close readings of texts from authors such as Gogol, Dostoyevsky, Tolstoy, Chekov, Gorky and Solzhenitsyn that reflect socio-political and psychological changes undergone in Russia from the nineteenth century to our own times. Prerequisite: Junior status or consent of instructor. Every second year.</td>
</tr>
</tbody>
</table>

Courses Restricted to Freshman Students

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>CVSP 210</td>
<td>Introduction to Feminist Theory</td>
<td>3.0</td>
<td>A course that examines feminism and its historical development through analysis and critique of the different feminist theories that have emerged during the twentieth century. Annually.</td>
</tr>
<tr>
<td>CVSP 250</td>
<td>Civilization Through the Arts I</td>
<td>3.0</td>
<td>An introduction to the appreciation of art. More of a cultural history than an art historical survey, this course aims to provide the student with general knowledge about how the understanding of art, artist and beauty/the aesthetic has changed in time and place. Annually.</td>
</tr>
<tr>
<td>CVSP 251</td>
<td>Civilization Through the Arts II</td>
<td>3.0</td>
<td>The course critically examines the terms ‘modern’ and ‘art’ and the association of modern art with Western art. It then focuses on non-Western modern art, taking Lebanon as an example. Annually.</td>
</tr>
<tr>
<td>CVSP 295</td>
<td>Special Topics in Cultural Studies</td>
<td>3.0</td>
<td>At the discretion of the program. May be repeated for credit on different topics. Prerequisite: Junior level and above, or by consent of instructor.</td>
</tr>
</tbody>
</table>

Courses Supplementary to the Regular Offerings

<table>
<thead>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVSP 212</td>
<td>Modern and Contemporary World Theatre</td>
<td>3.0</td>
<td>This course examines a number of plays from across different artistic, cultural and linguistic traditions. The focus will be on reading and analyzing these plays for an appreciation of aesthetic innovations; modes of theatrical expression; and their place within particular social or cultural contexts. Course materials may include filmed versions of the plays for comparison. Annually.</td>
</tr>
<tr>
<td>CVSP 215</td>
<td>A Survey of Nineteenth-Century French Literature</td>
<td>3.0</td>
<td>A survey of the major French poets and novelists of the nineteenth century with selected readings from Hugo, Lamartine, Baudelaire, and Rimbaud to Stendhal, Balzac and Zola. Prerequisite: Junior status or consent of instructor. Annually.</td>
</tr>
<tr>
<td>CVSP 216</td>
<td>A Survey of Twentieth-Century French Literature</td>
<td>3.0</td>
<td>A survey of the major French poets and novelists of the twentieth century with an emphasis on the main artistic currents from Proust, Colette, Gide, Sartre, and Camus, to surrealism in poetry and the New Novel by Robe-Grillet, Nathalie Sarraute, and Marguerite Duras. Prerequisite: Junior status or consent of instructor. Annually.</td>
</tr>
<tr>
<td>CVSP 217</td>
<td>Modern Russian Literature</td>
<td>3.0</td>
<td>Russian short stories, novels and plays have had a major impact on world literature. The course offers a close readings of texts from authors such as Gogol, Dostoyevsky, Tolstoy, Chekov, Gorky and Solzhenitsyn that reflect socio-political and psychological changes undergone in Russia from the nineteenth century to our own times. Prerequisite: Junior status or consent of instructor. Every second year.</td>
</tr>
</tbody>
</table>
Department of Computer Science

Chairperson: Turkiyyah, George M.
Professors: Nasri, Ahmad H.; Turkiyyah, George M.
Associate Professors: Abu Salem, Fatima K.; Attie, Paul C.; Karam, Marcel R.; Safa, Haidar H.
Assistant Professors: Elbassuoni, Shady; El Choubassi, Maha; El-Hajj, Wassim M.; Jaber, Mohamad
Senior Lecturer: Jureidini, Wadi’ N.
Instructors: Aoude, Loa; Bdeir, Mahmoud; Hamam, Mustafa; Mukaddam, Wassim G.; O瀚nessian, Hrag; Sidani-Bohsali, Hayat A.
Assistant Instructor: "Assaad Dib, Nisrine; "Fawzi, Zahraa; "Haddad, Daniel; "Kahil, Rany; "Moutaweh, Marwa

The Department of Computer Science offers a program leading to the degree of Bachelor of Science (BS) in Computer Science. It also offers a program leading to the degree of Master of Science (MS) in Computer Science. For more information about the department visit its webpage: http://www.cs.aub.edu.lb/.

BS in Computer Science

Mission Statement

The department of Computer Science prepares students for advanced study and professional careers in the dynamically changing world of computing and information technology. The BS program aims to produce graduates with a solid foundation in computing at both the theoretical and practical levels, the ability to design, build, and deploy sophisticated systems using current technologies in a broad array of areas, and an appreciation of the transformative impact that computing has had on a wide variety of disciplines. Students are trained in quantitative reasoning, the use of fundamental principles and ideas (abstraction, modularity, data structures, algorithms, computability, calculus, logic) for analysis and problem solving, and disciplined development of modern software systems. The department has vigorous research programs in graphics and multimedia, networking, high-performance computing, and software engineering and is committed to providing opportunities for students to get engaged in research in these areas.

Degree Requirements

To graduate with a B.S. in computer science a student must finish:

University General Education Requirements

- English Communication Skills 6 credits, Arabic Communication Skills 3 credits
- Humanities 12 credits, Social Sciences 6 credits, Natural Sciences 6 credits, Quantitative Thought 3 credits.

Major Requirements

- Computer science: CMPS 200, CMPS 205, CMPS 212, CMPS 253, CMPS 255, CMPS 256, CMPS 257, CMPS 258, CMPS 272, CMPS 277, CMPS 299, and nine additional credits in computer science courses numbered 220 and above
- Mathematics: MATH 201, MATH 211 (or CMPS 211), MATH 218 (or 219), STAT 230 (or 233).
- Sciences: PHYS 228, PHYS 228L

All prospective computer science majors are expected to complete CMPS 200, CMPS 205, MATH 201, MATH 211 or CMPS 211, and CMPS 212, in the sophomore year. Computer science majors are expected to complete CMPS 213, CMPS 253, CMPS 255, CMPS 256, CMPS 257, and CMPS 258 in the junior year, and maintain an average grade of at least 70 in computer science courses. Students must have an average of 67 or more in CMPS 200 and CMPS 212 before they are allowed to enroll in CMPS courses numbered 230 and above. A minor in computer science requires 18 credits: CMPS 200, CMPS 211, CMPS 212, CMPS 256, and six additional credits in computer science courses (CMPS) numbered 230 or above. A minimum of nine credits must be taken in the department. [Note: This minor is not open to EECE students.]

Sample Study Plan

A typical study plan could have the following distribution of CMPS courses:

First Year
- First Semester: CMPS 200, CMPS 211
- Second Semester: CMPS 205, CMPS 212, CMPS elective

Second Year
- First Semester: CMPS 213, CMPS 255, CMPS 256
- Second Semester: CMPS 253, CMPS 258, CMPS 277

Third Year
- First Semester: CMPS 257, CMPS 272, CMPS elective
- Second Semester: CMPS 299, CMPS elective
Course Descriptions

CMPS 101  Introduction to Computer Science  2.2; 3 cr.
Introduces the skills, concepts, and capabilities needed for effective use of information technology (IT). Includes logical reasoning, organization of information, managing complexity, operations of computers and networks, digital representation of information, security principles, and the use of contemporary applications such as effective Web search, spreadsheets, and database systems. Also includes a basic introduction to programming and problem solving through scripting web applications. Every Semester.

CMPS 200  Introduction to Programming  3.3; 3 cr.
An introduction to a disciplined approach to computer programming and problem solving, utilizing a block-structured high level language, with an emphasis on procedural abstraction and good programming style. This course covers the basic repetition and selection constructs, procedures and functions, parameter passing, and scope of variables. Each semester.

CMPS 205  Introduction to Computing Systems  1.2; 1 cr.
This course provides a broad introduction to computer science. It is meant to expose students to some of the ideas of the field as well to develop fluency in the use of information technology. The course introduces operations of computers and networks, World Wide Web and standards, systems for representing and organizing information, management of complexity, security principles and algorithmic thinking. Annually.

CMPS 206  Computers and Programming for the Arts  2.2; 3 cr.
An introduction to computers and an illustration of their use. Common applications are considered in word processing, spreadsheets, and database systems. This course also includes an introduction to the Internet and the World Wide Web. This course is meant to be a computer literacy course open to Arts students only. No credit is given to computer science majors. Students can get credit for only one of CMPS 206, CMPS 209, or EDUC 219. Annually.

CMPS 209  Computers and Programming for the Sciences  2.2; 3 cr.
A computer literacy course covering all the topics in CMPS 206. Additionally, this course provides an introduction to programming using Visual Basic or a similar language. No credit is given for computer science majors. Students can get credit for only one of CMPS 206, CMPS 209, or EDUC 219. Each semester.

CMPS 211  Discrete Structures  3.0; 3 cr.
Logical reasoning, sets, relations and functions; mathematical induction, counting, and simple finite probability theory; molecular arithmetic in different bases; recurrence relations and difference equations; truth tables and switching circuits; graphs and trees; strings and languages. This course is equivalent to MATH 211. Annually.

CMPS 212  Intermediate Programming with Data Structures  3.3; 3 cr.
A continuation of CMPS 200, this course consolidates algorithm design and programming techniques, emphasizing large programs. This course also provides a detailed study of data structures and data abstraction, and an introduction to complexity considerations and program verification. Prerequisite: CMPS 200. Each semester.

CMPS 213  C/C++programming  1.2; 1 cr.
This course exposes students to the C and C++ programming languages. The course covers basic syntax, defining structures and classes, I/O, pointers, arrays, memory management, references, overloaded operators, templates, the Standard Template Library, inheritance and polymorphism. Annually.

CMPS 230  Digital Media Programming  3.0; 3 cr.
The class is an introduction to digital media programming and processing. The course explains the essential technology behind images, animations, sound, and video and how to write interactive programs that manipulate these media in creative ways. The class assumes basic knowledge in Java or a first course in programming. Prerequisite: CMPS 200.

CMPS 251  Numerical Computing  3.1; 3 cr.
Techniques of numerical analysis: number representations and round-off errors, root finding, approximation of functions, integration, solving initial value problems, Monte-Carlo methods. Implementations and analysis of the algorithms are stressed. Projects using MATLAB or a similar tool are assigned. Prerequisites: (CMPS 200 or EEEC 230) and MATH 201. This course is equivalent to MATH 251. Annually.

CMPS 253  Software Engineering  3.0; 3 cr.
A course that introduces the fundamentals of software engineering, with emphasis on the requirements elicitation and specification, and analysis and design phases of the software life cycle. Specifications are given as a set of operations (with pre- and post-conditions), and using a generic data model, and the design as a module dependency diagram where both data and procedural decomposition are emphasized. The course also introduces verification and testing of a design with respect to its specification, and the use of modularity and decomposition to ensure tractability of the verification. Students will apply the concepts learned to develop a software system. Prerequisite: CMPS 212. Annually.

CMPS 255  Computer Architecture  3.0; 3 cr.
A structured overview of the fundamentals of designing digital computer systems. Topics covered include digital logic and systems, machine level representation of data, assembly level and machine organization, memory system organization and architecture, CPU implementation and virtual machines, and exposure to one or more micro/mini architectures. Prerequisites: CMPS 211 and CMPS 212. Annually.

CMPS 256  Algorithms and Data Structures  3.0; 3 cr.
A systematic study of algorithms and their complexity. Topics include techniques for designing efficient computer algorithms, proving their correctness, and analyzing their complexity; as well as advanced searching, sorting, selection, graph and matrix algorithms. Prerequisites: CMPS 211 and CMPS 212. Annually.

CMPS 257  Theory of Computation  3.0; 3 cr.
A course that covers basic theoretical principles embodied in automata and grammars. Topics include regular expressions, finite automata, context-free grammars and parsing, pushdown automata, closure properties, Turing machines, Church’s thesis, reductions and decidability. This course also provides a quick introduction to complexity theory. Prerequisites: CMPS 211 and CMPS 212. Annually.

CMPS 258  Programming Languages  3.0; 3 cr.
A course on the principles and programming styles that govern the design and implementation of contemporary programming languages, a history and overview of programming languages, fundamental issues in language design, and an introduction to language translation. This course focuses on design issues in imperative, object-oriented, functional, and rule-based paradigms. This last paradigm will be used to introduce intelligent systems issues. Languages such as C, C++, Haskell, and Prolog are used to illustrate key concepts. Prerequisite: CMPS 212. Annually.
CMPS 272  Operating Systems  3.0; 3 cr.

An overview of operating systems and net-centric computing. Topics include operating system principles, scheduling and resource management, virtual memory, file systems, concurrent processing and synchronization, security and protections, the Internet, network structures, distributed operating systems, and Web technologies and operating systems (URL, HTML, HTTP, applets). A case study of a contemporary operating system like UNIX accompanies the course. Prerequisites: CMPS 253 and CMPS 256. Each semester.

CMPS 273  Systems and Network Programming  3.0; 3 cr.

This course focuses on the programming aspects of networking protocols. Topics include: designing and building programming applications that use computer networks, fundamental concepts required to build iterative and concurrent client/server networking applications using sockets. Then it moves to explain low level networking programming and other advanced socket topics. The course also presents the emerging peer-to-peer computing along with some tools needed to develop P2P applications. Prerequisite: CMPS 272. Annually.

CMPS 274  Compiler Construction  3.0; 3 cr.

A course that covers syntax specifications of programming languages, parsing theory, top-down and bottom-up parsing, parser generators, syntax-directed code generation, symbol table organization and management, dynamic storage allocation, code optimization, dataflow analysis, and register allocation. Prerequisites: CMPS 255, CMPS 258 and CMPS 257. Biennially.

CMPS 277  Database Systems  3.0; 3 cr.

An overview of the nature and purposes of database systems and an introduction to data modeling: entity relationship model, relational model with relational algebra, relational calculus and SQL; integrity constraints; file organization and index files; normalization. Prerequisite: CMPS 256. Annually.

CMPS 278  Web Programming and Design  3.0; 3 cr.

This course introduces the fundamentals needed to program on the Internet, and the state of the art technologies used in designing and developing rich multi-tiered web based applications. It presents the basics of client-side/server-side web programming and the skills and tools needed to create dynamic Web-based applications. It provides in-depth coverage of various markup languages (XHTML, Dynamic HTML and XML) and their associated cascading style sheets, several client side and server side scripting languages (JavaScript, PHP) in addition to AJAX-enabled rich Internet applications, client-side technologies, web services, Web Servers, and multi-tiered applications using relational database systems. Prerequisite: CMPS 200. Annually.

CMPS 281  Numerical Linear Algebra  3.0; 3 cr.

A course on direct and interactive methods for solving general and special systems of linear equations, covering LU decomposition, Choleski decomposition, nested dissection, marching algorithms; Jacobi, Gauss-Seidel, successive over-relaxation, alternating directions, and conjugate gradient iterative methods. This course is equivalent to MATH 281. Prerequisites: (MATH 218 or 219) and (MATH 251 or CMPS 211). Annually.

CMPS 282  Advanced Software Engineering  3.0; 3 cr.

A course on state of the art software engineering for large distributed and concurrent systems. Fundamental principles and concepts for specifying, designing, analyzing, implementing, and testing such systems. Concurrent object oriented paradigms. Design patterns. Use of tools. Documentation using both formal and informal descriptions. Students will develop at least one large software system as part of the course. Prerequisite: CMPS 253. Annually.

CMPS 284  Computer Networks  3.0; 3 cr.

An introduction to basic data communication, network architecture, protocols, local area networks, and wide area networks. Special emphasis is placed on the TCP/IP protocol suite. The BSD socket library is presented. Prerequisite: CMPS 255. Annually.

CMPS 285  Computer Graphics  3.0; 3 cr.

A course that covers the practice of, and underlying mathematical foundation for, interactive graphics programming. Topics include basic graphics systems, graphics primitives and attributes, windows and viewports, clipping, geometric transformations, color systems, 2D texture mapping, and introduction to 3D graphics. Programming in OpenGL will be used. Prerequisite: CMPS 212. Annually.

CMPS 286  Computer-Aided Geometric Design  3.0; 3 cr.

A course that discusses the representation of free-form curves and surfaces in modeling objects by computers, including curve approximation and interpolation, spline curves (Bezier and B-splines), visual smoothness of curves, geometric continuity, parameterization of curves, introduction to surface interpolation and approximation, and spline surfaces (Bezier and B-splines). Prerequisite: CMPS 212. Biennially.

CMPS 287  Artificial Intelligence  3.0; 3 cr.

An introduction to the principles and techniques that enable computers to behave intelligently. This course covers basic problem solving methods, knowledge representation, reasoning methods, learning from samples and from experience, expert systems and knowledge acquisition, machine learning, and neural networks. Several projects are given, some of which are in Prolog. Prerequisites: CMPS 256 and CMPS 258. Annually.

CMPS 288  Internals of Database Management Systems  3.0; 3 cr.

A course on the internals of database management systems, especially relational DBMS. Topics include query processing and optimization, transaction processing, concurrency control, recovery, distributed transactions, database security, client-server, multi-tier architectures, and web deployed database systems. Prerequisite: CMPS 277. Annually.

CMPS 289  Human Computer Interaction  3.0; 3 cr.


CMPS 296  Computer Science Tutorial  1–3 cr.

Prerequisite: Senior standing.

CMPS 297  Special Topics in Computer Science  1–3 cr.

A course on selected topics which change according to the interests of the instructors and/or students. Topics are chosen from state-of-the-art innovations in software and computer information systems. Prerequisite: Consent of instructor. Annually.

CMPS 299  Software Graduation Project  3 cr.

A course to enhance students’ skills with practical experience giving them the opportunity to integrate knowledge accumulated in different courses. In this course, students must deliver a software product, which passes through the design, analysis, implementation, testing, and evaluation stages. Prerequisites: CMPS 253, CMPS 272, CMPS 277, and Senior standing. Annually.
# 41 Credits in Computer Science

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (6)</th>
<th>Natural Sciences (10)</th>
<th>Quantitative Thought (32+9+9+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Required Arabic courses (3): ARAB 201 A or B, or any upper level course (3), as determined by placement Required English courses (usually 6): ENGL 203(3), 204(3), as determined by placement</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP Required Courses (6) Required natural(^1) science courses (6) Required physics courses (4): PHYS 228(3), 228L(1)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Required CMPS courses (32): CMPS 200(3)+205(1), 212 (3)+213 (1), 253(3), 256(3), 257(3), 258(3), 272(3) 277(3), 299(3) Required CMPS electives (9): to be chosen from CMPS courses above 220 Required mathematics courses (9): MATH 201(3), 211(3) (or CMPS 211) and one Math course to be chosen from MATH 218, MATH 219, STAT 230, STAT 233, and MATH 261. Note: since MATH 251 is equivalent to CMPS 251, it cannot count as both a computer science elective and mathematics elective One free elective (3) numbered 200 and above from outside the department</td>
</tr>
<tr>
<td>Seminar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Required Courses (6)</td>
</tr>
<tr>
<td>Laboratory</td>
<td>PHYS 228L</td>
<td>CMPS 200, 205, 212, 213</td>
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<td></td>
<td></td>
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<tr>
<td>Research Project</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Required courses (3):</td>
</tr>
</tbody>
</table>

\(^1\) Natural science courses are numbered 200 and above and drawn from biology, chemistry, geology or physics, open to science students.
Department of Economics

Mission Statement

The undergraduate program in Economics is a rigorous quantitative program which enhances students’ analytical skills and critical thinking. In addition to broader economic concepts, the understanding of economic issues pertaining to the Middle East and North Africa region is given special attention. The Department is committed to a liberal arts philosophy and the development of leadership skills in the field of economics. The Program develops its students’ professional competencies and responsible citizenship skills, and prepares them for a variety of careers in economic research, financial economics, and banking.

Degree Requirements

Students accepted in economics must attain an average of 70 or above in major courses during the first three semesters in order to remain in the program. Economics majors are expected to take ECON 213 during their sophomore year and ECON 214 during their junior year. They must also complete CMPS 209, or its equivalent; MATH 218 or MATH 219; and ACCT 210. Holders of the Lebanese Baccalaureate Philosophy section must complete MATH 101 and MATH 102 before MATH 201.

The program for a BA in economics, which consists of 36 credits of economics courses numbered 210 or above, includes ECON 211, ECON 212, ECON 213, ECON 214, ECON 217, and ECON 227.

Part time
Economics majors whose economics average falls below 70 in their first two semesters in the major will be placed on departmental probation. Majors who have an average below 70 in their economics courses at the end of their third regular semester in the major will be dropped from the major.

The minor program in economics requires 18 credits: ECON 211, ECON 212, and ECON 214, plus three electives other than ECON 213, chosen from available economics offerings provided their prerequisites (or equivalent) have been satisfied.

The requirements for a BA degree in Economics are 90 credits for students entering the department at the sophomore level. The distribution of these courses is as follows:

### University General Education Requirements
- Refer to the section on “General University Academic Information: General Education Requirements” in this catalogue.

### Major Requirements
- Major Courses: 36 credits of Economics courses including 18 credits as required courses, and 18 credits as elective economics courses.
- Electives outside the Department: 12 credits of free electives.

Transfers from other programs to a major in economics require a cumulative average of 70 or more, a minimum grade of 70 in each of ECON 211, ECON 212, and ENGL 203; and a minimum cumulative average of 70 in MATH 201 and MATH 202.

### Course Descriptions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 101</td>
<td>Introduction to Microeconomics</td>
<td>3.0; 3 cr.</td>
<td>An introductory survey of the principles of microeconomics, designed primarily for freshman students. Annually.</td>
</tr>
<tr>
<td>ECON 102</td>
<td>Introduction to Macroeconomics</td>
<td>3.0; 3 cr.</td>
<td>An introductory survey of the principles of macroeconomics, designed primarily for freshman students. Annually.</td>
</tr>
<tr>
<td>ECON 203</td>
<td>Survey of Economics</td>
<td>3.0; 3 cr.</td>
<td>Elementary principles of microeconomics and macroeconomics and applications. No credit is given for students majoring in economics. Students cannot receive credit for both ECON 203 and ECON 211, ECON 212. Each semester.</td>
</tr>
<tr>
<td>ECON 211</td>
<td>Elementary Microeconomic Theory</td>
<td>3.0; 3 cr.</td>
<td>General principles of microeconomics; includes elements of supply and demand, consumer behavior, costs, market structures, and income distribution. Students cannot receive credit for both Econ 211 and AGSC 212, however the courses will not be treated as equivalent. Each semester.</td>
</tr>
<tr>
<td>ECON 212</td>
<td>Elementary Macroeconomic Theory</td>
<td>3.0; 3 cr.</td>
<td>General principles of macroeconomics; aggregate supply and demand framework is used to analyze overall movements in prices and national output, inflation and unemployment, and monetary and fiscal policies. Students cannot receive credit for both ECON 203 and ECON 212. Each semester.</td>
</tr>
<tr>
<td>ECON 213</td>
<td>Economic Statistics I</td>
<td>3.0; 3 cr.</td>
<td>Measures of dispersion; elements of probability theory; sampling, sampling distribution, estimation and hypothesis testing, and simple regression. Students can receive credit for only one of ECON 213, STAT 201, STAT 210, STAT 230, BUSS 200, or EDUC 227. Each semester.</td>
</tr>
<tr>
<td>ECON 214</td>
<td>Economic Statistics and Econometrics</td>
<td>3.0; 3 cr.</td>
<td>Classical linear regression model and the multiple regression model in matrix form; the criteria for estimators; multicollinearity, serial correlation, heteroskedasticity; identification and estimation of simultaneous equation models and applications. Prerequisites: ECON 211, ECON 212, ECON 213 or STAT 201, STAT 210, STAT 230, BUSS 200, EDUC 227, and MATH 201. Each semester.</td>
</tr>
<tr>
<td>ECON 215</td>
<td>Applied Econometrics</td>
<td>3.0; 3 cr.</td>
<td>A comprehensive treatment of econometric techniques applied in time series models, stationary time series models, modeling economic time series; multi-equation time series models; cointegration; and applications. Prerequisite: ECON 214. Annually.</td>
</tr>
<tr>
<td>ECON 217</td>
<td>Intermediate Price Theory</td>
<td>3.0; 3 cr.</td>
<td>Theory of allocation of resources; consumers' choice and classical demand theory, exchange and welfare; theory of production and costs; price and output determination under alternative market structures; game theory and applications to oligopoly. Prerequisites: ECON 211 and MATH 201. Each semester.</td>
</tr>
<tr>
<td>ECON 218</td>
<td>Income Distribution and Welfare Economics</td>
<td>3.0; 3 cr.</td>
<td>Factor markets and theories of income distribution, general equilibrium and input-output analysis, welfare economics. Prerequisite: ECON 217. Annually.</td>
</tr>
<tr>
<td>ECON 219</td>
<td>Economics of Financial Markets</td>
<td>3.0; 3 cr.</td>
<td>A survey of capital markets and asset pricing models; determination of the links between financial markets, monetary policy, and economic growth. Prerequisites: ECON 214 and ECON 227. Annually.</td>
</tr>
<tr>
<td>ECON 221</td>
<td>History of Economic Doctrines</td>
<td>3.0; 3 cr.</td>
<td>A survey of the history of economic thought, both theory and policy, with an emphasis on contemporary economic thought. Prerequisites: ECON 217 and ECON 227, or consent of instructor. Annually.</td>
</tr>
<tr>
<td>ECON 222</td>
<td>Labor Economics</td>
<td>3.0; 3 cr.</td>
<td>A survey of the demand for and supply of labor, investment in human capital, market structure and efficiency of labor markets, collective bargaining, income distribution, and unemployment. Prerequisite: ECON 217. Annually.</td>
</tr>
<tr>
<td>ECON 223/224</td>
<td>Economics of the Middle East</td>
<td>3.0; 3 cr.</td>
<td>A study of the resource endowment of the Arab Middle Eastern economies; their development experience, and the general outlook for growth and development. Prerequisites: ECON 211 and ECON 212. Occasionally.</td>
</tr>
</tbody>
</table>
ECON 227 Intermediate Macroeconomics 3.0; 3 cr.
A study of the aggregate approach to economics, including the determination of output, employment, the rise of interest rates, and the price level. Inflation and stabilization policies, budget deficits and the national debt, business cycles, theories of consumption, and investment behavior. Prerequisites: ECON 211 and 212, MATH 201, corequisite MATH 202. Each semester.

ECON 228 Intermediate Monetary Economics 3.0; 3 cr.
Central banking and instruments of monetary management, alternative theories of the demand for money, the balance of payments and the processes of its adjustment. Prerequisite: ECON 227. Annually.

ECON 230 Economic History 3.0; 3 cr.
Economic development of Europe and other areas up to 1914, with special emphasis on a number of distinct problems in different countries and historical periods. Prerequisites: ECON 211 and ECON 212. Occasionally.

ECON 232 Economic Policy in Developing Countries 3.0; 3 cr.
Economic policy in developing countries in the context of globalization, policy challenges facing developing countries, impact of regional blocs, and requirements for successful integration into the world economy. Prerequisite: ECON 227. Occasionally.

ECON 235 Intermediate International Trade Theory 3.0; 3 cr.
Classical trade model, the Heckscher-Ohlin theorem and subsequent theoretical developments, tariffs, domestic distortions, customs union, trade, and economic growth. Prerequisite: ECON 217. Annually.

ECON 236 Intermediate International Economic Policy 3.0; 3 cr.
Systematic analysis of policies in an open economy, the balance of payments, foreign exchange markets and adjustment under different exchange-rate standards; basic policy issues in trade and development. Prerequisites: ECON 217 and ECON 227. Annually.

ECON 237 Economic Development I 3.0; 3 cr.
Introduction to development economics; topical issues in development, market-oriented reforms, impact of globalization, urbanization, and agricultural development; recent experiences in developing countries. Prerequisite: ECON 217 or ECON 227. Annually.

ECON 238 Introduction to Mathematical Economics 3.0; 3 cr.
Optimization problems, dynamic analysis, difference and differential equations, linear and non-linear programming; dynamic programming and game theory with economic applications. Prerequisites: ECON 217 and MATH 201. Annually.

ECON 240 Economic Development II 3.0; 3 cr.
Models of economic development and growth; macroeconomic planning; policy formulation and implementation in developing countries. Prerequisite: ECON 227. Annually.

ECON 241 Industrial Organization and Public Policy 3.0; 3 cr.
Application of microeconomics; analysis of factors affecting market structure, conduct and firm behavior in imperfectly competitive industries; survey of theories relating to intensity of competition and maintenance of market dominance; rationale for antitrust laws. Prerequisite: ECON 217. Annually.

ECON 242 The Economics of Petroleum 3.0; 3 cr.
An analysis of the factors determining the production and pricing of oil with reference to the Arab oil countries, the world oil market, and the role of OPEC. Prerequisite: ECON 217. Occasionally.

ECON 243 Introduction to Game Theory and Economic Behavior 3.0; 3 cr.
Basic concepts and methods of game theory with applications to economic problems, Nash equilibrium, mixed strategies, zero sum games, repeated games. Prerequisites: ECON 217 and MATH 201. Annually.

ECON 295/296 Senior Seminars in Economics 3.0; 3 cr.
ECON 297 Senior Research Seminar 3.0; 3 cr.

36 Credits in Economics (18 + 18)
Department of Education

Chairperson: Ghaith, Ghazi M.
Professors: Bashshur, Munir M.; Boulaoude, Saouma B.; Ghaith, Ghazi M.; Jurdak, Murad E.
Associate Professors: Al-Hroub, Anies M.; Khamis, Vivian E.; Vlaardingerbroek, Barend P.
Assistant Professors: Al-Hroub, Anies M.; Khamis, Vivian E.; Vlaardingerbroek, Barend P.
Lecturers:  
Instructors:  

The Department of Education offers programs at both the undergraduate and graduate levels. The undergraduate level program leads to a Bachelor of Arts degree. The post-BA Diploma Program leads to a Teaching Diploma, Diploma in Special Education, or Diploma in Educational Management and Leadership. The graduate program leads to a Master of Arts degree in education.

The Department of Education offers a program leading to the degree of Bachelor of Arts in Education/Elementary.

BA Education/Elementary

Mission Statement

The Bachelor of Arts in Education/Elementary Program aims at developing students' knowledge base for teaching and competence in professional practice as well as promoting a commitment to personal professional development and active participation in the professional community. Through fulfillment of coursework, field-based experiences, and professional community service activities students are prepared to enter the field of teaching and/or graduate studies in education as reflective practitioners, literate in information and communication technology, and critical thinkers committed to the human and moral values of lifelong learning, integrity, innovation, civic responsibility, and leadership.

The bachelor's degree in education/elementary aims at developing:  
- professional understanding of children and their learning needs at the elementary level  
- broad-based competencies in methods and techniques of teaching to meet and develop learning needs  
- accurate knowledge of subject matter taught in elementary schools.

Degree Requirements

The program for the BA in elementary education is based on at least 90 credits as follows:

University General Education Requirements (36 cr.)

- Humanities (12 cr.) Group I CVSP (3 cr.), Group II CVSP (3 cr.); Humanities I (3 cr.)  
- Humanities II (3 cr.)  
- ENGL 203, ENGL 204; ARAB 201A or any General Education Arabic Communication Skills course.  
- Social sciences (6 cr.): One course must be an approved General Education course from outside the major.  
- Natural science (6 cr.)  
- Quantitative thought (3 cr.)

Education Requirements (39 cr.)

- Core Education Courses (21 cr.): EDUC 211 or EDUC 216, EDUC 215, EDUC 217, EDUC 219, EDUC 223, EDUC 230, EDUC 231  
- Specialization Courses (18 cr.):  
  \- Methods Courses (6 cr.): one of the following pairs: EDUC 240 and EDUC 251 (Arabic and social studies), EDUC 228 and EDUC 229 (art and music), EDUC 245 and EDUC 251 (English and social studies), EDUC 252 and EDUC 257 (math and science)  
  \- Seminar (6 cr.): EDUC 291 and EDUC 292  
  \- Practicum (6 cr.): EDUC 267

Subject Matter Courses (24 cr.)

- Specialization Courses (18 cr.): These are from 200 and above. They include one course in each of math and natural science, and 12 credits to be selected from two related disciplines (Arabic-social studies, art-music, English-social studies, math-science). Special math and science courses designed for teaching in the elementary school are offered by the department (EDUC 271*, EDUC 272, EDUC 273*, and EDUC 274). EDUC 218 is required as a subject matter course for language arts concentrations (Arabic–social studies, and English–social studies).  
- Electives within Subject Matter (6 cr.): 3 credits* in either nutrition or environmental health, and 3 credits in art or music.*

General Electives (6 cr.)

Minor in Education

The department offers a minor which aims to provide a broad-based knowledge and understanding of the psychological, sociological/philosophical, and professional basis of education. The education minor consists of the following: EDUC 211 or EDUC 216, EDUC 215

* These courses may overlap with General Education Requirements

* Part time

Undergraduate Catalogue 2013–14
Diploma Programs

Teaching Diploma Programs

The Teaching Diploma Program prepares elementary and secondary schoolteachers. This requires specialization in a subject matter area that can be completed before or during professional preparation in the Department of Education. Once completed, this preparation culminates in a teaching diploma that qualifies a student to teach at either the elementary or the secondary level. The program is comprised of a total of 21 credit hours in education.

Teaching Diploma in Elementary Education

Education Course Requirements

- EDUC 215
- EDUC 230
- For students concentrating on teaching Arabic and Social Studies: EDUC 231, 240, 251, 268
- For students concentrating on teaching Art and Music: EDUC 231, 228, 229, 268
- For students concentrating on teaching English and Social Studies: EDUC 231, 245, 251, 268
- For students concentrating on teaching Math and Sciences: EDUC 231, 252, 257, 268
- An elective in education

Subject Matter Requirements

24 credit hours in courses numbered 200 or above distributed over two subject matter areas from the following combinations: a) Arabic and social studies, b) art and music, c) English and social studies, and d) math and sciences. The math and science courses offered by the Department of Education (EDUC 271, EDUC 272, EDUC 273, EDUC 274) may be considered to satisfy part of the subject matter requirement in mathematics and sciences. EDUC 218 may be used to satisfy part of the subject matter requirements for language arts concentrations (Arabic–social studies, and English–social studies).

Teaching Diploma in Secondary Education

Education Course Requirements

- EDUC 211 or 216
- EDUC 215
- EDUC 230
- Two methods courses from the sequence EDUC 237–256 plus one relevant course from the sequence EDUC 261–269
- An elective in education

Subject Matter Requirements

Students must complete the requirements for a bachelor’s degree in a subject matter area taught in elementary and/or secondary schools before they are granted this diploma. These areas include Arabic, English, health, informatics, math, and social studies. In case of a shift in major, students are required to complete a minimum of 24 credit hours in the new subject matter area in courses numbered 200 or above.

NOTE: Only courses that are in areas taught in intermediate and secondary schools qualify for subject matter courses for the purposes of the Teaching Diploma.

Methods Courses

Methods courses at the secondary level are subject matter oriented, i.e., they deal with teaching a subject matter that has been chosen by the student as a major field of specialization. The distribution is as follows:

- EDUC 237, EDUC 238: Theories and Methods of Health Education
- EDUC 241, EDUC 242: Teaching of Arabic
- EDUC 243, EDUC 244: Teaching of English as a Foreign Language
- EDUC 246–EDUC 248: Informatics Education
- EDUC 249, EDUC 250: Teaching of Social Studies
- EDUC 253, EDUC 254: Teaching of Math
- EDUC 255, EDUC 256: Teaching of Sciences

In the case of students who are actual teachers in a recognized school, special arrangements may be made with the instructors of the methods courses to adjust the practical components of the course requirements for the methods courses and the practicums.

Admission to the Teaching Diploma Programs

New students should obtain an application from the Office of Admissions and apply as new students. Applications are reviewed by the department and, when accepted, students are classified as special students working for the teaching diploma. Completion of the bachelor’s degree is a requirement for admission of new students to the teaching diploma programs. AUB students working for their bachelor’s degree at AUB have to apply to the department directly.

Qualifications for the Teaching Diploma and Official Recognition by the Lebanese Government

Teaching Diploma in Elementary Education

Students qualify for the teaching diploma upon completion of the program of study as detailed above, attaining a cumulative average of 70 or above in its courses, and receiving the recommendation of the Department of Education.

Official recognition of the diploma is granted by the government of Lebanon as equivalent to the License d’Enseignement in elementary education, if the person:

- holds the Baccalaureate Part II or equivalent
- has completed a minimum of 111 semester credits
- has completed a minimum of 45 semester credits in the field of education.
Teaching Diploma in Secondary Education

Students qualify for the teaching diploma upon completion of the program of study as detailed above, attaining a cumulative average of 70 or above in its courses, and receiving the recommendation of the Department of Education.

Official recognition of the diploma is granted by the government of Lebanon as equivalent to the License d’Enseignement, if the person:
- holds the Baccalaureate Part II or equivalent
- has a bachelor’s degree in a subject taught at the secondary level (Arabic, English, informatics, math, science, and social studies)
- has completed the diploma requirements (21 semester credits in the field of education) over and above the total number required for a Bachelor’s degree.

Diploma in Special Education

The purpose of this diploma is to provide knowledge and practical training in the area of special education for children with mild learning problems between the ages of three and fifteen years. Holders of such a diploma are expected to be able to deal with children who have learning/cognitive processing problems enrolled in special as well as in regular schools. They should be able to work as assistants to school psychologists (consulting teachers), and/or as teachers in self-contained special classes or resource rooms. Although the focus of this diploma is on methods and techniques for children with special learning needs, it has relevance to almost all educational settings, especially for children in their early stages of growth.

For admission to this program students may enroll as part of their bachelor’s degree program or after completing the bachelor’s degree. It is preferable if the undergraduate major is in education or in psychology, but students with other undergraduate majors may be considered.

For completion of this program 21 credit hours are required with a cumulative average of 70. The program is composed of the following courses:

Prerequisites (6 cr.)
- PSYC 202 (or equivalent) General Psychology
- EDUC 225 (or equivalent) Human Development and Special Education

Requirements (21 cr.)
- Basic Courses (9 cr. hrs.) EDUC 215, EDUC 221, and EDUC 222
- Methods Courses (12 cr. hrs.) EDUC 280, EDUC 281, and EDUC 283

Diploma in Educational Management and Leadership

The purpose of this diploma is to provide knowledge and practical training in the areas of educational management and leadership. Holders of this diploma are qualified to become managers of schools and educational training institutions and programs.

BA in Education

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic</th>
<th>Humanities</th>
<th>Education and Social Sciences</th>
<th>Subject Matter</th>
<th>Natural Sciences</th>
<th>Quantitative Thought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Courses</td>
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<tr>
<td></td>
<td></td>
<td>Required Arabic course: ARAB 201</td>
<td>Required in the humanities (2 credits)</td>
<td>Required Educa-</td>
<td>Required Natural Science courses (6 crs) from the approved General Education courses</td>
<td>Required Quantitative Thought courses (3 crs) from the approved General Education courses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or any General Education Arabic communication skills (3)</td>
<td>Humanities I (3)</td>
<td>tion Courses: EDUC 211 (3) or EDUC 216 (3); EDUC 215 (3); 217 (3); 219 (3); 223 (3); 230 (3); 233 (3); One social science must be an approved General Education course from outside the major</td>
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<td>Required English courses: ENGL 203 (3), ENGL 204 (3)</td>
<td>Elective (3) Art or Music</td>
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<td>Required courses (12 crs) depending on specialization</td>
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<td>Seminar (6)</td>
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<td>EDUC 291 (3); EDUC 292 (3)</td>
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<tr>
<td>Laboratory/ Research Project (12)</td>
<td>One pair of: EDUC 240/251 (6); 245/251 (6); 252/257 (6); 228/229 (6); EDUC 267 (6)</td>
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Subject Matter Concentrations (12 cr.)

One of the following four pairs

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<tr>
<th>Arabic-Social Studies</th>
<th>English-Social Studies</th>
<th>Math-Science</th>
<th>Art-Music</th>
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<tbody>
<tr>
<td>12 credits to be selected from 200 level courses in Arabic and social studies, excluding general education requirements.</td>
<td>12 credits to be selected from 200 level courses in English and social studies, excluding general education requirements.</td>
<td>12 credits to be selected from 200 level courses in the sciences.</td>
<td>12 credits to be selected from 200 level courses in art and music.</td>
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</table>

EDUC 218 is a required subject matter course.

• General Electives (6 cr.)

Course Descriptions

**EDUC 211** The School and the Social Order 3.0; 3 cr.
A course on the importance of teaching as a profession in the larger context of social and cultural change; the manner in which teaching can influence the nature and direction of change; contrasts between advanced and developing countries. *Annually.*

**EDUC 212** Educational Laws and Policies 3.0; 3 cr.
A course on the educational laws that govern public and private schools, including policies related to various educational levels, certification and equivalency issues, government approval, syllabi, book authorship, examinations, and educational plans. *Annually.*

**EDUC 213** Introduction to Educational Administration 3.0; 3 cr.
A survey of various aspects of educational administration, with emphasis on leadership theories and organizational structure, functions, and responsibilities of educational administrators, and public control of education. *Annually.*

**EDUC 215** Learning and Human Development 3.0; 3 cr.
An introduction to instructional theory, the nature of intelligence, child development, learning and behavior management, with an emphasis on the basic implications for classroom teaching. *Annually.*

**EDUC 216** Philosophy of Education 3.0; 3 cr.
A review of the development of educational thought as expressed in the writings and ideas of major philosophers. This review endeavors to deal with thought in the context of the historical times. Arab thought is included. *Annually.*

**EDUC 217** Measurement and Evaluation for Classroom Teachers 3.0; 3 cr.

**EDUC 218** Children's Literature 3.0; 3 cr.
A study of the diverse elements of ancient and modern children's literature. Topics include poetry, fairy tales, epics, myths and legends, fantasy, fiction, and illustrated stories. The skill of using literature effectively with children is particularly stressed. *Annually.*

**EDUC 219** The Use of Computer Applications in Education 2.2; 3 cr.
A course that focuses on general knowledge about the use of microcomputers in education, including the use of common computer applications such as word processing, spreadsheet, database, and presentation software in teaching/learning activities; evaluating the effectiveness of educational software in teaching/learning in various subject matter areas. *Students can get credit for only one of CPMS 200 and CPMS 200L, CMPS 206, CMPS 209, or EDUC 219. Annually.*

**EDUC 220** Instructional Media and Techniques 2.2; 3 cr.
A course that discusses the selection and implementation of instructional strategies and media that enhance learners' achievement through the use of projected materials and hypermedia technologies. A wide range of communication alternatives, especially the Internet, is covered thoroughly, with special emphasis on practical work and projects. *Annually.*

**EDUC 221** Introduction to Special Education 3.0; 3 cr.
An introduction to special education and the various categories of exceptionality, including nature, causes, educational characteristics of children with intellectual disabilities, learning disabilities, emotional and behavioral disturbance, communication disorders, visual impairment, hearing impairment, physical disabilities, autism spectrum disorder, and giftedness. *Annually.*

**EDUC 222** Introduction to Assessment in Special Education 3.0; 3 cr.
An introduction to the selection and use of assessment techniques and instruments in special education. Emphasis is placed on educational implications for learners with special needs. *Annually.*

**EDUC 223** Introduction to Guidance and Counseling 3.0; 3 cr.
An introduction to the field of guidance and counseling. The role of the counselor in school and community settings is emphasized. *Annually.*

**EDUC 225** Child and Adolescent Development 3.0; 3 cr.
A chronological study of typical and atypical cognitive, linguistic, emotional, and physical development from the prenatal period through adolescence. The relative influences and interactions of heredity and environment, and the impact of development on learning and school success are examined. *Annually.*

**EDUC 226** Personnel Management and Development 3.0; 3 cr.
Personnel policies and procedures; recruitment, salary scales, benefits, promotions and pension plans; job description and evaluation; organizing the personnel department; training and development of human resource programs in educational institutions. *Annually.*

**EDUC 227** Statistics in Education 3.0; 3 cr.
Descriptive statistics, correlation, prediction, and statistical inference as applied to educational situations. *Students who receive credit for this course cannot receive credit for any other introductory statistics course, such as STAT 201, STAT 210, STAT 230, MATH 233, or ECON 213. Annually.*

**EDUC 230** Instructional Procedures 3.0; 3 cr.
An introduction to instructional planning, teaching strategies, classroom management, and evaluation procedures. *Annually.*
EDUC 231  Reading Instruction in the Elementary School  3.0; 3 cr.  
Trends, theories, and practices in the teaching and evaluation of reading in the elementary school; alternative teaching/learning strategies for developing readiness, comprehension, and evaluation of progress in reading. *Annually.*

EDUC 247  Computer-Based Instructional Packages  2.2; 3 cr. 
A course on the design and production of computer-based educational packages using multimedia and hypermedia techniques. Students are expected to use digital technology to produce applications that are deliverable through the internet, CD-ROMs, or other digital media. *Annually.*

EDUC 271  Mathematics for Elementary Teachers I  3.0; 3 cr. 
An in-depth study of mathematical concepts and skills in pre-secondary mathematics curricula. *Annually.*

EDUC 272  Mathematics for Elementary Teachers II  3.0; 3 cr. 

EDUC 273  Science for Elementary Teachers I  3.0; 3 cr. 
An in-depth study of science concepts and skills in pre-secondary science curricula. *Annually.*

EDUC 274  Science for Elementary Teachers II  3.0; 3 cr. 
An in-depth study of science concepts and skills in pre-secondary science curricula. *Annually.*

EDUC 290  Special Topics  1-3 cr. 
A course that deals with special issues and concerns not included in regular courses. The following examples are taken from topics given during the last few years: music for elementary teachers, visual arts for elementary teachers, and trends in early childhood education. *May be repeated for credit. Annually.*

EDUC 291  Senior Seminar (Issues in Elementary Education)  3.0; 3 cr. 
A seminar intended for majors in elementary education that focuses on one or more current issues in elementary education. *Annually.*

EDUC 292  Senior Seminar (Education in Arab Countries)  3.0; 3 cr. 
A seminar intended for majors in education that focuses on educational issues in one or groups of Arab countries. *Annually.*

Methods Courses

EDUC 214  Management in Practice  1.4; 3 cr. 
Managing, planning and organizing, and personnel management; supervised training at AUB and practical experiences in schools and other institutions, such as hospitals, technical institutions, colleges, and universities under the supervision of the course instructor and professional practitioners. *Prerequisite: EDUC 213. Annually.*

EDUC 224  Instructional Supervision  1.4; 3 cr. 
Workshops in supervision methods at AUB and practical skills in schools and other educational institutions, supervised by the course instructor and professionals in the field; approaches to instructional supervision for the generalist and specialist supervisor; communicating, motivating, evaluating, and monitoring of staff and professionals; promoting individual and group development, and overseeing curriculum development.

EDUC 228  The Teaching of Art in Elementary School  2.2; 3 cr. 

EDUC 229  The Teaching of Music in Elementary School  2.2; 3 cr. 
A course on the development of students’ basic skills in music (general vocal and instruments), combined with a study of source materials in the teaching of music. This course also includes observation and practice teaching in classrooms. *Corequisite: EDUC 230. Annually.*

EDUC 237  Theories and Methods of Health Education I  2.2; 3 cr. 
An introduction to the major theories of health behavior and health promotion. Emphasis is placed on the application of health behavior theories to health promotion and education practice. *Students cannot receive credit for both EDUC 237 and HCPH 237. Corequisite: EDUC 230. Annually.*

EDUC 238  Theories and Methods of Health Education II  1.4; 3 cr. 
An introduction to the assumptions we make about communication and key elements of the communication process. This course deals with factors that inhibit communication as well as some of the functions of communication as they relate to increasing positive health behavior and group effectiveness. This course aims at enhancing writing and oral presentation skills as well as effective interaction skills with peers and supervisors at work. *Cross-listed as HCPH 203, Communication for Health Professionals. Students cannot receive credit for both EDUC 238 and HCPH 203. Corequisite: EDUC 237. Annually.*

EDUC 240  The Teaching of Arabic in Elementary Schools  2.2; 3 cr. 

EDUC 241  The Teaching of Arabic I  2.2; 3 cr. 

EDUC 242  The Teaching of Arabic II  1.3; 3 cr. 
A practicum of classroom observation and supervised practice teaching of Arabic language and literacy at the secondary level. *Prerequisite: EDUC 241. Annually.*

EDUC 243  The Teaching of English as a Foreign Language I  2.2; 3 cr. 
Theoretical background and approaches to the teaching of English as a foreign/second language; principles and techniques of teaching the basic language skills; includes classroom observation and micro teaching practices. *Corequisite: EDUC 230. Annually.*

EDUC 244  The Teaching of English as a Foreign Language II  1.4; 3 cr. 
Preparation and evaluation of teaching materials through individual and group projects; guided and supervised practice teaching in schools. *Prerequisite: EDUC 243. Annually.*

EDUC 245  The Teaching of English as a Foreign Language in Elementary School  2.2; 3 cr. 
Theoretical background and approaches to the teaching of English as a foreign/second language; principles and techniques of teaching the basic language skills; includes classroom observation and micro teaching practices. *Corequisite: EDUC 230. Annually.*
EDUC 246  Computer Programming at the School Level  2.2; 3 cr.
A course that explores computer programming techniques suitable for teaching Informatics and other subject matters at the school level. This course includes cognitive theoretical background and practical work. Special emphasis is placed on the use of programming as a means to promote thinking skills. Corequisite: EDUC 219 or EDUC 220. Annually.

EDUC 248  Methods for Teaching Informatics  2.2; 3 cr.
Concepts, trends, and skills needed to design and teach curriculum materials for Informatics education; analysis and evaluation of Informatics curriculum; methods and techniques of teaching Informatics at the school level; includes demonstrations and observation of actual computer lab sessions. Corequisite: EDUC 246. Annually.

EDUC 249  The Teaching of Social Studies I  2.2; 3 cr. 
Approaches to the teaching of history, geography, and civics; adaptation of social science concepts and generalizations to the secondary level. Corequisite: EDUC 230. Annually.

EDUC 250  The Teaching of Social Studies II 1.4; 3 cr.
A practicum of classroom observation and supervised practice teaching of social science, or history, geography, and civics in neighboring schools. Prerequisite: EDUC 249. Annually.

EDUC 251  The Teaching of Social Studies in Elementary School  2.2; 3 cr.

EDUC 252  The Teaching of Mathematics in Elementary School  2.2; 3 cr.

EDUC 253  The Teaching of Mathematics I 2.2; 3 cr.
Pedagogical and mathematical basis of various approaches in mathematics teaching in middle and secondary schools; includes demonstrations, classroom observation, and applications. Corequisite: EDUC 230. Annually.

EDUC 254  The Teaching of Mathematics II 1.4; 3 cr.
An analysis and preparation of teaching/learning materials, plans, and tests for mathematics teaching, including supervised practice teaching and individual and group meetings. Prerequisite: EDUC 253. Annually.

EDUC 255  The Teaching of Science I  2.2; 3 cr.

EDUC 256  The Teaching of Science II 1.4; 3 cr.
A review of various science curriculum projects and programs; curriculum planning, micro-teaching, and practicum in classroom observation and teaching. Prerequisite: EDUC 255. Annually.

EDUC 257  The Teaching of Science in Elementary School  2.2; 3 cr.

EDUC 261  Practicum in TEFL in Secondary School 0.6; 3 cr.
Observation and practice in classroom situations under the guidance of university course instructors and cooperating schoolteachers. Prerequisite: EDUC 243. Annually.
Department of English

Chairperson: Wrisley, David J.
Professors: Myers, Robert E.; Shaaban, Kassim A.
Associate Professors: Choueiri, Lina G.; Harb, Sirène H.; Hout, Syrine C.; Khalaf, Roseanne S.; Nassar, Christopher S.; Wrisley, David J.; Zenger, Amy A.
Assistant Professors: Arnold, Lisa R.; Currell, David; Dennison, Michael J.; Gonsalves, Joshua D.; Hartwiger, Alexander; Khoury, Nicole; Schwartz, John Pedro; Vermy, Michael; Waterman, Adam
Visiting Assistant Professors: Mehmood Ali, Tariq; Sabbagh, Omar
Instructor Avant, Doyle R.

Communication Skills Program
Director of Communication Skills: Arnold, Lisa R.
Lecturer: Jarkas, Najla
Instructors:  
1Al Kadi-Harmouch, Layla; Al-Sayyed, Amany; Baalbaki, Rula Z.; Bauer, Christopher; 2Bhulyan, Nadia; 3Dabaja, Sarwat; Deeb, Rima N.; El-Den, Najwa J.; 4Fakhreddine, Juheila; 5Farah, Jacqueline; 6Fidaoui, Diana; Fleszar, Dorota; Haidar, Rana; Iskandarani-Turk, Rima I.; 7Jabbar, Nagham; Jamous, Rima M.; Karkanawi-Blohlo, Lina A.; 8Kharroub, Hisham; Khoury, Malakeh K.; Kodeih, Rabab A.; Kurani, Amin; Lincoln, Kathryn; Maktabi, Sawsan A.; 9Mehio, Marwa; Mikati, May W.; 10Mounzer, Mia; Najjar, Jasmina; Rantisii, Rima; Riman, Souha; Shaaban, Reem Rashash; Shadid, Rima J.; 11Shalak, Maha H.; Shalhoub, Nina K.; 12Shedrawi, Shadi; Shmaysani-Shayto, Hayfa Y.; 13Shweiry, Zinnia; Sinno, Zane A.; 14Stouhi, Missan Laycy

BA in English Literature
BA in English Language

The Department of English offers two undergraduate degree programs: the BA in English literature, and the BA in English language. The department also offers communication skills courses which are part of the university general education requirements.

The department offers minors in English language, in English literature, and in Creative Writing. A minor in English literature requires 15 credits: two core courses from among ENGL 201, ENGL 205, ENGL 207, plus three other courses: one period course, and any two courses from the different categories of the literature curriculum. A minor in English language requires 15 credits: ENGL 227 and four other courses chosen from ENGL 224–238 and/or ENGL 245–294. A minor in Creative Writing requires 15 credits: ENGL 236, two courses chosen from ENGL 237, ENGL 239, ENGL 249, ENGL 250, ENGL 251, or ENGL 253. One 200-level course chosen from the offerings in Literature, and one course chosen either from the Literature offerings or from ENGL 237, ENGL 239, ENGL 249, ENGL 250, or ENGL 251.

Degree Requirements

The requirements for a BA degree in English language or English literature are 90 credits for students entering the department at the sophomore level. The distribution of these courses is as follows:

University general education requirements

Six credits of English Communication Skills and three credits of Arabic Communication Skills; 12 credits in the Humanities, including six credits of CVSP; six credits in Social Science; six credits in Natural Science; and three credits in Quantitative Thought (e.g., Computer Science or Mathematics from the approved General Education list).

Major courses

39 credits of English language and literature, with the possibility of having some of these courses in creative writing.

Electives outside the department

Nine credits in the humanities and six credits of free electives.

Students wishing to major in English are accepted provisionally until they have achieved a grade of 70 or more in ENGL 203 and ENGL 204 and in two of the four introductory courses: ENGL 201, ENGL 205, ENGL 207, and ENGL 227. Normally, the courses may be repeated only once.

The requirements for literature majors are as follows: ENGL 201, ENGL 205, ENGL 207, ENGL 212, ENGL 221, ENGL 229, ENGL 238, and two additional period courses chosen from ENGL 210, ENGL 211, ENGL 213, ENGL 214, and ENGL 215; two courses chosen from the three categories (literary genres, American literature, and comparative and world literature); and two additional courses chosen from among those numbered ENGL 210 to ENGL 292, including creative writing courses.

The requirements for language majors are as follows: ENGL 227, ENGL 228, ENGL 229, ENGL 230 or ENGL 232, ENGL 237 or ENGL 238, ENGL 231 or ENGL 294, and three additional courses chosen from among the department’s language offerings; in literature, ENGL 212 and two courses chosen from ENGL 201, ENGL 205, and ENGL 207, and one additional course from among those numbered ENGL 210 to ENGL 292, including creative writing courses.

Both literature and language majors may also take courses leading to the teaching diploma. The requirements for the teaching diploma are specified under the catalogue section Department of Education.
Communication Skills Program

Mission Statement

The Communication Skills Program adheres to the philosophy that learning to write is a dynamic process, both social and individual, that takes place over time with continual guidance and practice. The program comprises courses designed to satisfy university requirements and to meet the diverse literacy needs of AUB students. It aims to educate students to use writing and reading for learning, critical thinking, and communication in academic and other social contexts. It seeks to foster a collaborative environment within the program and across the university.

The Communication Skills Program consists of three core courses (ENGL 102, ENGL 203, and ENGL 204) and two specialized courses (ENGL 206 and ENGL 208). The Department of English also offers the Intensive English Course for those students who have not met the English Language Proficiency Requirement (ELPR).

Entry into the program (except for the specialized courses, ENGL 206 and ENGL 208) is based on scores of the AUB-EN or TOEFL or SAT Writing. The program itself provides training in communication, both oral and written, with emphasis on the reading, writing, and research skills required of university students.

Course Descriptions

ENGL 102  Enrichment Course in English  3.0; 3 cr.
A course that offers instruction in the writing of short essays of various expository types (e.g., description, comparison and contrast, cause and effect). This course emphasizes communicative fluency and accuracy. Throughout the course students are involved in authentic communicative and academic tasks, such as class discussions, informal debates, and oral presentations. Prerequisite: 500-530 on the EEE or 573-587 on the TOEFL (230-240 on the CBT or 88-95 on the IBT) or English 100. Each semester.

ENGL 203  Academic English  3.0; 3 cr.
A course designed to develop critical thinking, reading, and writing at the sophomore level. Students compose essays based on their analysis of and response to thematic articles presented in class. Prerequisite: 531–569 on the EEE or 590–653 on the TOEFL (243–280 on the CBT or 96–99 on the IBT) or ENGL 102 or English 100. Each semester.

ENGL 204  Advanced Academic English  3.0; 3 cr.
A course designed to provide rigorous training in reading comprehension, synthesis, critiquing, and research skills. Although ENGL 204 builds on many of the skills learned in ENGL 203, it differs in that it encourages more advanced independent research as well as writing and discussion in relation to a variety of issues across the curriculum. Prerequisite: 570+ on the EEE or 657+ on the TOEFL (283+ on the CBT or 99+ on the IBT) or ENGL 203. This course does not count toward graduation for students in FEA. Each semester.

ENGL 206  Technical English  3.0; 3 cr.
A course that introduces students to English used for communication in technical fields. This course focuses on reading, writing, oral communication activities, and preparation and presentation of technical reports. Prerequisite: 570+ on the EEE or 657+ on the TOEFL (283+ on the CBT or 99+ on the IBT) or ENGL 203. For students in FEA only. Each semester.

ENGL 208  English for International Business  3.0; 3 cr.
A course designed to increase the proficiency of students in English within the context of business affairs and needs. The focus of this course is on business and management data, as well as on using forms of communication familiar in business, including letters, memos, and reports. Prerequisite: ENGL 204. For Business majors only. Each semester.

English Literature Program

Mission Statement

The mission of the B.A. in Literature in the English Department is to provide a solid background in British, American, and other Anglophone literary texts, traditions, and cultures, as well as their continued relevance in a humanistic and liberal arts-based education. Cultivated by a community of teachers, scholars, and writers, undergraduate students engage with an ensemble of critical issues and develop individual interpretive theories and scholarly approaches. Upon graduation, students will be equipped to continue advanced study in English Literature, or other related disciplines, or to pursue a variety of career options in education, media, and communications.

The literature program in the Department of English has a dual purpose. It provides the humanistic discipline and training necessary for those who wish to obtain an education based on wide reading and literary study, and at the same time it provides a structure of courses useful to those who intend to pursue study in English literature. The literature program, while exposing students to the major authors, works, and movements of English and American literature through extensive class discussion and the writing of critical essays in each course, seeks also to teach students to become perceptive, critical and analytical readers.

Course Descriptions

ENGL 103  Introduction to English Drama  3.0; 3 cr.
An introduction for freshman students to drama in English. The focus of this course is on a selection of major playwrights from different periods. Eight to twelve plays are read. The plays selected may vary from year to year. Annually.

ENGL 104  Introduction to English Poetry  3.0; 3 cr.
An introduction for freshman students to poetry in English. The focus of this course is on major poets from various periods. This course may vary in content depending on the interest and expertise of the faculty available. Annually.

ENGL 105  Introduction to American Literature  3.0; 3 cr.
An introduction to selections of American writing from the colonial period to the present. Students are exposed to some major writings of various American authors. This course may vary in content depending on the interests and expertise of the faculty available. Annually.

ENGL 106  Introduction to World Literature  3.0; 3 cr.
An introduction to selected non-British and non-American literature in English with an emphasis on fictional prose. This course may vary in content depending on the interests and expertise of the faculty available. Annually.
ENGL 201  Survey of American Literature  3.0; 3 cr.  
An introduction to a broad range of major American writers and texts, most of which are drawn from the nineteenth and twentieth centuries. This course may vary in content depending on the instructor.  
Annually.

ENGL 205  Introduction to English Literature I  3.0; 3 cr.  
A course that covers English literature from Anglo-Saxon times to the later eighteenth century. Specific texts by the principal writers of these periods will be examined against the social, historical, and philosophical background of the period.  
Annually.

ENGL 207  Introduction to English Literature II  3.0; 3 cr.  
A course that continues the survey of English literature begun in English 205, moving from Blake to Eliot, through the examination of specific texts by major authors against the social, historical, and philosophical background of the period.  
Annually.

Period Courses

ENGL 210  Literature of the Middle Ages  3.0; 3 cr.  
A study of selected texts including Beowulf, Sir Gawain and the Green Knight, and a number of Chaucer's Canterbury Tales. Most texts are read in modern English translation. Attention is given to major literary forms, as well as the social and historical background of the period.  
Annually.

ENGL 211  Renaissance and Restoration  3.0; 3 cr.  
A survey of non-dramatic literature from the early Tudors to the Stuart Restoration. Writers studied may include More, Spenser, Shakespeare, Donne, Jonson, Marvell, and Milton. Attention is given to salient features of the political, social, and philosophical background of the period.  
Annually.

ENGL 212  Introduction to Shakespeare  3.0; 3 cr.  
A course in which students study representative comedies, histories, and tragedies by Shakespeare. The plays are read intensively and understood in the context of the theatrical conventions of the period and the culture of play going in early modern England, as well as the social, cultural, religious, and intellectual history of the period. Each semester.

ENGL 213  Neo-Classical and Romantic Age  3.0; 3 cr.  
A course that looks at the neo-classical principles of literature as reflected in the work of such figures as Pope, Swift, and Johnson, and then shifts to a study of romantic poetry, which is in part a reaction against Neo-Classicism.  
Annually.

ENGL 214  Victorian Literature  3.0; 3 cr.  
A course that emphasizes the major poets and prose writers of the Victorian period including Tennyson, Browning, Arnold, Dickens, Carlyle, and Wilde.  
Annually.

ENGL 215  Twentieth-Century Literature  3.0; 3 cr.  
A course that concentrates on a close reading of selected and representative British and American texts of the modern period and goes on to consider literature of the later 1900s.  
Annually.

ENGL 216  Drama  3.0; 3 cr.  
A course that focuses on representative texts drawn from British and American literature. Attention is given to the theoretical definition of dramatic form, to changes in the conception of dramatic genres, and to the nature of genre as it shapes the expectations of the reader or audience.  
Annually.

ENGL 217  The Novel  3.0; 3 cr.  
An introduction to the development of the novel as a new literary form through a close reading of a number of significant texts against a background of social and philosophical currents of the eighteenth, nineteenth, and twentieth centuries.  
Annually.

ENGL 218  Poetry  3.0; 3 cr.  
A close reading of texts drawn from British or American literature, selected to elucidate the nature of poetic genres and forms, such as lyric, epic, and satire. Some attention is given to critical theory and to relevant aspects of social and political history.  
Annually.

ENGL 219  Film as Text  3.0; 3 cr.  
Using the analytical methods of literary analysis, as well as those pertinent to the study of film, students will study a selection of influential twentieth-century film texts. Screening of films and practical analysis will form the core activities of this course.  
Annually.

ENGL 220  Travel Writing  3.0; 3 cr.  
A course that exposes the heterogeneity of travel literature by identifying its overlaps with kindred literary (sub)genres, such as autobiography, letters, memoirs, the picaresque novel, and the Bildungsroman, as well as with scientific discourse, notably ethnography.  
Annually.

ENGL 210  Introduction to Literary Theory  3.0; 3 cr.  
Students are introduced to the history of literary theory and to the dominant schools of contemporary literary study, with an emphasis on the practical application of those schools.  
Annually.

ENGL 222  Literature and Culture  3.0; 3 cr.  
A course that considers major works of literature, specifically in the context of twentieth-century cultural theory, including Marxism, post colonialism, national literatures, ethnic writings, and feminist theory. The primary intention of this course is to explore how various texts interact with their societies, or how those societies are influential in the construction of literary works.  
Annually.

ENGL 223  Literary Aesthetics  3.0; 3 cr.  
A course that locates classical literary texts in the context of ideas and theories related to art, as espoused by major figures in literary history and philosophy.  
Annually.
American Literature

ENGL 224  American Literature to 1900 3.0; 3 cr.
A course that examines the major literary movements of the period (Romanticism, Transcendentalism, Realism, and Naturalism) as present in the works of writers including Longfellow, Irving, Poe, Hawthorne, Melville, Dickinson, Whitman, Twain, and James. Annually.

ENGL 225  American Literature from 1900 to 1960 3.0; 3 cr.
A course that looks at the development of American literature in the first half of the twentieth century, starting with Realism and Naturalism and ending with the works of the Beat Generation. Major figures whose works might be examined include Cather, Wharton, Anderson, Frost, O'Neill, Fitzgerald, Hemingway, Steinbeck, and O'Connor. Annually.

ENGL 226  Contemporary American Literature 3.0; 3 cr.
A course that examines recent and current trends and movements in American literature, such as Absurdism, Post-Modernism, and ethnic literatures of the United States. Authors studied might include Morrison, Walker, Vonnegut, Heller, and Carver. Annually.

Creative Writing

ENGL 236  Introduction to Creative Writing 3.0; 3 cr.
A course that acquaints students with the techniques involved in the writing of fiction, poetry, and drama. Student work will be read in class and critiqued, and models of good writing are used to illustrate various techniques and forms. Prerequisite: ENGL 203 (or 570+ on the EEE, or 283+ on the CBT, or 99+ on the IBT). Each semester.

ENGL 237  Creative Non-Fiction 3.0; 3 cr.
This course will focus on the writing of memoir, biography, reportage, and reflective essays. Workshop discussions will be supplemented by exercises and readings selected from creative non-fiction texts. Students will be required to produce and develop a portfolio of their own original material. Prerequisite: ENGL 203 (or 570+ on the EEE, or 283+ on the CBT, or 99+ on the IBT). Each semester.

ENGL 239  Screenwriting 3.0; 3 cr.
In this course students will read and analyze screenplays, view films based on those screenplays, read theoretical texts on screenwriting and filmmaking and write screenplays. Students will also learn the technical terminology and format used in professional screenwriting, but the focus of the course will be on workshop readings and critiques of students’ scenes. Students will be required to write their own original screenplay. Prerequisite: ENGL 236. Annually.

ENGL 249  Fiction Writing 3.0; 3 cr.
This course offers students the opportunity to study and engage in the process of writing fiction. A variety of books will be examined from a practitioner’s perspective. They will be used as models for writing and to discuss the craft that informs them. Students will be required to produce and develop in a workshop setting a portfolio of their own original material. Prerequisite: ENGL 236. Annually.

ENGL 250  Poetry Writing 3.0; 3 cr.
This course introduces students to a variety of traditional and experimental poetic composition techniques and philosophies through the reading and discussion of theoretical and literary texts. Students will be required to produce and develop within a workshop setting a substantial portfolio of poems in varying styles and formats. Prerequisite: ENGL 236. Annually.

ENGL 251  Playwriting 3.0; 3 cr.
In this course students will develop and enhance playwriting skills by reading and analyzing plays from various traditions, reading theoretical texts on theater and playwriting, and presenting in class and critiquing scenes written by students. The course will culminate in a public presentation of staged scenes written by students. Prerequisite: ENGL 236. Annually.

ENGL 252  Contemporary Writers 3.0; 3 cr.
In this course, students are introduced to the most up-to-date trends in contemporary writing in the genres of short fiction, poetry, and creative non-fiction. Through reading, discussion, writing, and literary readings, students explore the culture of literary journals and small magazines, web-zines, chapbooks, and non-commercial book publishers. Prerequisite: ENGL 203 (or 570+ on the EEE, or 283+ on the CBT, or 99+ on the IBT). Annually.

ENGL 253  Critical Review Writing 3.0; 3 cr.
In this course, students study review writing as a form of creative prose. Through reading published reviews, attending arts performances, and writing their own reviews, students learn advanced critical appreciation of performance and literary arts. Prerequisite: ENGL 203 (or 570+ on the EEE, or 283+ on the CBT, or 99+ on the IBT). Annually.

Comparative and World Literature

ENGL 240  Literature and Empire 3.0; 3 cr.
A course that focuses on nineteenth- and twentieth-century texts with explicit and/or implicit connections to the ideology of British imperialism. Authors may include Kipling, Forster, Orwell, Conrad, and Lawrence. Annually.

ENGL 241  Cultural Cross-Currents 3.0; 3 cr.
A course that selects for study a specific theme or idea found in two or more national literatures. Textual comparisons serve to determine differences as well as similarities in cultural responses to common issues and concerns. Annually.

ENGL 242  Modernism and Post-Modernism 3.0; 3 cr.
A course that examines selected works of twentieth-century modernism and post-modernism, which are considered against a cultural, historical, and artistic background. Major writers studied might include Joyce, Woolf, T.S. Eliot, Beckett, Nabokov, and Garcia Marquez. Annually.

ENGL 243  Post-Colonial Literature 3.0; 3 cr.
A course that focuses on texts “writing back” to the metropolis in the era of de-colonization. Novels by authors from Africa, the Middle East, Asia, and Latin America are studied in the contexts of neocolonialism, nationalism, and post-colonial cultures and politics. Annually.

ENGL 244  Special Topics in Literature 3.0; 3 cr.
A course that varies in content and focuses on varied topics such as women writers, black writers, the epic, Arabic literature in translation, and other similar topics. May be repeated for credit. Annually.

ENGL 292  Seminar for English Majors in Literature 3.0; 3 cr.
Offered on demand. Directed reading and discussion in a selected topic, along with the writing of assigned papers. Prerequisite: an average of 80 or above in the major. Offered on demand.

ENGL 293  Directed Study in English Literature 3–6 cr.
Directed study in English literature is available. Credit for reading and discussion in a selected topic, along with the writing of assigned papers. Prerequisite: an average of 80 or above in the major. Offered on demand.

ENGL 294  Seminar for English Majors in Literature 3.0; 3 cr.
Topics and approaches vary depending on the instructor. Prerequisite: Senior standing. Annually.
BA in English Literature: 39 Credits in English

<table>
<thead>
<tr>
<th>Hours</th>
<th>English and Arabic (9)</th>
<th>Humanities (12+39)</th>
<th>Social Sciences (Min. 6)</th>
<th>Natural Sciences (Min. 6)</th>
<th>Quantitative Thought (Min. 3)</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>6+54+21</td>
<td></td>
<td>6</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Required</td>
<td>ARAB 201A, or any</td>
<td>Required 12 credits in the humanities, including 6 credits from GP (see list of approved GE humanities courses)</td>
<td>Electives (min. 6)</td>
<td>Electives (min. 6)</td>
<td>Electives (min. 6)</td>
</tr>
<tr>
<td>English</td>
<td>203, 204</td>
<td>Required English literature courses (24): ENGL 201, 205, 207, 221; two period courses; two courses chosen from the three categories: I. Literary Genres: ENGL 216, 237, 218, 219, 220; II. American Literature: ENGL 224, 225, 226; III. Comparative and World Literature: ENGL 240, 241, 242, 243, 244</td>
<td>Electives (9)</td>
<td></td>
<td></td>
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<tr>
<td>courses</td>
<td></td>
<td>Required English language courses (3): ENGL 229; Electives (6): two courses from among those numbered ENGL 231 to 292</td>
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</tr>
<tr>
<td>Seminar /</td>
<td>Elective English:</td>
<td>Electives (min. 6)</td>
<td>Electives (min. 6)</td>
<td>Electives (min. 6)</td>
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<tr>
<td>Workshop</td>
<td>ENGL 234, 237, 219, 249, 250, 251, 292</td>
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<tr>
<td>Laboratory</td>
<td>Required English Language</td>
<td>Electives (min. 6)</td>
<td>ENGL 238</td>
<td>ENGL 238</td>
<td>ENGL 212</td>
</tr>
<tr>
<td>Research</td>
<td>Required English Literature</td>
<td>ENGL 212</td>
<td>ENGL 212</td>
<td>ENGL 212</td>
<td>ENGL 212</td>
</tr>
</tbody>
</table>

English Language Program

Mission Statement

The mission of the BA program in English Language is to promote a multifaceted approach to language. The program provides students with a foundational understanding of the principles and issues within current approaches to language and introduces them to various aspects of the structure, use, and learning of English. Through teaching and mentoring, the program encourages the students to apply their analytical skills to their experience outside the classroom, and prepares them for employment in areas related to English language teaching and publishing, and for the pursuit of advanced degrees in linguistics.

The language program gives the English language major the essential foundations of post-modern linguistic readings as well as contextual selections in literature. The language courses are intended to provide an appropriate linguistic background for prospective teachers of English and a preparation for those planning to pursue graduate work in linguistics.

Course Descriptions

ENGL 107  Language and Culture  3.0; 3 cr.
A study of language in the context of ethnology. Emphasis is on the effect of social variables on language use and on the role of paralanguage (e.g., Kinesics and Proxemics) in communication. Annually.

ENGL 108  Beginning Translation  3.0; 3 cr.
An introduction to theories of translation that helps students develop their skills in translation by having them translate texts representing various written and spoken genres from English to Arabic and vice versa. Typical problems involved in such translation are highlighted and discussed. Annually.

ENGL 227  Introduction to Language  3.0; 3 cr.
A survey of current areas in theoretical and applied linguistics including the different levels of structure, the nature of language acquisition, language variation and evolution, and language teaching. Annually.

ENGL 228  Phonetics  3.0; 3 cr.
A study of the articulatory, auditory, and acoustic description of the sounds of the English language. This course also includes descriptions of the sounds of other languages, chiefly colloquial Arabic of the Eastern variety. The practical component of this course involves practice in transcription and production of sounds in most languages. Annually.

ENGL 229  History of the English Language  3.0; 3 cr.
An introductory survey of the history of the English language from its earliest Indo-European origins to the present day. The nature and changes of the language are presented by reviewing the shifts that have occurred from Indo-European, Germanic, Old English, Middle English, up to Early Modern English. Annually.
ENGL 230 Language in Society 3.0; 3 cr.
An examination of language variations in English as they relate to geographic and social factors. This course covers such topics as dialect, accent, Standard English, lingua franca, pidgin, Creole, and jargon. Additionally, the course analyzes social discourse, socio-linguistic theories, diversity and uniformity, multilingualism, speech communities, and language planning. Annually.

ENGL 231 Modern English Grammar 3.0; 3 cr.
A study of grammar through exploration and analysis. A more detailed study of word and phrase formation, pragmatics, and critical analysis of descriptive uses of grammar are covered. Annually.

ENGL 232 Psycholinguistics 3.0; 3 cr.
An introduction to the fields of first and second language acquisition, highlighting such issues as stages of acquisition, order of acquisition, and theories of language learning. The practicum part of this course involves collecting and analyzing data from learners. Topics covered include formal cognitive mechanisms relevant to knowledge and use of language, with an emphasis on modular view of the mind and its consequences for L1 and L2 language acquisition. Annually.

ENGL 233 Introduction to Translation 3.0; 3 cr.
A course that familiarizes the student with basic translation theories and offers hands-on opportunities to practice the development of basic translation skills. This course covers topics such as comparative and contrastive linguistics between Arabic and English, computerized translating machines, semiotics, registers, culture, rhetoric, and pragmatics. Annually.

ENGL 234 Gender and Language 3.0; 3 cr.
A course that explores sexism in language. This course also examines gender-based language differences in relation to status, age, historical context, and attitudes. Annually.

ENGL 235 Politics of Language 3.0; 3 cr.
An analysis of the forces that govern and shape language. Topics covered include the determinants of language use such as communicative context, power dynamics, social correctness, taboos, gender biases, and censorship. Annually.

ENGL 236 Advanced Academic Writing 3.0; 3 cr.
A course in which fluency and productivity in the forms and modes of academic writing are developed through selected readings and writing exercises. Students are taught to develop their style and proficiency in major academic writing genres. Annually.

ENGL 237 Journalistic Writing 3.0; 3 cr.
A course that exposes the student to the diverse styles of journalistic writings. Hands-on exercises in reporting, writing editorials, and conducting investigative research are components of the course. Lectures by journalists are typically integrated into the program. Annually.

ENGL 238 Applied Linguistics 3.0; 3 cr.
This course deals with the implications of the findings of theoretical and empirical research of language in all its aspects (language structure, language acquisition, and language variation and use) for the language learner and language teacher. Annually.

ENGL 239 Discourse Analysis 3.0; 3 cr.
A course that examines human discourse as a means of achieving better understanding of what language is and how it works. This course emphasizes the inter-relationship between language forms and language functions culminating in the study of speech acts and the ethnography of speaking. Topics covered include registers, cultural aspects, gender referencing, and pragmatics. Annually.

ENGL 248 Special Topics in English Language 3.0; 3 cr.
This course changes in content from year to year and focuses on varied topics in English language. May be repeated for credit. Annually.

ENGL 291 Tutorial 3 cr.
Reading and discussion of selected topics in linguistics.

ENGL 293 Seminar for English Majors in Language 3.0; 3 cr.
Topics vary depending on the instructor. Prerequisite: Senior standing. Annually.

ENGL 294 Advanced English Grammar 3.0; 3 cr.
A course that aims to provide a linguistic perspective that can penetrate the surface differences of the major English grammars and reveal their most basic features: traditional, descriptive, and transformational grammars are examined. Annually.

BA in English Language: 39 Credits in English

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12+9+39)</th>
<th>Social Sciences (Min. 6)</th>
<th>Natural Sciences (Min. 6)</th>
<th>Quantitative Thought (Min. 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Courses (6+48+21)</td>
<td>• Required Arabic course (3): ARAB 201A, or any General Education Arabic communication skills (based on placement results)</td>
<td>• Required credits in the humanities: 12 credits including 6 from CVSP (see list of approved GE humanities courses)</td>
<td>• Electives (min. 6)</td>
<td>• Electives (min. 6)</td>
<td>• Electives (min. 3)</td>
</tr>
<tr>
<td>Seminar/Workshop</td>
<td>• Elective English: ENGL 236, 237, 239, 249, 250, 251, 253</td>
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<tr>
<td>Laboratory (6)</td>
<td>• Required English: ENGL 238</td>
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<tr>
<td>Research Project (9)</td>
<td>• Required English (9): ENGL 211, 217, 218, 230</td>
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</tbody>
</table>
Department of Fine Arts and Art History

Chairperson: Kim, Thomas
Associate Professor: Franses, Henri
Assistant Professors: Assad Salha, Neville M.; Esanu, Octavian; Farhat, May A.; Harutyunyan, Angela; Kim, Thomas; Kovitz, Kasper; Krafft, Cornelia N.
Visiting Assistant Professors Assaf, Sahar; Orlandi, Paolo
Senior Lecturers: Kurani, David H.; Shebaya, Peter H.
Lecturers: Deeb, Reem A.; Zurayk, Afaf C.
Instructors: Arsani, Myriam; Ghazal, Wajid; Jamal, Ghada M.; Kheich, Rita; Meskaoui, Zeina M.; Wilson-Goldie, Kaelen; Youssef, Shawki

Mission Statement

The Department of Fine Arts and Art History educates students in the arts in all their dimensions, believing that an understanding and appreciation of this area of human endeavor is an essential element in the formation of well-rounded individuals. To that end, we offer courses in the visual arts, music and theater. In the case of our courses aimed at training practitioners, our goal is to produce students with the skills to create meaningful statements in art. In the case of our historical and theoretical courses, we introduce students to great works of art of different cultures, and aim to equip them to deal with artworks critically, and with scholarship.

The department offers two degree programs: a BA in studio arts and a BA in art history.

The department also offers minors in studio arts, art history, music, and theater.

Studio Arts Program

The studio arts program seeks to train students in skills and concepts needed to develop as practicing artists and to make meaningful statements in the visual arts. It offers a core program with flexibility in the choice of studio concentrations in painting, sculpture, and ceramics.

The requirement for a BA degree in studio arts is ninety credits for students entering the department at the sophomore level. The distribution of these courses is as follows:

Degree Requirements

University General Education Requirements

<table>
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<tr>
<th>University General Education Requirements</th>
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<tbody>
<tr>
<td>9 crs, ENGL 203, ENGL 204, ARAB 201A or any General Education Arabic Communication Skills;</td>
</tr>
<tr>
<td>12 crs, Humanities, 3 crs from CVSP sequence I, 3 crs from CVSP sequence II, 6 crs from the list of approved courses in the humanities; 6 crs, Social Sciences; 6 crs, Natural Sciences; 3 crs, Quantitative Thought.</td>
</tr>
</tbody>
</table>

Free electives outside the department

(9 crs, ENGL 203, ENGL 204, ARAB 201A or any General Education Arabic Communication Skills; 12 crs, Humanities, 3 crs from CVSP sequence I, 3 crs from CVSP sequence II, 6 crs from the list of approved courses in the humanities; 6 crs, Social Sciences; 6 crs, Natural Sciences; 3 crs, Quantitative Thought)

39 credits in the department, as follows:

- FAAH 200, FAAH 205, FAAH 218, FAAH 219, FAAH 239.
- One course from the following: FAAH 221, FAAH 222, FAAH 223.
- One course from the following: FAAH 224, FAAH 229A, B or C, or equivalent.
- One course from the following: FAAH 232, FAAH 235, FAAH 238, or equivalent.
- Two courses from one of the following concentrations: Painting - FAAH 209A, B or C, FAAH 202, FAAH 207; Sculpture - FAAH 210, FAAH 211, FAAH 212; or Ceramics - FAAH 215, FAAH 216, FAAH 217.
- Three courses from the following; at least two studio courses must be taken, one of which must fall outside of chosen concentration:
  - Studio Courses - FAAH 201, FAAH 202, FAAH 206, FAAH 207, FAAH 208, FAAH 209A, B, C or D, FAAH 210, FAAH 211, FAAH 212, FAAH 215, FAAH 216, FAAH 217, FAAH 234, FAAH 239, FAAH 286, FAAH 292.
  - Art History Courses - FAAH 221, FAAH 222, FAAH 223, FAAH 224, FAAH 225A, B or C, FAAH 226A, B or C, FAAH 227A, B or C, FAAH 228A, B or C, FAAH 229A, FAAH 229B, FAAH 232, FAAH 233, FAAH 235, FAAH 238.

The minor program in studio arts requires fifteen credits: FAAH 200; FAAH 205; six credits taken from any studio courses, and one course from FAAH 229A, B, C, D, or E or FAAH 224 or equivalent, or FAAH 235 or FAAH 238 or equivalent.

Art History Program

The art history program seeks to train students in art history skills and concepts needed to develop capabilities in art theory, research, teaching, and criticism. It offers a core program with flexibility in the choice of art history concentrations in various periods and areas, notably the Middle East.

The requirement for a BA degree in art history is 90 credits for students entering the department at the sophomore level. The distribution of these courses is as follows:
Degree Requirements

University General Education Requirements

9 hrs, ENGL 203, ENGL 204, ARAB 210A or any General Education Arabic Communication Skills; 12 hrs, Humanities, 3 hrs from CVSP sequence I, 3 hrs from CVSP sequence II, 6 hrs from the list of approved courses in the humanities; 6 hrs, Social Sciences; 6 hrs, Natural Sciences; 3 hrs, Quantitative Thought

Elective Requirements

Any one course (3 hrs) from the following group PHIL 217, GRDS 231, SOAN 250, ARCH 033, or equivalent.

Free Electives Outside the Department

(theater and music courses in the department may be allowed up to six credits):

12 hrs., (15 hrs. for students exempt from the Arabic requirement).

Major Courses

39 credits in the department, as follows:

- FAAH 200 or FAAH 205, FAAH 218, FAAH 221, FAAH 222, FAAH 223, FAAH 229B, FAAH 229D (or approved alternate).

- Two courses from the following: FAAH 232, FAAH 235, FAAH 238

- Three courses from any art history special topic group (Group 1—Ancient and Classical: FAAH 225A, FAAH 225B, FAAH 225C), (Group 2—Medieval: FAAH 226A, FAAH 226B, FAAH 226C), (Group 3—Middle Eastern and Islamic: FAAH 227A, FAAH 227B, FAAH 227C), (Group 4—Renaissance and Baroque: FAAH 228A, FAAH 228B, FAAH 228C), (Group 5—Modern and Contemporary: FAAH 229A, B, C, D, E), and one course from any remaining group.

The minor program in art history requires fifteen credits: nine credits chosen from FAAH 221, FAAH 222, FAAH 223, FAAH 224 or equivalents, and three credits from any Special Topics in Art History course (courses numbered FAAH 225A, FAAH 225B, FAAH 225C, FAAH 226A, FAAH 226B, FAAH 226C, FAAH 227A, FAAH 227B, FAAH 227C, FAAH 228A, FAAH 228B, FAAH 228C, FAAH 229A, FAAH 229B, FAAH 229C, FAAH 229D, FAAH 229E, FAAH 229F, FAAH 229G, and three credits from the following group FAAH 229D, FAAH 232, FAAH 235, FAAH 238 (or approved alternate).

Theater Program

The minor program in Theatre Arts seeks to acquaint students with basic theoretical and practical aspects of theatre performance and production. An overview of theatre past and present around the world is offered through a choice of interdepartmental courses encompassing relevant history, literature and criticism.

The minor program in Theatre requires fifteen credits: FAAH/Theatre 267, CVSP 212, FAAH/Theatre 265 or 270, FAAH/Theatre 283 or 284, and one course from the following group FAAH/Theatre 274, FAAH 286, ARAB 240, ENGL 212, ENGL 216, ENGL 251, or other theatre elective as approved by the Department.

Music Program

The minor program in Music seeks to train students in skills and concepts needed to develop as musicians, and to enhance their capacities as performers, analysts, and audience members. It offers the fundamentals of higher education in music, seeking to balance historical, theoretical, and performance aspects.

The minor program in Music requires fifteen credits: Three credits from the following group: FAAH 242, FAAH 242A, FAAH 242B, FAAH 263, FAAH 263A, FAAH 263B; FAAH 240 or FAAH 241; FAAH 247; FAAH 262; and one of the following: FAAH 2240, FAAH 2241, FAAH 2244, FAAH 2249, FAAH 2260, FAAH 261, or other music elective as approved by the Department. Note that FAAH 245 is NOT approved as an elective for the minor.

Course Descriptions

FAAH 150 Introduction to Art History for Freshmen 3.0; 3 cr.
A course that offers a fundamental overview of art and its development in the Western world, providing the students with a chronology and brief description of the main art periods and movements in the West starting from prehistoric art all the way to contemporary art. Each semester.

FAAH 200 Foundations in Painting and Drawing 0.6; 3 cr.
Foundations in Painting and Drawing focuses on the development of basic art making skills and concepts by promoting an exploration of 2D media to interpret three-dimensional space. It is also an introduction to basic art materials, liquid and dry. Each semester.

FAAH 201 Drawing I 0.6; 3 cr.
A course in freehand drawing: various approaches to drawing are explored using both dry and liquid media. This course also deals with contours, proportions, forms, shading, and some perspective. Equivalent: ARCH 112. Prerequisite: FAAH 200 or consent of the instructor. Occasionally.

FAAH 202 Drawing II 0.6; 3 cr.
Emphasis is placed on draughtsmanship in various techniques and media with attention to expression, figure drawing, interpretation, and drawing as a basis for studies for other art forms. Prerequisite: FAAH 201 or consent of instructor. Occasionally.

FAAH 205 Foundations in Sculpture and Ceramics 0.6; 3 cr.
This course focuses on the development of basic art making skills and concepts by working with materials “in the round.” It is also an introduction to basic 3D art materials, such as wood, clay, plaster and steel. Each semester.

FAAH 206 Painting I 0.6; 3 cr.
A beginning studio course introducing students to various painting media and subject matter aimed to develop basic skills. Prerequisite: FAAH 200 or consent of the instructor. Occasionally.

FAAH 207 Painting II 0.6; 3 cr.
A studio course in the handling of basic subject matter in pastel, wash, gouache and/or acrylic. Design and paint application are emphasized. Previously: CVSP/Art 223. Prerequisite: FAAH 206 or consent of the instructor. Occasionally.
FAAH 208  Watercolor and Illustration  0.6; 3 cr.
A studio course introducing students to the procedure and materials of water color media, its various applications and techniques. Through a series of progressive painting assignments, this course aims to lay the foundations for personal expression as well as exposure to different styles and subject matter. *Annually.*

FAAH 209  Special Topics in 2D Art  0.6; 3 cr.
Specialized courses in 2D studio arts. *Prerequisite: FAAH 200 or permission of the instructor. Annually.*

FAAH 210  Sculpture I  0.6; 3 cr.
A studio course in modeling, casting, and construction in various materials. Emphasis is placed on the fundamentals of three-dimensional organization and expression in relation to the use of tools and materials, and the element of form. *Prerequisite: FAAH 205 or consent of the instructor. Occasionally.*

FAAH 211  Sculpture II  0.6; 3 cr.
A studio course that concentrates on general knowledge of modern sculpture, creating sculptures in the round, abstract forms with attention given to direct carving, and relating the sculpture to the environment and architecture. *Prerequisite: Sculpture I or consent of instructor. Annually.*

FAAH 212  Sculpture III  0.6; 3 cr.
Intermediate-advanced studio course emphasizing the refinement of personal technique, expression, and skill level. Attention is given to current developments in the field, and relating the sculpture to its environment. *Prerequisite: FAAH 211 or consent of the instructor. Occasionally.*

FAAH 215  Ceramics I  0.6; 3 cr.
A studio course in basic handbuilding ceramics techniques; pinching, coiling, slab building, and glazing. The student potter is encouraged to create artistic functional pots, reflecting an understanding of the acquired basics. *Prerequisite: FAAH 205 or consent of the instructor. Occasionally.*

FAAH 216  Ceramics II  0.6; 3 cr.
A studio course for the student potter who took Ceramics I. All basic techniques are fully developed and reinforced to suit the student's design. Design versus function is emphasized, as well as appreciation and criticism. *Prerequisite: FAAH 215 or consent of instructor. Annually.*

FAAH 217  Ceramics III  0.6; 3 cr.
A studio course emphasizing skills in wheel-throwing and decorative projects, with attention to development of a personal idiom. *Prerequisite: FAAH 216 or consent of the instructor. Occasionally.*

FAAH 218  Conceptual Studio I  0.6; 3 cr.
An idea-based and non-media-specific studio course. Review of contemporary art movements form a starting point for the creation of artworks that are explorative, interdisciplinary, with new notions of relating to culture and society. Technology and media work may be included by way of interaction and networking with existing resources in other departments. *Prerequisite: Consent of the department. Annually (Fall Semester).*

FAAH 219  Conceptual Studio II  0.6; 3 cr.
An idea-based and non-media-specific studio course. Course description as above in Conceptual Studio I, but with different emphasis and projects. *Prerequisite: FAAH 218. Annually (Spring Semester).*

FAAH 221  Art History I: Ancient and Classical  3.0; 3 cr.
A survey and analysis of art, architecture, and the evolution of the city in antiquity. *Equivalent: ARCH 121. Prerequisite: FAAH 218. Annually (Fall Semester).*

FAAH 222  Art History II: Medieval  3.0; 3 cr.
A survey and analysis of art, architecture, and the evolution of the city from the fourth to the fourteenth century. *Equivalent: ARCH 122. Annually (Spring Semester).*

FAAH 223  Art History III: Renaissance/Post-Medieval to Baroque  3.0; 3 cr.
A survey and analysis of art, architecture, and the evolution of the city from the fifteenth to the mid-eighteenth century. *Equivalent: ARCH 223. Annually (Fall Semester).*

FAAH 224  Art History IV: Modern  3.0; 3 cr.
A survey and analysis of art, architecture, and the evolution of the city from the mid-eighteenth century to the beginning of World War II. *Equivalent: ARCH 224. Annually (Spring Semester).*

FAAH 225  Special Topics In Art History/ (A,B,C) Ancient and Classical (or equivalent)  3.0; 3 cr. (each)
Specialized courses in ancient and classical art subjects. *Occasionally.*

FAAH 226  Special Topics In Art History/ (A,B,C) Medieval (or equivalent)  3.0; 3 cr. (each)
Specialized courses in Medieval art subjects. *Occasionally.*

FAAH 227  Special Topics In Art History/ (A,B,C) Middle Eastern and Islamic (or equivalent)  3.0; 3 cr. (each)
Specialized courses in Middle Eastern Islamic art subjects. *Occasionally.*

FAAH 228  Special Topics In Art History/ (A,B,C) Renaissance to Baroque (or equivalent)  3.0; 3 cr. (each)
Specialized courses in Renaissance to Baroque art subjects. *Occasionally.*

FAAH 229  Special Topics In Art History/ (A,B,C) Modern and Contemporary Art (or equivalent)  3.0; 3 cr. (each)
Specialized courses in modern and contemporary art subjects. *Occasionally.*

FAAH 232  Methods in Art History  3.0; 3 cr.
A study in the tradition and methodology of art historical research. This pursues a discussion of the work of major theorists who have structured the discipline of art history; includes theories of the evolution of art, iconography, and art criticism. *Occasionally.*

FAAH 234  Theories of Color/Composition/Design  3.0; 3 cr.
An analysis of the dynamic interaction of color and its implications for designers and artists. This course studies the physics of color, colored light, colored pigments, and the color wheel. *Equivalent: GRDS 112. Annually.*

FAAH 235  Theories of Modern Art  3.0; 3 cr.
A comparative study of the major theories of modern art: the meaning of the visual arts, aesthetics, and psychology of perception; includes theories forwarded by postimpressionists and German expressionists as well as symbolist theories. *Annually.*
FAAH 236  Art Education  
Theory and practice in teaching visual art in the elementary school. Equivalent: EDUC 290B. Each semester.

FAAH 238  Special Topics In Art Theory  
An advanced art theory course covering a broad spectrum of historical and/or specialized treatments of art. Prerequisite: at least one previous Art History course (or equivalent) or one Special Topics in Art History course (courses numbered FAAH 225A, FAAH 225B, FAAH 225C, FAAH 226A, FAAH 226B, FAAH 226C, FAAH 227A, FAAH 227B, FAAH 227C, FAAH 228A, FAAH 228B, FAAH 228C, FAAH 229A, B, C, D, or E) or consent of instructor. Occasionally.

FAAH 239  Advanced Studio Practice  
This course develops students’ abilities in relation to advanced studio art. By the end of the course, students should have acquired real expertise in at least one chosen medium/area. Prerequisite: Consent of the department. (Replaces FAAH 237 for students entering studio arts major in 2011 and later). Occasionally.

FAAH/ Music 240  Western Musical Traditions I  
An introduction to Western music from antiquity to the death of J.S. Bach, using readings and aural analysis of recorded performances. Annually. Students taking this course may not take FAAH/Music 245.

FAAH/ Music 241  Western Musical Traditions II  
A continuation of readings and analysis of Western music from 1750 to the present day. Restriction: Students taking this course may not take FAAH/Music 245. Annually.

FAAH/ Music 242  AUB Choir (applied music)  
Rehearsal and performance in ensemble of standard mixed choral repertoire. Prerequisite: Audition and consent of instructor. Each semester.

FAAH/ Music 242A  AUB Choir (applied music)  
An expansion of repertoire and refinement of skills developed in 242. Prerequisite: FAAH/Music 242. Each semester.

FAAH/ Music 242B  AUB Choir (applied music)  
An expansion of repertoire and refinement of skills developed in 242A. Prerequisite: FAAH/Music 242A. Each semester.

FAAH/ Music 243  AUB Choir (applied music)  
Advanced rehearsal and performance of standard choral and vocal ensemble repertoire. Prerequisite: Audition and consent of instructor. Annually. Prerequisite: FAAH/Music 242B.

FAAH/ Music 243A  AUB Choir (applied music)  
An expansion of repertoire and refinement of skills developed in 243. Prerequisite: FAAH/Music 243. Each semester.

FAAH/ Music 243B  AUB Choir (applied music)  
An expansion of repertoire and refinement of skills developed in 243A. Prerequisite: FAAH/Music 243A. Each semester.

FAAH/ Music 244  Introduction to Voice Performance  
A course on the fundamentals of singing technique and performance, including breath management, vocal registration, musical notation, and song repertoire. Prerequisite: Consent of instructor.

FAAH/ Music 245  Music Appreciation; Historical Survey  
A survey of western music from antiquity to modern times, from antiquity to jazz. Some musical basics are covered, ample illustrations are provided. This course does not satisfy the requirements for the minor in Music. Students taking this course may not take FAAH/Music 240 and/or FAAH/Music 241. Each semester.

FAAH/ Music 246  Elements and Notation of Music  
An introduction to the materials and notation of western music, with emphasis on musical performance, especially sight-singing. Annually.

FAAH/ Music 247  Music Theory I  
An introductory study of western music notation and theory including voice leading in four parts through secondary dominant and leading-tone chords. Prerequisites: FAAH/Music 246, or competence in music reading; and consent of instructor. Annually.

FAAH/ Music 248  Music Theory II  
A continuation of FAAH/Music 247 including augmented sixth, Neapolitan, and quartal chords with an introduction to set theory and serial techniques. Prerequisite: FAAH/Music 247. Occasionally.

FAAH/ Music 249  Introduction to Conducting  
A study of basic conducting techniques, including conducting patterns, score interpretation and musical leadership. Prerequisite: FAAH/Music 247. Corequisite: FAAH/Music 242, 242a, 242b, 243, 243a, or 243b. Occasionally.

FAAH/ Music 260  Western Musical Traditions III  
A focused survey of one style, period, genre, or composer of western music. Such titles as Romantic Music, The Symphony, or The Music of J.S. Bach may be included. At the discretion of the program.

FAAH/ Music 260A  Special Topics in Music  
Specialized courses in music. Occasionally.

FAAH/ Music 260B  Special Topics in Music  
Specialized courses in music. Occasionally.
FAAH/ Music 260C Special Topics in Music 3.0; 3 cr.
Specialized courses in music. Occasionally.

FAAH/ Music 261 An Introduction to the World of Opera 3.0; 3 cr.
A survey of the history and development of opera from 1598 to the present. Emphasis is placed on the analysis and evaluation of recorded opera performances on film. At the discretion of the program.

FAAH Arabic and Middle Eastern music 3.0; 3 cr.
A course introducing students to the history and key characteristics of Arabic and Middle Eastern music. No previous musical knowledge is required. While the class will be taught in English, it is highly recommended that students have a working knowledge of Arabic prior to taking the course. Each semester.

FAAH Arabic Music Ensemble (applied music) 1 cr.
Rehearsal and performance in ensemble of Arabic repertoire. Each semester.

FAAH Arabic Music Ensemble (applied music) 1 cr.
An expansion of repertoire and refinement of skills developed in 263A. Prerequisite: FAAH/Music 263A. Each semester.

FAAH Arabic Music Ensemble (applied music) 1 cr.
An expansion of repertoire and refinement of skills developed in 263B. Prerequisite: FAAH/Music 263B. Each semester.

FAAH Arabic Music Ensemble (applied music) 1 cr.
Advanced rehearsal and performance of Arabic repertoire. Prerequisite: Audition and consent of instructor. Annually. Prerequisite: FAAH/Music 263B.

FAAH Arabic Music Ensemble (applied music) 1 cr.
An expansion of repertoire and refinement of skills developed in 264A. Prerequisite: FAAH/Music 264A. Each semester.

FAAH Arabic Music Ensemble (applied music) 1 cr.
An expansion of repertoire and refinement of skills developed in 264B. Prerequisite: FAAH/Music 264B. Each semester.

FAAH Introduction to Theater 3.0; 3 cr.
An introductory course on various types of theatrical presentations: realism, anti-realism, tragedy, comedy, and romance, with a view toward helping students appreciate current developments and experimentation in the theater. Each semester.

FAAH Voice and Acting in the Theater 2.2; 3 cr.
Theater 267
A course covering the basics of clear speaking, vocal projection, and acting. Annually.

FAAH Theater History 3.0; 3 cr.
Theater 270
An overview of theater and related entertainment from ancient times to modern. Acting, production, stages, spectacle, audience control, and presentation styles are covered and illustrated with slides, videos, and anecdotes. Occasionally.

FAAH Design in Theater 2.2; 3 cr
Theater 274
A course on the basics of design and drawing as applied to theater; specifically stage settings, costume design, and poster design. Annually.

FAAH Workshop in Theater Production 2.2; 3 cr.
Theater 283
An introductory course on the art of the theater with a survey of the techniques involved in various plays and/or class production. Prerequisite: FAAH/Theater 284 or consent of the instructor. Annually.

FAAH Workshop in Acting and Directing 2.2; 3 cr.
Theater 284
An introductory course involving practical work in the areas of acting and directing. Annually.

FAAH Performance Art 2.2; 3 cr.
Theater 286
A studio course that will explore the body and its relationship to time and space as a fundamental element in art making. The course will also discuss the history and theory of performance. Annually.

FAAH Workshop in Video Art 2.2; 3 cr.
Theater 292
A studio course teaching students some of the basic skills to use video as a means of artistic expression. It will also examine the history and theory of video art. Occasionally.
### BA in Studio Arts

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<thead>
<tr>
<th>Mode of Analysis</th>
<th>English And Arabic (9)</th>
<th>Humanities</th>
<th>Social Sciences</th>
<th>Natural Sciences</th>
<th>Quantitative Thought</th>
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<tr>
<td>Lecture Courses</td>
<td><em>(9+12+9+6+6+3)</em></td>
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<td></td>
<td>• Required Arabic course: ARAB 201A or any General Education Arabic communication skills (3)</td>
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<td>• Required English courses: ENGL 203(E), 204(E)</td>
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<td>• Required credits In the humanities: 12 credits including 6 credits of CVSP.</td>
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<td>• Three credits required from the following: FAAH 221 or ARCH 121 or FAAH 222 or ARCH 122 or FAAH 223 or ARCH 223.</td>
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<td>• Three credits required from the following: FAAH 224 or ARCH 224 or FAAH 229A or FAAH 232.</td>
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<td>Lecture/ Laboratory (0)</td>
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- Lecture/ Laboratory (0)

- Lecture: Free electives from outside the department (12 crs) (18 crs for those exempt from the Arabic requirement); can include up to 6 credits of FAAH/Theater and FAAH/Music courses even though these are within the department.

### BA in Art History

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<tr>
<th>Mode of Analysis</th>
<th>English And Arabic (9)</th>
<th>Humanities</th>
<th>Social Sciences</th>
<th>Natural Sciences</th>
<th>Quantitative Thought</th>
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<tbody>
<tr>
<td>Lecture Courses</td>
<td><em>(9+48+6+6+3)</em></td>
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<td></td>
<td>• Required Arabic course: ARAB 201A or General Education Arabic communication skills (3)</td>
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<td></td>
<td>• Required English courses: ENGL 203(E), 204(E)</td>
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<td></td>
<td>• 12 credits required in the humanities including 6 cr. of CVSP.</td>
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<td>• 15 credits including: FAAH 221 or ARCH 121, FAAH 222 or ARCH 122, FAAH 223 or ARCH 223, FAAH 229B, FAAH 229D.</td>
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<td>• 9 credits from one of the following concentrations: FAAH 225, FAAH 226, FAAH 227 A,B,C or FAAH 228 A,B,C or FAAH 229 A,B,C or FAAH 232, FAAH 233, FAAH 234, FAAH 235, FAAH 236, FAAH 238.</td>
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<td>• 6 credits distributed as follows: 3 credits from any of the remaining concentrations listed above; and 3 cr. from the following: PHIL 217 or GRDS 231 or SOAN 250 or ARCH 033, or approved alternative.</td>
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<td>Lecture/ Laboratory (0)</td>
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- Lecture/ Laboratory (0)

- Lecture: Free electives from outside the department (12 crs) (15 crs for those exempt from the Arabic requirement); can include up to 6 credits of FAAH/Theater and FAAH/Music courses even though these are within the department.

- Studio Work (6)

- Studio: Free electives from outside the department (12 crs) (18 crs for those exempt from the Arabic requirement); can include up to 6 credits of FAAH/Theater and FAAH/Music courses even though these are within the department.
Department of Geology

Chairperson: Abdel-Rahman, Abdel-Fattah M.
Professor: Abdel-Rahman, Abdel-Fattah M.
Assistant Professors: Doummar, Joanna J.; Elias, Ata R.; Haidar, Ali T.
Instructors: Kallas-Bteish, Lara M.; Khadra, Wisam M.; Oueida, Raghida S.
Assistant Instructor: Abdel Massih, Abd

The Department of Geology offers programs leading to the degree of Bachelor of Science in Geology, and Master of Science degrees in certain areas of the vast field of geological sciences. It also offers a more broadly based program leading to the degree of Bachelor of Science in Petroleum Studies. Students wishing to major in geology or petroleum studies must secure the approval of the department. In addition, students must have a strong background in sciences and have taken the freshman science program or its equivalent.

The department also offers the following undergraduate elective courses: GEOL 101, GEOL 102, GEOL 103, GEOL 104, and GEOL 201 in the area of general geology, and GEOL 205 in environmental geology.

Field trips are required parts of most geology courses.

Mission Statement

The Department of Geology at the American University of Beirut is committed in providing the best Geoscience education in the Middle East, via its emphasis on excellence in teaching, and engaging students in research. The aim is to prepare our students to fulfill the needs of this region in terms of its geological nature, its petroleum and mineral resources, as well as groundwater resources, and their role in world economy and environmental implications. This is achieved within the context of learning about the occurrence, distribution and origin of natural resources worldwide. With the structure of our courses which include laboratory components, field components, term papers, oral presentations, and problem-solving assignments, we train our students to observe, analyze, critically evaluate, think independently, and derive their own conclusions. We emphasize the development of the conceptual apparatus, and the unbiased and accurate reporting of field and laboratory data (observation) and its significance in reaching a correct interpretation. In this manner, we promote high ethical professional standards, character, and scientific integrity. The program prepares our students to be life-long learners and well-rounded individuals, who can lead successful careers in the areas of energy and petroleum resources, hydrogeology, mining, geotechnical sciences and related fields.

BS Degree in Geology

Geology majors must attain an average of 70 in major courses during the first three semesters in order to remain in the program. Majors must complete the following courses, in which a general average of 70 or more must be maintained: GEOL 201, GEOL 202, GEOL 203, GEOL 210, GEOL 211, GEOL 212, GEOL 213, GEOL 214, GEOL 219, GEOL 221, GEOL 222, GEOL 224, and GEOL 229, which is a total of 40 credits. In addition, three required elective courses - CMPS 209 and 200-level approved General Education economics and education courses (6 credits) - must be completed. No course may be taken without its prerequisite unless authorized by the departmental faculty. Students are encouraged to take additional geology courses such as GEOL 205, GEOL 207, GEOL 215 or GEOL 225, and also courses from the graduate level, provided other requirements permit.

The requirements for a BS degree in Geology are 90 credits for students entering the department at the sophomore level, including 40 credits in the major. The distribution of university requirements is as follows:

University General Education Requirements

English Communication Skills (6 cr) and Arabic Communication Skills (3 cr) Humanities (12 cr), Social Sciences (6 cr), Natural Sciences (9 cr) and Quantitative thought (3 cr). Also note that one natural science must be an approved General Education course from outside the major (in PHYS, CHEM, or BIOL).

BS Degree in Petroleum Studies

The core courses of the petroleum studies program (totaling 58 credits) are GEOL 201, GEOL 202, GEOL 203, GEOL 211, GEOL 212, GEOL 213, GEOL 214, GEOL 219, GEOL 221, GEOL 222, GEOL 225, GEOL 229; CHEM 201, CHEM 208; ACCT 210, MNGT 215, MKTG 210, and ECON (GE). In addition, a required elective course, CMPS 209 must be completed.

Petroleum studies majors must attain a grade of 70 or more in GEOL 201, and GEOL 203, and also pass the next two geology courses with a grade of 70 or more.

The requirements for a BS degree in Petroleum Studies are 90 credits for students entering the department at the sophomore level, including 37 credits of geology courses, 6 credits of chemistry courses, 9 credits of business courses and 3 credits in economics. The distribution of university requirements is as follows:

University General Education Requirements

English Communication Skills (6 cr) and Arabic Communication Skills (3 cr) Humanities (12 cr), Social Sciences (6 cr), Natural Sciences (9 cr) and Quantitative thought (3 cr).

Minor in Geology

To obtain a minor in geology, students must complete the following core courses: GEOL 201, GEOL 202, GEOL 203, and GEOL 205, and two of the following elective courses: GEOL 210, GEOL 211, and GEOL 222 (for a total of 16 credits).
Course Descriptions

GEOL 101  The Earth, Present and Past  3.0; 3 cr.
A freshman level survey of the present day processes that shape the earth we live on, such as plate tectonic activity, rock formation and erosion, coupled with an overview of the origin and history of the earth and life. Each semester.

GEOL 102  Environmental Physical Geography  3.0; 3 cr.
An introduction to the structure, classification, physical processes and characteristics of the earth's atmosphere, hydrosphere and biosphere, dynamics of change, and associated environmental impacts. Each semester.

GEOL 103  Introduction to Marine Geology  3.0; 3 cr.
A freshman level survey of oceanic geological processes, wave dynamics, submarine springs, marine economic mineral resources, marine communities, pollution, global change, and marine-related environmental issues. Each semester.

GEOL 104  Natural Disasters  3.0; 3 cr.
A freshman level course covering events involving natural forces that have major devastating effects on humankind. These include mud flows, landslides and slope failure, earthquakes, tsunamis, explosive eruptions and volcanic hazards, meteoritic impact and mass extinctions, hurricanes and tornadoes, flooding, and forest fires. Each semester.

GEOL 105  Physical Geology  3.0; 3 cr.
An introduction to minerals, igneous, sedimentary and metamorphic rocks, geological structures, and external earth processes, including the geologic work of streams, glaciers, groundwater, wind, and plate tectonic theory. Each semester.

GEOL 106  Historical Geology  2.2; 3 cr.
An introduction to earth history, including the principles of interpreting the past, origin, and development of the solar system. This course also provides an introduction to the systematic study of fossils, their classification, and identification. Prerequisites: GEOL 201, GEOL 203, or consent of instructor. Annually.

GEOL 107  Physical Geology Laboratory  0.2; 1 cr.
An introduction to the identification of rocks and minerals in hand specimen, geometric and geological maps, and basic interpretation of geological data. Pre- or corequisite: GEOL 101, GEOL 102, GEOL 103, or GEOL 201, or consent of instructor. Each semester.

GEOL 201  Geomorphology  3.0; 3 cr.
An introduction to the study of land forms and the interaction of external geological forces and erosion agents with the structure and composition of their surface rocks. This course is also an examination of the interaction between the internal and external earth processes responsible for the development of land forms. Prerequisites: GEOL 201 and GEOL 203, or consent of instructor. Annually.

GEOL 202  Historical Geology  2.2; 3 cr.
An introduction to the study and classification of crystals; properties of minerals as related to their crystal structure; identification, description, and classification of minerals. This course entails practical work with crystal models and hand specimens of common minerals. Annually.

GEOL 203  Optical Mineralogy  2.2; 3 cr.
An introduction to the theory of crystal optics, the polarizing microscope, and methods of mineral identification based on their optical properties. This course is also a systematic study of the common rock forming minerals in thin section. Prerequisite: GEOL 201 or consent of instructor. Annually.

GEOL 204  Structural Geology  2.2; 3 cr.
Introduction to the study of rock deformation, the relationship between stress and strain, and the interpretation of structures and their significance to regional and global tectonics. Prerequisite: GEOL 201. Annually.

GEOL 205  Stratigraphy  2.2; 3 cr.
A course on the principles of interpretation of the sedimentary rocks and methods of correlation and an introduction to the stratigraphy of Lebanon in the context of the regional geology of the Middle East. Prerequisite: GEOL 222 or consent of instructor. Annually.

GEOL 206  Sedimentology  2.2; 3 cr.
A study of the characteristics and classification of sedimentary rocks using petrographic and field study methods, with some focus on diagenetic processes, depositional environments, and elementary basin analysis. Pre- or corequisites: GEOL 202 and GEOL 212, or consent of instructor. Annually.

GEOL 207  Regional Geology  3.0; 3 cr.
A course on the geology of the Middle East region, with emphasis on its stratigraphy, structure, geological history, and tectonic evolution, and with reference to oil and mineral resources in the region. Prerequisites: GEOL 213 and GEOL 222, or consent of instructor. Annually.

GEOL 208  Earth Resources and Energy  3.0; 3 cr.
A course on the description, reading and interpretation of topographic and geological maps. This course also introduces stereographic projections, construction of cross-sections across geologic structures, and basic field mapping techniques. Prerequisites: GEOL 201, GEOL 203, or consent of instructor. Occasionally.
GEOL 225  Petroleum Geology  3.0; 3 cr.
A course on hydrocarbon formation and occurrence as oil and gas fields, as well as exploration and extraction methods. Prerequisites: GEOL 213, GEOL 222, or consent of instructor. Annually.

GEOL 229  Individual Field Work Project  0.18; 6 cr.
A complete and independent geological investigation of a designated area and preparation of a detailed geological map, cross-sections, and report. For juniors and seniors. Pre- or corequisite: GEOL 219. Annually.

GEOL 271/272  Directed Study in Geology  1–3 cr.
A tutorial that may be repeated for credit with different topics or may replace a required course. Occasionally.

### 40 Credits in Geology

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (6+Unspecified)</th>
<th>Natural Sciences (40)</th>
<th>Quantitative Thought (3)</th>
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<tbody>
<tr>
<td>Lecture Courses</td>
<td>(9+12+3+40+3)</td>
<td>Required Arabic course: ARAB 201 A or any General Education Arabic communication skills (3)</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Required elective economics courses: a 200-level approved GE economics course (3); ECON 211(3), or ECON 212(3)</td>
<td>Required geology courses: GEOL 201(3), 202(3), 210(3), 211(3), 212(3), 213(3), 214(3), 219(3), 221(4), 222(4), 224(4), 229(6)</td>
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<tr>
<td>Seminar</td>
<td>(24+12)</td>
<td>Required geology courses: GEOL 201(3), 202(3), 210(3), 211(3), 212(3), 213(3), 214(3), 221(4), 222(4), 224(4), 229(6)</td>
<td>Elective geology courses: GEOL 205(3), 225(3), 271(3), 272(3)</td>
<td>One natural science must be an approved GE course from outside the major (in PHYS, CHEM, or BIOL)</td>
<td>Required elective computer science courses: CMPS 209(3)</td>
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</table>

1 Plus 50 required and elective credits
2 Combined lecture, laboratory (field), and research project courses
3 Combined lecture and seminar courses
4 Combined lecture and lab courses
# 37 Credits in Petroleum Studies

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<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (12)</th>
<th>Natural Sciences (37+6)</th>
<th>Quantitative Thought (3)</th>
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<tr>
<td>Lecture Courses</td>
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<td>• Required Arabic course: 201A General Education Arabic communication skills (3)</td>
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<td>• Required English courses: 203(3), 204(3)</td>
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<td>• Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
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<td>• Required business courses: ACCT 210(3), MNGT 215(3), MKTG 210(3)</td>
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<td>• Economics courses: ECON 211(3), or ECON 212(3)</td>
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<td>• One approved General Education social science course (3): EDUC 215(3), or EDUC 230(3)</td>
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<td>• Elective geology courses: GEOL 205(3), 210(3), 211(3), 212(3), 271(3), 272(3)</td>
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<tr>
<td>Seminar (30+12)</td>
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<td>• Elective geology courses: GEOL 205(3), 210(3), 211(3), 212(3), 271(3), 272(3)</td>
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<td>• Required geology courses: GEOL 203(1), 211(3), 212(3), 213(3)</td>
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<td>Research Project (30+12)</td>
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<td>• Elective geology courses: GEOL 205(3), 210(3), 211(3), 212(3), 271(3), 272(3)</td>
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1 Plus 21 required credits in business, economics, and chemistry, in addition to 38 required and elective credits
2 Combined lecture and research project courses.
3 Combined lecture and seminar courses.
4 Combined lecture and lab courses.
Department of History and Archaeology

Chairperson: Sader, Helen S.
Professors: Abu Husayn, Abdul Rahim A.; El-Cheikh, Nadia M.; Meloy, John L.; Sader, Helen S.; Seeden, Helga R.; Seikaly, Samir M.
Associate Professors: Du Quenoy, Paul G.; Genz, Hermann P.
Assistant Professors: Newson, Paul G.; Wick, Alexis N.
Visiting Professors: Deringil, Selim (Alfred H. Howell Chair); O’Dell, Emily (Whittlesey Chair)
Lecturers: ¹Kaidbey, Nai'a A.; Sharif, Malek A.
Instructors: ²Naoufal, Antoine P.; ³Nurpetlian, Jack A.

The department offers programs leading to the BA, MA, and PhD in Arab and Middle Eastern History. The department also offers programs leading to the BA and MA in Archaeology. Requirements for transfer to the department include approval by the department, and a grade of 70 or more in any two humanities courses (excluding the communication skills requirements in Arabic and English). Students expecting to work in Arab history must also have knowledge of Arabic.

History

Mission Statement

By means of a broad and diversified curriculum, our undergraduate program introduces students to the richness and complexity of Arab and Middle Eastern history. That program is intended to develop not only essential knowledge of the past, but also awareness of the methodological and theoretical problematic involved in the study of history as a discipline in the humanities. Students are motivated to be reflexive, to read, research and write critically, analytically, and without prejudice or preconceptions. Courses in European and American history supplement the core offerings, fostering a comparative understanding of the enduring relevance of the past in multiple contexts. In line with the Faculty’s mission, the program maintains Major and Minor flexible requirements, leaving room for students to explore other fields of study.

BA in History

Students majoring in history must complete a minimum of 39 credit hours in the department, including HIST 286, HIST 287, HIST 291, and HIST 292. Detailed programs are determined by subcommittees of the department, which advise each student on courses in his/her major, related departments, and electives. In fulfillment of university general education requirements majors must also take the following: English Communication Skills 6 crs.; Arabic Communication Skills 3 crs.; Humanities 12 crs.; Social Sciences 6 crs.; Natural Sciences 6 crs.; Quantitative Thought 3 crs.

¹ Part time
Students choosing to minor in history must complete five courses numbered 200 and above. All minors, especially those considering graduate work in history, are encouraged to take HIST 287 as one of the five courses.

Course Descriptions

**HIST 101/102** Survey of Modern Europe 3.0; 3 cr. (each)
A chronological and topical survey of the political and socio-economic forces that have shaped modern Europe and the rest of the world. Attention is given to teaching students how to tackle historical problems and how to initiate and conduct research. For freshman students only. **Annually.**

**HIST 200** Introduction to the History of the United States 3.0; 3 cr.
An introductory survey of the political and social development of the United States from its colonial origins through the early twentieth century. Principal themes include European settlement of the North American continent and the establishment of an independent United States; the tensions between North and South that culminated in civil war; and the social transformations brought about by the rise of a market-oriented, industrial society. Open to freshman students. **Annually.**

**HIST 201** Introduction to the Study of History 3.0; 3 cr.
An introduction to some of the main themes and problems of the study of history such as the structures, aims, and methods of historical writing, and related questions such as causation, periodization, and style. The readings in this course are drawn mostly from modern texts in the methodology of history. **Offered occasionally.**

**HIST 202** Introduction to the Modern History of the Arab East 3.0; 3 cr.
An introduction to the modern history of the Arab East from the Ottoman conquest until the outburst of the Arab revolt. This course also uses case studies relating to the rise of local Arab rule and to Arab-Turkish relations in the late Ottoman period. **Annually.**

**HIST 212** Islamic History: Origins and Empire, 600–750 3.0; 3 cr.
A course that focuses on the origins of Islam in Arabia, Islamic expansion, internal divisions, and the establishment of the Umayyad dynasty. This course emphasizes the themes of Arab expansion and adaptation, the historical roots of Shiism, institutional developments, problems of societal integration, and the factors of decline. **Alternate years.**

**HIST 213** Islamic History: The Rise and Fall of the Abbasids, 750–1055 3.0; 3 cr.
A survey of the Abbasid Caliphate from its establishment in 750 to the Seljuk take-over of Baghdad in 1055. This course studies the origins, interpretation, and results of the Abbasid revolution, the militarization of the state, the emergence of specific institutions, the process of political decentralization, and the flourishing of cultural-scientific achievements. **Alternate years.**

**HIST 214** Islamic History: Military Society in the Middle East, 1055–1500 3.0; 3 cr.
A course that completes the three-part survey of the central lands of Islam, covering the period from the Seljuk conquest in the eleventh century until the Ottoman expansion into the Middle East at the beginning of the sixteenth century. This course traces the fusion of societies that generated a new social and political order in the region. **Alternate years.**

**HIST 216** History of the Fatimid Imamate, 909–1171 3.0; 3 cr.
A survey of the major stages of the Fatimid polity from the turn of the tenth century to its demise at the end of the twelfth century. Major themes include the political institutions of the Fatimid state, the intellectual trends of the Fatimid movement, and the social and economic ramifications of Fatimid rule. **Offered occasionally.**

**HIST 217** Slaves and Soldiers: The Mamluk Sultanate, 1250–1517 3.0; 3 cr.
An investigation of the politics and society of Egypt and Syria during the regime of the Mamluk Sultanate by means of a chronological and thematic survey of the period from 1250 to 1517. Using all sources available—historical, archaeological, literary—students investigate the origins and nature of the Mamluk institution and its impact on society and politics in the Middle East. **Alternate years.**

**HIST 218** The Abbasid Court 3.0; 3 cr.
A course that focuses on the Abbasid court in the ninth and tenth centuries. It seeks to define the terms court and courtiers within the Abbasid context and studies the structure that defined the court in a physical way, the Abbasid court culture; the role of ceremonial, the interpretation of harem and court, and the understanding of particular functions of courtiers. **Alternate years.**

**HIST 220** Local Histories 3.0; 3 cr.
A term-specific variety of courses that focus on provincial history and deal with the affairs, both urban and rural, of a particular region or locality. Courses may include such titles as Bilad al-Sham, 600–1097 and Rural Syria in Ottoman times. This course may be repeated for credit under different topics. **Offered occasionally.**

**HIST 225** Byzantine Empire and Civilization, 330–900 3.0; 3 cr.
A survey of Byzantine history from the foundation of Constantinople in 330 to the end of the Iconoclast controversy and the establishment of the Macedonian dynasty in the later ninth century. Readings focus on doctrinal controversies, the reconstruction of the empire in the seventh century, and foreign relations, as well as artistic and cultural expression. **Alternate years.**

**HIST 226** Byzantine Empire and Civilization, 900–1453 3.0; 3 cr.
A continuation of HIST 225, down to the fall of Constantinople. Topics include the encounter with the Crusades and the Italian maritime states, changes in Byzantine society, and the erosion and fragmentation of the empire in the thirteenth and fourteenth centuries. **Alternate years.**

**HIST 227** Cultures in Contact: The Crusades 3.0; 3 cr.
A survey of the history of the Crusades from the beginning of the movement in the eleventh century until the demise of the Crusader states in the Middle East at the end of the thirteenth century. This course investigates the political and social conditions in the Levant that enabled the Crusaders’ initial success and ultimate failure. **Alternate years.**

**HIST 230** Iran: State, Society, and Religion, 1501–1722 3.0; 3 cr.
A course on the origin, expansion, and development of the Safavid state from the establishment of the dynasty as leaders of a Sufi order in the early fourteenth century until the fall of the Safavid dynasty and state in the eighteenth century. In addition to the political history of Persia during this period, this course examines the economic, social, and intellectual life in Persia under the Safavids. **Offered occasionally.**
HIST 233 History of the Arabs to 632
A course that covers Arabia before the coming of Islam, explaining in some detail the history of the various Arabian kingdoms of both Southern and Western Arabia. Particular importance is attached to the study of surviving epigraphy and the historical dimensions of Jahili poetry. Offered occasionally.

HIST 234 History of the Arabs, 632–750
A survey of the Rashidun and Umayyad period, with special emphasis on the politics and society of the Umayyad Caliphate and its place in early Arab Islamic civilization. Original texts are used in addition to modern studies. Offered occasionally.

HIST 235 History of the Arabs, 750–950
A course that covers the first two centuries of the Abbasid Empire until the arrival of the Buyids, the first dynasty openly to take the Abbasids under their wing. This course places particular emphasis on the culture of the period as well as on Abbasid institutions of government and society. Offered occasionally.

HIST 236 History of the Arabs, 950–1258
A course that covers Arab history from the Buyids to the Mamluks, also discussing other major dynasties such as the Seljuks, Zengids, and Ayyubids. Offered occasionally.

HIST 237 Ottoman State and Society, 1300–1600
A course on the formation, consolidation, and expansion of the Ottoman state from its birth as a ghazi principality in northwestern Anatolia in the late thirteenth century until the end of the so-called Classical Age. This course emphasizes political and institutional developments. Alternate years.

HIST 238 Ottoman State and Society, 1600–1923
A continuation of HIST 237 which traces the change and transformation of the classical Ottoman system and the responses to it. This course examines the Ottoman reform efforts from traditional reform in the seventeenth century through the Tulip Age and down to the Tanzimat (modernization) of the nineteenth century. Alternate years.

HIST 239 History of the Arab East and Egypt from 1516 to 1798
A course that covers the expansion of Ottoman rule into the Arab East and the nature of Ottoman domination and its consequences. Selected case studies investigate the emergence of local Arab autonomies in the seventeenth and eighteenth centuries. Alternate years.

HIST 240 Confronting Modernity:
The Arab East and Egypt from 1798 to 1920
A course on the Arab provinces of the Ottoman Empire in the age of the Tanzimat, foreign intrusion into the region, and the Arab provinces’ progressive incorporation into a developing global economy. Special attention is given to Egypt’s bid for autonomy, the nhada and the emergence of national sentiment in the Arab provinces of the Fertile Crescent. Alternate years.

HIST 242 A Social History of the Modern Middle East: 1800–1980
Examines the historical trajectory and character of social groups—including peasants, workers, middle and upper classes—in the 19th and 20th century Middle East. Explores how the rise of modern interventionist states has transformed everyday social life. Considers the effects, characteristics, and limits of the region’s integration into the world economy, and the effect of oil and inter-state warfare on state-society relations. Alternate years.

HIST 243 History of the Arab East and Egypt Since 1920
The course focuses on the establishment of the mandate system, and other types of western control in the region, the struggle for Arab independence and the foundation of the post-colonial interventionist state. Alternate years.

HIST 244 Sociopolitical History of Modern Iran, 1800–1989
Focuses on the interaction between various social forces and the state in modern Iran. Examines the transformation of the state from a weak 19th century patrimonial monarchy, via an autocratic monarchy, to a post-revolutionary populist hierarchy; and discusses the transformation of tribes, the clergy, merchants, the intelligentsia, peasants, and workers, throughout the modern period. Alternate years.

HIST 245 History of Lebanon from 634 to 1920 A.D.
A study of the history of the regions which came to constitute Greater Lebanon. This course analyzes the factors that contributed to the development of a distinctive Lebanese identity. Annually.

HIST 246 History of the Arab East and Egypt Since 1920
A survey of the failure of the Vienna Settlement to preserve the European political status quo, the transformation of Europe under the impact of industrialization, and the emergence of dynamic new states in Italy and Germany. Offered occasionally.

HIST 251 History of North Africa and Spain in the Middle Ages
A survey of North Africa and Andalusia from the Arab conquest until the eclipse of Muslim power in al-Andalus. Alternate years.

HIST 252 The Middle Ages in Europe
A study of the history of the Western half of the Roman Empire during the crisis of the third century until the rise of the earliest nation states in Europe in the tenth and eleventh centuries. Offered occasionally.

HIST 253 History of Europe from 1350 to 1618
A course that covers the transformation of Europe under the twin influences of the Renaissance and the Reformation. Attention is given to the political and socio-economic reorientations provoked by the voyages of discovery and the rise of European colonial empires. Offered occasionally.

HIST 254 History of Europe from 1618 to 1815
A survey of the political and socio-economic evolution of Europe from the outbreak of the Thirty Years' War to the Congress of Vienna. Special attention is devoted to the rise to primacy of England and France and to the revolutionary transformations that the latter experienced. Offered occasionally.

HIST 255 History of Europe from 1815 to 1871
A survey of the failure of the Vienna Settlement to preserve the European political status quo, the transformation of Europe under the impact of industrialization, and the emergence of dynamic new states in Italy and Germany. Offered occasionally.

HIST 256 World History from 1871 to 1914
An examination of the socio-political and economic transformations which culminated with World War I. Attention is paid to the phenomenon of European imperialism and to the failure of the European state system and diplomacy to maintain peaceful co-existence. Offered occasionally.

HIST 257 The Contemporary World Since 1914
A survey of the attempts to reconstruct a new world order at Versailles, the revolutionary overturn of existing orders in Russia, Italy, Germany, and China, the slide into World War II, and its aftermath. Offered occasionally.
HIST 258  Special Topics in History  3.0; 3 cr.
A term-specific variety of in-depth courses involving a detailed and systematic analysis of a particular topic, region, or nation. Examples of courses offered include Palestine under Mandate, Middle Eastern Monarchies, 1920-1958, Revolution in the Middle East, the Sea in History, Islamic Cities and Urbanism in the Modern Middle East. Repeated for credit under different topics. Offered occasionally.

HIST 259  Imperial Russia  3.0; 3 cr.
A survey of the Russian state from its origins in the Middle Ages to its emergence as an empire up to the revolutionary year of 1917. Attention is given to diplomacy and statecraft, internal challenges, social and political change, reform, war and revolution. Offered occasionally.

HIST 260  Russia since the Revolution  3.0; 3 cr.
A survey of Russia's history from the transformative moment of the Revolution of 1917. The course will offer a detailed review of the Soviet era, assess its problems and tragedies, address the collapse of communism in 1989-1991, and examine the recent history of post-Soviet Russia. Offered occasionally.

HIST 261  Modern Italy  3.0; 3 cr.
A consideration of the history of Italy emphasizing the period from Napoleon Bonaparte's conquest and reorganization of the peninsula in the 1790s to the present. Particular attention is given to the development of Italian nationalism, the process of national unification between 1859 and 1870, the impact of World War I, Mussolini's dictatorship and World War II, and Italy's place in European integration. Social, cultural, and intellectual developments are also considered. Offered Occasionally.

HIST 262  Women and Gender in Classical Islamic Society  3.0; 3 cr.
An investigation of the history of gender roles, perception, and experiences in the social, political, economic, and legal contexts of classical Muslim societies. Through a topical approach, emphasis is placed on the variety of Muslim women's experience. Reading material includes translations of primary sources that will be at the center of class discussions. Alternate years.

HIST 271/279 Senior Seminar in Arab and Middle Eastern History  3.0; 3 cr. (each)
A seminar in which students work in association on a select topic, report on their progress in class, and incorporate their findings in a detailed paper applying recognized historical methods of referencing and documentation. Alternate years.

HIST 272  Economic History of the United States  3.0; 3 cr.
A survey of the economic life of the United States from colonial times to the present. This course examines the development of the economy and business institutions and corresponding changes in public policy and cultural life. Topics addressed include the colonial economy within the mercantilist system, the economics of slavery, industrialization, the rise of large corporations, government regulation, the Great Depression, the recent decline of traditional manufacturing, and the emergence of a high-technology, service-oriented economy. Offered occasionally.

HIST 273  The United States and the Middle East  3.0; 3 cr.
An examination of the varying and complex relationship between the United States and the Middle East over the last two centuries. Subjects examined include images of the Middle East in early American political discourse, the activities of American missionaries and the founding of AUB, Arab immigration to the US, the role of American oil companies in the region and the rise of OPEC, Cold War diplomacy toward the Arab states and Israel, the Iran hostage crisis, US intervention in the conflict in Lebanon, and the Gulf War. Offered occasionally.

HIST 274  The United States in the Twentieth Century  3.0; 3 cr.
A survey of the social, political, and cultural development of the United States from the early twentieth century until recent times. This course emphasizes particular episodes of domestic political reform such as the New Deal, the changing social roles of African-Americans and women, the turmoil of the 1960s and its aftermath, and the role of the United States as a world power. This course is designed as a companion course to HIST 200, although HIST 200 is not a prerequisite for HIST 274. Annually.

HIST 278/279 Special Topics in United States History 3.0; 3 cr.(each)
A course emphasizing a particular subject, theme, period, or region in the history of the United States (e.g., Native Americans, US environmental history, Civil War and Reconstruction, the American West) to be offered by resident or visiting specialists with expertise in the field. May be repeated for credit. Offered occasionally. Equivalent to AMST 215/230.

HIST 286  Historical Interpretation  3.0; 3 cr.
An introduction to current theoretical trends and interpretations in history and archaeology, including postmodern interpretations. Alternate years.

HIST 287  Historical Writing  3.0; 3 cr.
An applied library course focusing on the conduct of historical and archaeological research and writing. Emphasis centers on historical and archaeological methodology in the identification and utilization of sources, analysis, synthesis, and exposition. Alternate years.

HIST 291/292 Senior Seminar in Arab and Middle Eastern History  3.0; 3 cr. (each)
A seminar in which students work in association on a select topic, report on their progress in class, and incorporate their findings in a detailed paper applying recognized historical methods of referencing and documentation. Alternate years.
Archaeology

Mission Statement

The undergraduate program in Archaeology provides students with a working knowledge and critical understanding of the methodological and theoretical principles of archaeological investigation and fieldwork. Its curriculum introduces students to the wealth and diversity of Mediterranean and Near Eastern archaeology. In addition to developing essential knowledge about the material and cultural roots of past societies, the program enhances student awareness about the value and relevance of Lebanon’s and the region’s archaeological heritage. In line with the Faculty’s mission, the program maintains Major and Minor flexible requirements, enabling students to explore other areas of academic interest.

BA in Archaeology

Students majoring in archaeology must complete a minimum of 39 credit hours in the department, including HIST 286, HIST 287, AROL 233 or 234, and AROL 291 or AROL 292. Detailed programs are determined by subcommittees of the department, which advise each student on courses in his/her major, related departments, and electives. In fulfillment of university general education requirements majors must also take the following: English Communication Skills 6 crs.; Arabic Communication Skills 3 crs.; Humanities 12 crs.; Social Sciences 6 crs.; Natural Sciences 6 crs.; Quantitative Thought 3 crs.

Students choosing a minor in archaeology must complete five courses numbered 200 and above, including one of the following courses: AROL 211, AROL 212, AROL 233, AROL 234, AROL 291, or AROL 292.

Course Descriptions

AROL 101 Introduction to Archaeology 3.0; 3 cr.
An introductory course on how the world’s archaeological resources are threatened and require rescue, protection, and management. Archaeology studies this cultural heritage and rediscovers human experience from its origins to the present. What is the nature of archaeological evidence, and how can it be saved? Each semester.

AROL 201 Archaeology in Lebanon 3.0; 3 cr.
A course that presents the archaeology of Lebanon: its history, institutional organization, the state of the evidence, and the problems Lebanon’s archaeological heritage is facing. Reports of the country’s main excavated sites and standing monuments are studied in combination with required site visits. Alternate years.

AROL 211/212 Methodology 3.0; 3 cr. (each)
A study of the methods of recovery, systematic description, integration, and presentation of archaeological material for the preservation and reconstruction of information from the human past. Special emphasis is given to cultural heritage preservation and education in Lebanon and the Near East. Alternate years.
AROL 213  The Human Story I: The Old Stone Age  3.0; 3 cr.  
(up to ca. 10,000 BC)  
A course on the physical and cultural evolution of hominids and early humans subsisting on food gathering, hunting, and fishing in a Pleistocene environment. The cultural and functional significance of artifacts and lifestyles are investigated with the help of information gained from the palaeoenvironment, experimental technology, and ethnography. Alternate years.

AROL 214  The Human Story II: The New Stone Age or Neolithic Period (tenth to fourth millennium BC)  3.0; 3 cr.  
A course on the gradual domestication of plants and animals, leading to food production, and the development of socio-cultural systems with increasing differentiation of activities. Neolithic village communities are investigated for evidence of new technologies and arts and crafts, including exotic raw materials and luxury goods. Alternate years.

AROL 215/216  The Near East in the Bronze Ages  3.0; 3 cr. (each)  
(3500–1200 BC)  
A course on the growth of small towns and larger urban centers in an essentially agricultural environment. The changes that occurred during the later second millennium and the breakdown of the Bronze Age urban palace culture are investigated. Alternate years.

AROL 217  Phoenicia and the Phoenicians  3.0; 3 cr.  
A study of the Phoenician, mainly Tyrian and Sidonian, expansion in the Mediterranean, its causes, and the means by which it was achieved. This course also examines the material culture of the first millennium BC Phoenician settlements in Cyprus, North Africa, Italy, and Spain, and cultural and economic interaction with local populations. Offered occasionally.

AROL 218  The Phoenician Expansion in the Mediterranean  3.0; 3 cr.  
A study of the Phoenician, mainly Tyrian and Sidonian, expansion in the Mediterranean, its causes, and the means by which it was achieved. This course also examines the material culture of the first millennium BC Phoenician settlements in Cyprus, North Africa, Italy, and Spain, and cultural and economic interaction with local populations. Offered occasionally.

AROL 219/220  Ancient Mesopotamia  3.0; 3 cr. (each)  
A study of the major political, cultural, and technological achievements of Mesopotamian civilization from the fourth millennium BC to the fall of the Neo-Babylonian Empire. Specific archaeological sites are chosen to illustrate the material culture of the successive historical periods from the Early Dynastic to Neo-Babylonian times. Offered occasionally.

AROL 221/222  Archaeology of the Greek World  3.0; 3 cr. (each)  
A course on the Greek Bronze and Dark Ages (221), covering the archaeology of Minoan Crete, the Cyclades, Helladic and Mycenaean Greece, and the development of the early Greek city-states. Archaic and Classical Greece (222) explores the history and archaeology of Greece, Western Asia Minor, and the Greek colonies in Southern Italy, and Sicily, from the eighth century BC and the fourth centuries BC. Alternate years.

AROL 223  Archaeology of the Hellenistic World  3.0; 3 cr.  
A course on the history and archaeology of the empire of Alexander the Great and his successors, in Greece, Asia Minor, the Near East, Iran, and beyond from the fourth to first centuries BC. This course covers the spread of Greek culture and institutions, and their interaction with local cultures. Alternate years.

AROL 224  Introduction to the Roman World  3.0; 3 cr.  
An introduction to society and culture of the Roman Empire. The focus of this course is on Rome and the provinces, imperial history, everyday life, and material culture between the second century BC and the fourth century AD, with special emphasis on the first and second centuries, when the Roman Empire was at its height. Alternate years.

AROL 225  The Roman and Byzantine Near East  3.0; 3 cr.  
A study of the history and material culture of the Near East, from the first century BC to the seventh century AD, including archaeological sites, religion, art, and architecture. The emphasis is on local traditions and responses to Roman rule. Alternate years.

AROL 226  The World of the Phillistines, Israelites, and Aramaeans  3.0; 3 cr.  
An investigation of the material culture of Syria and Palestine from 1200–300 BC, with special emphasis on the origin and early settlement of Philistines, Israelites, and Aramaeans, the formation of their states, and the processes of urbanization. Alternate years.

AROL 227  The Archaeology of Anatolia I: From the Neolithic to the Middle Bronze Age (10,000—1600 BC)  3.0; 3 cr.  
The course covers the archaeology of Anatolia (modern Turkey) from the beginning of the Neolithic (ca. 10,000 BC) until the end of the Middle Bronze Age (ca. 1600 BC), with a special focus on key concepts such as the process of neolithization, the emergence of elites and craft specialists in the Early Bronze Age, and the development of international trade relations in the Middle Bronze Age. Alternate years.

AROL 228  The Archaeology of Anatolia II: The Hittites (1600–1200 BC)  3.0; 3 cr.  
This course deals with the archaeology of Anatolia in the second millennium B.C. ca. 1600 to ca. 1200 BC. It discusses the rise and development of the Hittite empire, its material culture and the reasons of its collapse around 1200 BC. Special focus is on the emergence and decline of complex state societies and on the interconnection of Anatolia with the Ancient Near East. Alternate years.

AROL 231  Ancient Near Eastern Religions  3.0; 3 cr.  
A study of ancient Mesopotamian, Canaanite, and biblical religious texts with emphasis on creation myths, divine beings, death and the afterlife, cults and rituals. This course also includes a complementary investigation of archaeological evidence for religious beliefs and practices. Offered occasionally.

AROL 232  Animals in Archaeology  3.0; 3 cr.  
This course examines the relationship between humans and animals from the Palaeolithic to the end of the Roman Period. The course answers questions such as why, when and how did humans use animals? How did animals influence and change the social and economic structures of past human societies? Important concepts such as the domestication of animals, the secondary products revolution, and the development of specialized ways of subsistence such as pastoralism and nomadism will be discussed. Offered occasionally.

AROL 233/234  Fieldwork in Archaeology  3.0; 3 cr. (each)  
A course entailing participation in archaeological fieldwork to acquire practical experience of methods and techniques used in area surveys, excavation, building recording, post-exavation analysis, or ethnographic data collection related to archaeological fieldwork. Annually. Restricted to majors and minors in Archaeology.
AROL 235/236  Special Topics in Archaeology  
3.0; 3 cr. (each)
A course on the archaeology of a particular area, region (e.g., Anatolia, the Arabian Peninsula, Egypt, Iran, etc.) or subject. Such courses are offered by resident or visiting specialists in their respective fields. *May be repeated for credit. Offered occasionally.*

AROL 291/292  Senior Seminar  
3.0; 3 cr. (each)
A seminar on research methods in archaeology. Subjects include the study and identification of material culture and theoretical frameworks, or explanation in archaeology. Students are expected to research specific topics, present the results for discussion at workshop sessions, and submit their final analysis in research papers. *Alternate years.*

AROL 293/294  Ancient Texts  
3.0; 3 cr. (each)
An introduction to West Semitic epigraphy, including the origin of the alphabet and development of alphabetic scripts, presentation of the various Semitic dialects, and palaeography and selected texts for illustration. This course may be repeated for credit under different topics. *Offered occasionally.*

**Archaeology: 39 Credits in Archaeology**

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<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12+39)</th>
<th>Social Sciences (6)</th>
<th>Natural Sciences (6)</th>
<th>Quantitative Thought (3)</th>
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<tr>
<td>Lecture Courses</td>
<td>Required Arabic course: ARAB 201A or any General Education Arabic communication skills</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Two courses (6)</td>
<td>Two courses (6)</td>
<td>One course (3) in computer literacy</td>
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<td>Required English courses: ENGL 203(3), 204(3)</td>
<td>Nine archaeology courses (27 cr.) from the following: AROL 201, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 231, 235, 236</td>
<td>The academic adviser will recommend particular courses in these disciplines.</td>
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<td>Fieldwork (3)</td>
<td>Required archaeology course: AROL 233(3) or 234(3)</td>
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<td>Seminar (3)</td>
<td>Required archaeology course: AROL 291(3) or 292(3)</td>
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<td>Laboratory (3)</td>
<td>Computer Lab (3)</td>
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<td>Research Project (6)</td>
<td>Required history courses: HIST 286(3), 287(3)</td>
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Department of Mathematics

Chairperson: Abu-Khuzam, Hazar M.
Professors Emeriti: Muwafi, Amin; Yff, Peter
Assistant Professors: Alhakim, Abbas M.; Azar, Monique E.; Bright, Martin P.; Egeileh, Michel Y.; El Khoury, Sabine S.; Kuffner, Todd G.; Raji, Wissam V.; Tlas, Tamer M.
Lecturers: "Fayyad, Dolly J.; "Kobeissi, Mohammad A.; Makhoul, Ola S.; Yamani, Hossam A.

The Department of Mathematics offers programs leading to the degrees of Bachelor of Science (BS) and Bachelor of Arts (BA) in Mathematics, in Applied Mathematics, and in Statistics. It also offers programs leading to the degree of Master of Science (MS) in Mathematics.

Mission Statement

The Department of Mathematics subscribes to the view that “Mathematics as an expression of the Human mind reflects the active will, the contemplative reason, and the desire for aesthetic perfection.” Through the different fields of Algebra, Analysis, Geometry, Number Theory, Statistics, and Applied Mathematics, the Department aims to train students in quantitative reasoning, in dealing with abstraction, in enhancing their sense of formalism, in tackling Mathematical problems, and in writing clear and rigorous proofs. The training will help the student acquire a sound balance between abstract generality and colorful individuality, and between the qualitative and quantitative aspects of Mathematics. It also will help the student master the theory through a clear comprehension of the theoretical aspects, but without losing sight of applications. Graduates of the Mathematics Department should be well placed to work in various professional areas of Education, Finance, Information Technology, or for pursuing graduate studies in Mathematics or a related area.

BA or BS in Mathematics

The department requires nine credits in courses numbered 200 or above in the sciences for the BS degree, and at least nine credits in courses numbered 200 or above in the arts (humanities or social sciences) for the BA degree. In both cases it is recommended that at least six of these nine credits be in disciplines that use quantitative methods, and be chosen in conjunction with

Part time
the student’s faculty adviser. In addition, the departmental requirements are as follows:

MATH 201, MATH 210, MATH 214, MATH 219, MATH 223, MATH 227, MATH 233, MATH 241, and at least one of MATH 220 or MATH 242 and 12 more credits chosen from MATH 202 and mathematics courses numbered 213 or above. In addition, students must take CMPS 200, which is a first course in programming.

University General Education Requirements

6 credits in English Communication Skills and 3 credits in Arabic Communication Skills; 12 credits in the Humanities; 6 credits in Social Sciences (covered by the departmental requirements for BA); 6 credits in natural sciences (covered by the departmental requirements for BS); and 3 credits in Quantitative Thought (covered as a Math major).

A transfer student who has done well in MATH 218 can count it toward the mathematics major instead of MATH 219, subject to departmental approval. In such a case, the department will usually require the student to take MATH 220.

Students wishing to pursue graduate study in mathematics are strongly urged to take, MATH 220, MATH 242, and MATH 213 or MATH 216. They may also want to consider taking one or more graduate course in their senior year. Students with an interest in applied mathematics are urged to take MATH 202, MATH 220, MATH 224, MATH 251, and MATH 234, and to choose their additional courses from those that include a significant use of mathematical techniques. Students interested in high school teaching are encouraged to include MATH 202, MATH 213, MATH 251, and MATH 261 among their courses.

A minor in mathematics requires 18 credits: MATH 201, MATH 210; either MATH 218 or MATH 219; and nine more credits in mathematics courses numbered MATH 202, MATH 211 or above, or statistics courses numbered 230 or above.

BA or BS in Applied Mathematics

A student opting for the program in Applied Mathematics can earn either a BA or a BS degree. The science requirements for the BS are fulfilled by at least 2 science courses (or 6 science credits) chosen in departments in the FAS; the arts requirements for the BA are fulfilled by 2 courses (6 arts credits) chosen in departments in the FAS. The Mathematics requirement is the same for both degrees and consists of 39 credits in Mathematics courses as follows:

MATH 201, MATH 202, MATH 210, MATH 218, MATH 223, MATH 224, MATH 227, MATH 233, MATH 251, MATH 281, and 9 more credits chosen from Mathematics courses numbered 211 and above.

In addition, the student will choose 9 credits in one applied discipline or track from the following list:
1. Computer Science
2. Economics/Econometrics
3. Natural Sciences
4. Engineering and Health Sciences

University General Education Requirements

6 credits in English Communication Skills and 3 credits in Arabic Communication Skills; 12 credits in the Humanities; 6 credits in Social Sciences (covered by the departmental requirements for BA); 6 credits in natural sciences (covered by the departmental requirements for BS); and 3 credits in Quantitative Thought (covered as a Math major).

A minor in Applied Mathematics requires 18 credits: MATH 201, MATH 210; either MATH 218 or MATH 219; and nine more credits in mathematics courses numbered MATH 202, MATH 211 or above, or statistics courses numbered 230 or above.

BA or BS in Statistics

The department requires nine credits in courses numbered 200 or above in the sciences for the BS degree, and at least nine credits in courses numbered 200 or above in the arts (humanities or social sciences) for the BA degree. In both cases it is recommended that at least six of these nine credits be in disciplines that use quantitative methods, and be chosen in conjunction with the student’s faculty adviser. In addition, the departmental requirements are as follows:

- In statistics: STAT 233, STAT 234, STAT 235, STAT 236, STAT 237 and STAT 238, and nine more credits chosen from MATH 202 and from mathematics, statistics, and computer science courses numbered 212 or above, excluding STAT 230.
- In mathematics: MATH 201, MATH 210, and MATH 218 or MATH 219.
- In computer science: CMPS 200.

Students planning to go for higher education in statistics are advised to take their electives in advanced mathematics courses such as MATH 223 and MATH 227. Other students are encouraged to choose among their electives MATH 251 and other computing-oriented courses.

University General Education Requirements

6 credits in English Communication Skills and 3 credits in Arabic Communication Skills; 12 credits in the Humanities; 6 credits in Social Sciences (covered by the departmental requirements for BA); 6 credits in natural sciences (covered by the departmental requirements for BS); and 3 credits in Quantitative Thought (covered as a Math major).

It is to be noted that STAT 201, 210, and 230 are mainly service courses. STAT 201 is essentially equivalent to EDUC 237, and STAT 210 is essentially equivalent to ECON 213. Students can get credit for only one of the following: STAT 201, STAT 210, STAT 230, STAT 233, EDUC 227, ECON 213.

A minor in statistics requires 18 credits: MATH 201, MATH 210, and STAT 233, and nine more credits in statistics courses numbered 211 or above excluding STAT 230.
Course Descriptions
Mathematics

MATH 101 Calculus and Analytic Geometry I 3.1; 3 cr.
Limits, continuity, differentiation with application to curve plotting; Rolle's theorem; integration with application to area, distance, volume, arc-length; fundamental theorem of calculus, transcendental functions. Each semester.

MATH 102 Calculus and Analytic Geometry II 3.1; 3 cr.
Methods of integration, improper integrals, polar coordinates, conic sections, analytic geometry in space, parametric equations, and vector functions and their derivatives. Prerequisite: MATH 101. Each semester.

MATH 201 Calculus and Analytic Geometry III 3.1; 3 cr.
Multivariable functions, partial derivatives, cylindrical and spherical coordinates, multiple integrals, sequences and series, and integration in vector fields. Prerequisite: MATH 101. Each semester.

MATH 202 Differential Equations 3.1; 3 cr.
Surface integrals, Stokes theorem, divergence theorem; first-order differential equations, linear differential equations, series solutions, Bessel's and Legendre's functions, Laplace transform, and systems. Prerequisite: MATH 201. Each semester.

MATH 203 Mathematics for Social Sciences I 3.0; 3 cr.
Polynomials, factoring, first- and second-degree equations, inequalities, absolute value, straight lines, Gaussian elimination, functions, graphs, exponential and logarithmic functions, and differentiation. Not open to students with prior credit in MATH 101 (or its equivalent) or Math 201. Each semester.

MATH 204 Mathematics for Social Sciences II 3.0; 3 cr.
Matrix operations, inverses, determinants, set operations, permutations, combinations, probability, rate of change, techniques of integration, differential equations, graphs of multivariate functions, partial derivatives, and optimization. Prerequisite: MATH 101 or MATH 203. Each semester.

MATH 210 Introduction to Analysis 3.0; 3 cr.
The real numbers, completeness, sequences, some basic topology of the real line, compact sets, Heine-Borel theorem, continuous functions, intermediate value theorem, uniform continuity, extreme values, differentiation, mean-value theorem, Taylor's theorem, and integration, sequences and series of functions. Prerequisite: MATH 201. Annually.

MATH 211 Discrete Structures 3.1; 3 cr.
Logical reasoning, sets, relations and functions; mathematical induction, counting, and simple finite probability theory; analysis of algorithms, complexity; recurrence relations and difference equations; truth tables and switching circuits; graphs and trees; strings and languages. This course is equivalent to CMPS 211. Annually.

MATH 212 Introductory Partial Differential Equations 3.0; 3 cr.
Partial differential equations as mathematical models in science, Fourier series, Fourier inversion, Gibbs phenomenon, applications of Fourier series to partial differential equations (heat equation, Laplace equation, wave equation), Sturm-Liouville Systems, Fourier and Laplace transforms and applications to partial differential equations, pointwise and uniform convergence of sequences and series of functions. Prerequisites: MATH 201, MATH 202. For non-Math majors. Students cannot receive credit for both MATH 212 and 224. Each semester.

MATH 213 Higher Geometry 3.0; 3 cr.
Topics chosen from isometries of Euclidean space, inversion, elements of differential geometry, the Frenet frame, curvature, torsion, the pseudo-sphere, hyperbolic geometry, and affine and projective geometry. Biennially.

MATH 214 Topology I 3.0; 3 cr.

MATH 216 Topology II 3.0; 3 cr.
A senior level course covering more advanced topics in topology. Prerequisite: Consent of instructor. Biennially.

MATH 218 Elementary Linear Algebra with Applications 3.0; 3 cr.
An introduction to linear algebra at a less theoretical level than MATH 219. Systems of linear equations and Gaussian elimination, vectors in Rn, matrices, determinants, vector spaces, subspaces and dimension, orthogonal projection and least-squares approximation, eigenvalues, eigenvectors, and selected applications. Students cannot receive credit for both MATH 219 and MATH 218. Annually.

MATH 219 Linear Algebra I 3.0; 3 cr.
A rigorous introduction to linear algebra, with emphasis on proof and conceptual reasoning. Vector spaces, linear transformations and their matrix representation, linear independence, bases and dimension, rank-nullity, systems of linear equations, brief discussion of inner products, projections, orthonormal bases, change of basis, determinants, eigenvalues, eigenvectors, and spectral theorem. Students cannot receive credit for both MATH 219 and MATH 218. Annually.

MATH 220 Linear Algebra II 3.0; 3 cr.
A deeper study of determinants, inner product spaces, and eigenvalue theory. Adjoints and the spectral theorem, primary decomposition, quotient spaces, diagonalization, triangularization, rational and Jordan forms, connection with modules over a PID, dual spaces, bilinear forms, and tensors. Prerequisite: MATH 241 or consent of instructor. Biennially.

MATH 223 Advanced Calculus 3.0; 3 cr.
Metric spaces, normed vector spaces, the derivative as a linear transformation, chain rule, vector versions of mean-value theorem, Taylor's formula, inverse and implicit function theorems, divergence, curl, differential forms, Stokes's theorem, and notions of differential geometry. Prerequisites: MATH 210 or MATH 224, and MATH 218 or MATH 219. Biennially.

MATH 226 Fourier Analysis and Applications 3.0; 3 cr.
Uniform and absolute convergence of infinite series and integrals, Laplace's method and Stirling's formula, Sturm-Liouville systems, Gram-Schmidt orthogonalization, orthogonal polynomials, Fourier series, Fourier integrals, Parseval and Plancherel theorems, and some partial differential equations. Prerequisites: MATH 210 and MATH 218 or MATH 219. Annually. Students cannot receive credit for both MATH 212 and 224.
MATH 225  Wavelets and Applications  3.0; 3 cr.

MATH 227  Introduction to Complex Analysis  3.0; 3 cr.
Complex numbers, analytic functions, integration in the complex plane, Cauchy's integral theorem, Taylor series, Laurent series, singularities, residues, and contour integration. Prerequisites: MATH 201 and consent of instructor. Annually.

MATH 233  Advanced Probability and Random Variables  3.0; 3 cr.
Same description as STAT 233. Annually.

MATH 234  Introduction to Statistical Inference  3.0; 3 cr.
Same description as STAT 234. Annually.

MATH 238  Applied Probability Models  3.0; 3 cr.
Same description as STAT 238. Annually.

MATH 241  Introduction to Abstract Algebra  3.0; 3 cr.
Groups, subgroups, homomorphisms, normal subgroups and quotient groups, permutation groups, orbits and stabilizers, statement of Sylow theorems, rings, ideals, homomorphisms and quotient fields, and Euclidean and principal ideal domains. Prerequisite: MATH 219 or MATH 218 with a good understanding of proof, or consent of instructor. Annually.

MATH 242  Topics in Algebra  3.0; 3 cr.
Topics chosen among: fields and Galois theory, group theory, ring theory, modules over a PID, and other topics as determined by the instructor. Prerequisite: MATH 241. Biennially.

MATH 251  Numerical Computing  3.1; 3 cr.
Techniques of numerical analysis: number representations and round-off errors, root finding, approximation of functions, integration, solving initial value problems, Monte-Carlo methods. Implementations and analysis of the algorithms are stressed. Projects using MATLAB or a similar tool are assigned. Prerequisites: CMPS 200 or EECE 230 and MATH 201. This course is equivalent to CMPS 251. Annually.

MATH 261  Number Theory  3.0; 3 cr.
Prime factorization, the Euclidean algorithm, congruences, quadratic reciprocity, some Diophantine equations, binary quadratic forms, and continued fractions. Prerequisite: MATH 219 or consent of instructor. Annually.

MATH 271  Set Theory  3.0; 3 cr.
Operations on sets and families of sets, ordered sets, transfinite induction, axiom of choice and equivalent forms, and ordinal and cardinal numbers. Biennially.

MATH 275  Numerical Linear Algebra  3.0; 3 cr.
Equivalent to CMPS 281. Biennially.

MATH 292  Senior Tutorial Courses  3.0; 3 cr.
Prerequisite: Senior standing.

BA in Mathematics: 39 Credits in Mathematics

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12+3)</th>
<th>Social Sciences (6)</th>
<th>Natural Sciences (6)</th>
<th>Quantitative Thought (27+12+3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Courses</td>
<td>9+15+6+6+4+2</td>
<td>• Required Arabic courses (3): ARAB 201A or any General Education Arabic communication skills (3), as determined by placement.</td>
<td>• Required credits in the humanities: 12 credits including 6 credits from CYSR.</td>
<td>• Required courses (6)</td>
<td>• Required Electives (6)</td>
</tr>
<tr>
<td></td>
<td>9+15+6+6+4+2</td>
<td>• Required credits in the humanities: 12 credits including 6 credits from CYSR.</td>
<td>• Required courses (6)</td>
<td>• Required Electives (6)</td>
<td>• Required mathematics electives (12): MATH 202(3), and/or courses numbered 213 and above.</td>
</tr>
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</table>

BS in Mathematics: 39 Credits in Mathematics

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<td></td>
<td>9+12+6+9+4+2</td>
<td>• Required Credits in the humanities: 12 credits including 6 credits from CYSR.</td>
<td>• Required Courses (9)</td>
<td>• Required Electives (9)</td>
<td>• Required mathematics electives (12): MATH 201(3), 210(3), 214(3), 219(3), 223(3), 227(3), 233(3), 241(3), and at least one of 220(3) or 242(3).</td>
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<tr>
<td></td>
<td>9+12+6+9+4+2</td>
<td>• Elective mathematics courses (12): MATH 202 (3), and/or courses numbered 213 and above.</td>
<td>• Elective mathematics courses (12): MATH 202 (3), and/or courses numbered 213 and above.</td>
<td>• Elective programming course (3): CMPS 200</td>
<td>• CMPS 200</td>
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Seminar (0) Laboratory (3) Research Project (0)
BA in Applied Mathematics: 39 credits in Mathematics

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<tr>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (12)</th>
<th>Sciences (6)</th>
<th>Quantitative Thought (39+3)</th>
<th>Free Electives (9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Arabic courses (3): ARAB 101A or any General Education Arabic communication skills (3), as determined by placement.</td>
<td>Required credits in the Humanities: 12 credits including 6 credits from CVSP.</td>
<td>Required Applied Mathematics courses (30): MATH 201, 202, 210, 218, 223, 224, 227, 233, 251, 281.</td>
<td>Required Mathematics electives (9): MATH courses numbered 211 and above.</td>
<td>6 credits in Social sciences. Must include one Economics course (3): ECON 211.</td>
<td>Must include 6 credits chosen in one of the following concentration areas:</td>
</tr>
<tr>
<td>English and Arabic (9)</td>
<td>Humanities (12)</td>
<td>Social Sciences (12)</td>
<td>Sciences (6)</td>
<td>Quantitative Thought (39+3)</td>
<td>Free Electives (9)</td>
</tr>
<tr>
<td>Required English courses (usually 6): ENGL 203 (3), and/or 204 (3), as determined by placement.</td>
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<td>Health Sciences.</td>
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</tbody>
</table>

BS in Applied Mathematics: 39 credits in Mathematics

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<th>English and Arabic (9)</th>
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<th>Sciences (6)</th>
<th>Quantitative Thought (39+4)</th>
<th>Free Electives (15)</th>
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<td>Required Arabic courses (3): ARAB 101A or any General Education Arabic communication skills (3), as determined by placement.</td>
<td>Required credits in the Humanities: 12 credits including 6 credits from CVSP.</td>
<td>6 credits in Sciences.</td>
<td>Required Applied Mathematics courses (30): MATH 201, 202, 210, 218, 223, 224, 227, 233, 251, 281.</td>
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<td>English and Arabic (9)</td>
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<td>Quantitative Thought (39+4)</td>
<td>Free Electives (15)</td>
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<td>Required credits in the Humanities: 12 credits including 6 credits from CVSP.</td>
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<td>Must include 6 credits chosen in one of the following concentration areas:</td>
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</tr>
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</table>

Statistics

**STAT 201** Elementary Statistics for the Social Sciences (Formerly MATH 207) 3.0; 3 cr.
Data organization and frequency distributions; measures of central tendency and dispersion; probability and random variables; binomial and normal distributions; correlation, regression, estimation, and hypothesis testing. Open only to arts students whose mathematical preparation does not allow them to take STAT 210. Students can get credit for only one of STAT 201, STAT 210, STAT 230, STAT 233, or ECON 213. Each semester.

**STAT 210** Elementary Statistics for the Sciences (Formerly MATH 208) 3.0; 3 cr.
Populations, samples, and sampling error; types of data, frequency distributions, and graphical displays of data; empirical definition of probability and probability distributions; conditional probability, independence, Bayes’ rule, and counting rules; discrete and continuous distributions, random variables, binomial, normal, and t distributions; point and interval estimation and hypothesis testing; linear regression and correlation. Computer packages may be used to illustrate methods. Students can get credit for only one of STAT 201, STAT 210, STAT 230, STAT 233, or ECON 213. Each semester.

**STAT 230** Introduction to Probability and Random Variables 3.0; 3 cr.
Display of data, properties of probability, methods of enumeration, conditional probability and independent events; univariate and bivariate distributions corresponding to both discrete and continuous variables; covariance and correlation, moment generating functions, independent random samples and the central limit theorem; basics of confidence intervals and hypothesis testing. Prerequisite: MATH 201. Students can get credit for only one of STAT 201, STAT 210, STAT 230, STAT 233, or ECON 213. Each semester.

**STAT 233** Advanced Probability and Random Variables 3.0; 3 cr.
Axiomatic definition of probability, random variables, univariate and multivariate p.d.f. and c.d.f.; expectation; moment generating function; conditional distribution; families of discrete and continuous random variables; distribution of functions of random variables, stochastic convergence and convergence of distribution functions; the law of large numbers and the central limit theorem. Prerequisite: MATH 201. Students can get credit for only one of STAT 201, STAT 210, STAT 230, STAT 233, or ECON 213. Annually.

**STAT 234** Introduction to Statistical Inference 3.0; 3 cr.
Sampling distribution; point and interval estimation; Neuman-Pearson theory of hypothesis testing; likelihood ratio test; sequential analysis; elementary decision theory. Prerequisite: STAT 233 or a grade of at least 70 in STAT 230. Annually.

**STAT 235** Applied Regression Analysis 3.0; 3 cr.
Straight line regression, multiple regression, analysis of variance and analysis of covariance, multiple and partial correlation; hypothesis testing; confounding, interaction and regression diagnostics; discriminant and factor analysis. Prerequisite: STAT 234. Annually.

**STAT 236** Sampling Techniques 3.0; 3 cr.
Simple random, systematic, stratified, cluster, and two-stage sampling; estimation of parameters and properties of estimates; ratio and regression estimates; problem of non-response. Prerequisite: STAT 234. Annually.

**STAT 237** Applied Nonparametric Methods 3.0; 3 cr.
Order statistics; sign test, Wilcoxon signed-rank test, and Mann-Whitney test; run test and test for randomness; goodness of fit tests; efficiency. Prerequisite: STAT 234 or consent of instructor. Annually.
STAT 238  Applied Probability Models  3.0; 3 cr.
Conditional probability and expectation; discrete and continuous time Markov chains; Chapman-Kolmogorov difference and differential equations; limiting probabilities; branching, Poisson, and birth and death processes; distribution of arrival times; queuing theory. Prerequisite: STAT 233 or a grade of at least 70 in STAT 230. Annually.

BA in Statistics: 36 Credits in Statistics/Mathematics

<table>
<thead>
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<tbody>
<tr>
<td>Lecture Courses</td>
<td>Required Arabic courses (3): ARAB 201 A or any General Education Arabic communication skills (3) as determined by placement</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Required courses (6)</td>
<td>Required Electives (6)</td>
<td>Required mathematics courses (9): MATH 201(3), 210(3), 219(3)</td>
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<td></td>
<td>Required English courses (usually 6 cr.): ENGL 203(3), 204(3) as determined by placement</td>
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<td>Required statistics courses (18): STAT 233(3), 234(3), 235(3), 236(3), 237(3), 238(3)</td>
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<td>Elective MATH/STAT/CMPS (9): Courses numbered 210 and above, excluding STAT 230</td>
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<td>Required programming course (4): CMPS 200(3)</td>
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</tbody>
</table>

Seminar (0)  
Laboratory (3)  
Research Project (0)

BS in Statistics: 36 Credits in Statistics/Mathematics

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<td></td>
<td></td>
<td>Required statistics courses (18): STAT 233(3), 234(3), 235(3), 236(3), 237(3), 238(3)</td>
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<td>Elective MATH/STAT/CMPS (9): Courses numbered 210 and above, excluding STAT 230</td>
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Seminar (0)  
Laboratory (3)  
Research Project (0)

1 May be from the humanities.  
2 CMPS 200 is a 4-credit course with 3 lecture hours (3 credits) and 3–4 lab hours (1 credit) per week.
Department of Philosophy

Chairman: Brassier, Ray
Professor Emeritus: Fakhry, Majid
Professor: Haydar, Bashshar H.
Associate Professors: Brassier, Ray; Muller, Hans D.; Nasr, Waddah N.
Assistant Professors: Bashour, Bana M.; Johns, Christopher; Lewtas, Patrick K.
Lecturers: Jraissati, Yasmina; McWherter, Dustin; Saleh, Agha J.; Spohr, Paul
Instructors: Chalabi, Fares; Dib, Nelly; Hassan, Hani; Khamis, Deanna; Soghom, Vahik; Wahab, Karam

The Department of Philosophy offers programs leading to the degrees of Bachelor of Arts and Master of Arts in Philosophy. Requirements for transfer to the department include approval by the department, and a grade of 70 or more in any two humanities courses (excluding the communication skills requirements in Arabic and English).

Mission Statement

The undergraduate program in Philosophy provides students with a knowledge of key historical and contemporary philosophers and philosophical problems, together with a range of answers to those problems. They promote respect for clarity, truth, critical reflection and rational argument. They promote independence and of thought rooted in a fair-minded understanding of opposing views. They strive to equip students with the knowledge and skills needed to navigate relevant portions of the contemporary philosophical terrain; competence at critical analysis; and the ability to write about abstract issues in a clear, nuanced and compelling manner. Both programs also seek to impart an awareness of the application of philosophical thought to other academic disciplines or to matters of public interest, encouraging students to apply their philosophical skills more widely.

BA in Philosophy

Students majoring in philosophy are required to take a total of at least 36 credits of philosophy courses, which must include PHIL 210 and PHIL 211, and two of PHIL 213, PHIL 214, and PHIL 225. Students should also choose, under the supervision of the department, a balanced program of systematic and historical courses. In fulfilment of university requirements majors must also take the following:

University General Education Requirements

English Communication Skills 6 credits; Arabic Communication Skills 3 credits; Humanities 12 credits (including six credits of CVSP); Social Sciences 6 credits; Natural Sciences 6 credits; Quantitative Thought 3 credits.

Students choosing a minor in philosophy are required to take a total of fifteen credits in philosophy, including two of the following courses: PHIL 210, PHIL 211, PHIL 213, and PHIL 214.
Course Descriptions

PHIL 101  Applied Philosophy  3.0; 3 cr.
A course that deals with philosophical questions which have practical import; it aims to introduce students to the philosophical mode of analysis. Each semester.

PHIL 102  Philosophical Classics  3.0; 3 cr.
An introduction to the thought of some major figures in the history of philosophy. Each semester.

PHIL 103  Introduction to Philosophy  3.0; 3 cr.
An introduction to philosophy and its methods through an analysis of traditional issues in ethics, epistemology, metaphysics, and the philosophy of religion. Each semester.

PHIL 211  Introduction to Logic  3.0; 3 cr.
An introductory examination of various contemporary accounts of the nature of language and meaning. Prerequisite: PHIL 210.

PHIL 212  Philosophy of Mind  3.0; 3 cr.
An introduction to the philosophical problems and issues that arise in the attempt to understand the nature of the mental and of psychological explanation. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 213  History of Ancient and Medieval Philosophy  3.0; 3 cr.
A survey of ancient and medieval philosophy from the pre-Socratics to Aquinas. Annually.

PHIL 214  History of Modern Philosophy  3.0; 3 cr.
A survey of early modern philosophy, from Descartes to Kant. Annually.

PHIL 215  Nineteenth Century Philosophy  3.0; 3 cr.
An introductory survey of post-Kantian philosophy, with emphasis on Fichte, Schelling, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Alternate years.

PHIL 216  Political Philosophy  3.0; 3 cr.
An examination of the main issues of political philosophy, such as political obligation, justice, political rights, and other issues. Students cannot receive credit for both PHIL 216 and PSPA 210. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 217  Aesthetics  3.0; 3 cr.
An examination of the central problems and issues that arise in the interpretation, analysis, and evaluation of works of art. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 218  Metaphysics and Epistemology  3.0; 3 cr.
An investigation of the most fundamental concepts involved in our thoughts about the world, including the nature of truth, knowledge, causality, substance, space, and time. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 219  Existentialism  3.0; 3 cr.
An introduction to existentialist philosophy, within the context of nineteenth-century and twentieth-century philosophy. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 220  Symbolic Logic  3.0; 3 cr.
A study of the axiomatization and the meta-theory of classical propositional and predicate logic, first-order theories, as well as related philosophical issues. Prerequisite: PHIL 211. Offered occasionally.

PHIL 221  Philosophy of Science  3.0; 3 cr.
An introductory examination of contemporary accounts of the nature of the mental and of psychological explanation. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 222  Philosophy of Religion  3.0; 3 cr.
An introductory examination of various contemporary accounts of the nature of language and meaning. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 223  Philosophy of Religion  3.0; 3 cr.
An introductory examination of various contemporary accounts of the nature of language and meaning. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 224  Philosophy of Religion  3.0; 3 cr.
An in-depth survey of the main philosophical questions connected to religion, including questions about religion as a feature of human experience, as well as questions connected to the nature of God, evil, free will, and so on. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 225  History of Moral Philosophy  3.0; 3 cr.
A survey of some major historical traditions in moral philosophy, including at least one figure from ancient or medieval philosophy, and at least one figure from modern philosophy. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 226  Ethical Theory  3.0; 3 cr.
An examination of some theories about the moral status of actions or character, or about the overall nature of morality itself. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 230  Philosophy of Plato  3.0; 3 cr.
An introduction to some of Plato’s major dialogues. Prerequisite: One previous course in philosophy, or consent of instructor. Offered occasionally.
PHIL 231  Philosophy of Aristotle  3.0; 3 cr.
An introductory examination of the physics, metaphysics, logic, ethics, and politics of Aristotle. 
Prerequisite: One previous course in philosophy, or consent of instructor. Offered occasionally.

PHIL 232  Islamic Philosophy  3.0; 3 cr.
An examination of the philosophical and religious thought of the major philosophers of Islam.
Offered either in Arabic or in English. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 249  Philosophy of Feminism  3.0; 3 cr.
An examination of philosophical issues relating to gender relations and the foundations of feminist theory; issues addressed primarily involve the ethical or epistemological content of feminist theory. Prerequisite: One previous course in philosophy, or consent of instructor. Alternate years.

PHIL 250  Special Topics in Logic  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 251  Special Topics in Ethics  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 252  Special Topics in Political Philosophy  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 253  Special Topics in Aesthetics  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 254  Special Topics in Metaphysics  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 255  Special Topics in Epistemology  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 256  Special Topics in the Philosophy of Science  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 257  Special Topics in the Philosophy of Language  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 258  Special Topics in the Philosophy of Mind  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. May be repeated for credit. Offered occasionally.

PHIL 260/261  Special Topics in the History of Philosophy  3.0; 3 cr.
Prerequisite: Two previous courses in philosophy or consent of instructor. Offered occasionally.

PHIL 262/263  Special Topics in Contemporary Philosophy  3.0; 3 cr.
Prerequisite: Two previous philosophy courses or consent of instructor. Offered occasionally.

PHIL 271/272  Directed Studies in Philosophy  3-6 cr.
Prerequisite: Consent of Instructor. Offered on demand.

24 + 12 Credits in Philosophy

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12+12+24)</th>
<th>Social Sciences (6) (Unspecified)</th>
<th>Sciences, Math, and Technology (Unspecified) Natural Sciences (6)</th>
<th>Quantitative Thought (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Courses</td>
<td>Required Arabic course: ARAB 201 A or B, or any upper level course (3)</td>
<td>Required English courses: ENGL 203(3), 204(3)</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Four required philosophy courses (12): PHIL 210(3), 211(3), two courses from the following: 213(3), 214(3), 225(3)</td>
<td>Electives (min. 6) recommended is a course in computer literacy</td>
</tr>
<tr>
<td>Seminar (33)</td>
<td>Lecture Courses (9+12+36)</td>
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<tr>
<td>Laboratory (0)</td>
<td>Computer Lab (3)</td>
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<tr>
<td>Research Project</td>
<td>PHIL 210, 213–224,</td>
<td></td>
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<tr>
<td>(9)</td>
<td>230–332, 249–263</td>
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</table>
Department of Physics

Chairperson: Isber, Samih T.
Professor Emeritus: Mavromatis, Harry A.
Professors: Bitar, Khalil M.; Chamseddine, Ali H.; El Eid, Mounib F.; Isber, Samih T.; Klushin, Leonid I.; Sabra, Wafic A.; Tabbal, Malek D.; Touma, Jihad R.
Associate Professors: Antar, Ghassan Y.; Christidis, Theodore C.
Assistant Professor: Kazan, Michel J.
Lecturers: *Bodakian, Berjouhi H.; *Ghamlouche, Hasan J.; *Roumieh, Mohammad A.; *Said, Aurore J.

BS in Physics

Mission Statement

The program leading to the Bachelor of Science emphasizes the fundamental concepts and principles of physics and their roles in a variety of disciplines, in a liberal arts setting. The educational focus of the Physics Department is to provide the students with high quality instruction in both theoretical and experimental Physics. Consequently, theoretical courses, together with computer modeling experience and a comprehensive set of laboratory experiments, introduce the students to various methods of inquiry and research in physics. The emphasis is not only on subject instruction, but also on the development of communication and teamwork skills, as well as critical and analytical thinking. The program is designed to graduate well-rounded, free-thinking individuals with inquisitive minds who are well prepared for further study in basic and applied research and are capable of pursuing professional careers in a variety of diverse fields.

The Department of Physics offers courses at the undergraduate level leading to a bachelor’s degree in physics.

The requirements for a BS in Physics are 90 credits for students entering at the sophomore level. The distributions of these courses are as follows:

Degree Requirements

- 39 credits in Natural Sciences (27 credits required Physics courses; 6 credits elective Physics courses; 6 credits required Physics Lab courses).
- 40 credits if PHYS 228 is chosen as an elective.
- 12 credits in Quantitative Thought (9 credits in Math; 3 credits in CMPS 200 or EECE 230).
- 15 credits in free electives.
- General Education requirements that include 9 credits in Communication Skills (3 credits in Arabic; 6 credits in English - Eng. 203 and Eng. 204); 12 credits in the Humanities (including

Course Descriptions

**PHYS 101** Introductory Physics I 4.0; 4 cr.
Measurements, motion in one dimension, vectors, motion in two dimensions, Newton’s laws with applications, work and energy, circular motion, linear momentum and collisions, rotation and angular momentum, oscillations, gravity, and elements of fluid mechanics. Pre- or corequisite: MATH 101. Annually. Students shall receive credit for only one of PHYS 101 or PHYS 103.

**PHYS 101L** Introductory Physics Laboratory I 0.2; 1 cr.
Error analysis, measuring devices, speed and acceleration, measurement of gravitational acceleration, forces, friction, circular motion, conservation of energy, ballistic pendulum, rotation, and simple harmonic motion. Pre- or corequisite: PHYS 101. Annually.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 103</td>
<td>Physics for the Life Sciences</td>
<td>3.0</td>
<td>Units and dimensions, scalars and vectors, kinematics in one and two dimensions, dynamics, work and energy, collisions, gravitation, and rotational motion. Each semester. Students shall receive credit for only one of PHYS 101 or PHYS 103.</td>
</tr>
<tr>
<td>PHYS 103L</td>
<td>Physics for the Life Sciences Laboratory</td>
<td>0.2</td>
<td>Error analysis, measurements, position, speed and acceleration, ballistic pendulum static and dynamic forces, Atwood's machine, Linear Air Track I, collision, centrifugal force and rotational inertia. Pre- or corequisite: PHYS 103. Each semester.</td>
</tr>
<tr>
<td>PHYS 200</td>
<td>Understanding the Universe</td>
<td>3.0</td>
<td>An introductory course in astronomy. Basic astronomical tools, properties of the earth, solar system, sun, electromagnetic radiation, properties and evolution of stars, and the Milky Way galaxy. Each semester. Students cannot receive credit for PHYS 200 and PHYS 204 or PHYS 205 or PHYS 210 or PHYS 211 or PHYS 212.</td>
</tr>
<tr>
<td>PHYS 204</td>
<td>Classical Physics for Life Sciences</td>
<td>3.0</td>
<td>Fluids, heat and heat engines, gas dynamics, wave phenomena, and sound and light. Preerequisite: PHYS 103 (or equivalent). Annually.</td>
</tr>
<tr>
<td>PHYS 204L</td>
<td>Classical Physics for Life Sciences Laboratory</td>
<td>0.2</td>
<td>Error analysis, Bernoulli's Law, surface tension, coefficient of viscosity, thermal expansion, Boyle's law, heat engine, mechanical equivalent of heat, waves on a stretched string, standing waves in air columns, geometrical optics I: reflection and refraction, geometrical optics II: mirrors and lenses, interference and diffraction. Pre- or corequisite: PHYS 204. Annually.</td>
</tr>
<tr>
<td>PHYS 205</td>
<td>Modern Physics for Life Sciences</td>
<td>3.0</td>
<td>Electricity: electric field and electric potential, electric current and circuits, and capacitance. Magnetism: magnetic field, magnetic materials, electromagnetic induction, electromagnetism applied to biological systems, introduction to special relativity, atoms and atomic structure, nuclei, and radioactivity. Preerequisite: PHYS 103 (or equivalent). Annually.</td>
</tr>
<tr>
<td>PHYS 205L</td>
<td>Modern Physics for Life Sciences Laboratory</td>
<td>0.2</td>
<td>Error analysis, capacitance and dielectric constants, basic oscilloscope operations, Wheatstone bridge, RC and RL circuits, measurements of magnetic induction fields, measurement of the charge to mass ratio of electrons, RC and RLC-circuits, Ohm's law, Planck's constant, atomic spectroscopy, transformers. Pre- or corequisite: PHYS 205. Annually.</td>
</tr>
<tr>
<td>PHYS 210</td>
<td>Introductory Physics II</td>
<td>3.1</td>
<td>Review of classical mechanics, fluid statics, fluid dynamics, temperature, heat and first law of thermodynamics, kinetic theory of gases, heat engines, entropy and second law of thermodynamics, general properties of waves, sound waves and resonances, light and optics, interference, diffraction, and polarization. Pre- or corequisite: MATH 201. Each semester.</td>
</tr>
<tr>
<td>PHYS 210L</td>
<td>Introductory Physics Laboratory II</td>
<td>0.2</td>
<td>Error analysis, Atwood's Machine and motion down an incline, conservation of Mechanical energy, surface tension and viscosity, thermal expansion of solids, mechanical equivalent of heat, standing waves on a stretched string, standing waves in air columns, interference and diffraction, the spectrometer, Michelson interferometer. Pre- or corequisite: PHYS 210. Each semester.</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Magnetism</td>
<td>3.0</td>
<td>Electrostatics, current, resistance, Ohm's law, Kirchhoff's laws, RC circuits, magnetostatic theory, Ampere's law, Biot-Savart law, Faraday's law, LR circuit, RLC circuits, and a qualitative discussion of Maxwell's equations. Pre- or corequisite: MATH 201. Each semester.</td>
</tr>
<tr>
<td>PHYS 211L</td>
<td>Electricity and Magnetism Laboratory</td>
<td>0.2</td>
<td>Error analysis, capacitance and dielectric constant measurements, electrical circuits and Wheatstone bridge, measurement of the force between two parallel current-carrying conductors, measurement of magnetic induction fields, basic oscilloscope operations, RL, RC, and RLC circuits, measurement of the e/m ratio of electrons, transformers, Ohm's Law and resistivity. Pre- or corequisite: PHYS 211. Each semester.</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>Modern Physics</td>
<td>3.0</td>
<td>Special theory of relativity, introductory quantum mechanics, atomic physics, nuclear physics, and introduction to elementary particles and cosmology. Pre- or corequisite: MATH 201. Each semester. Students cannot receive credit for both PHYS 212 and CHEM 218.</td>
</tr>
<tr>
<td>PHYS 221L</td>
<td>Junior Laboratory</td>
<td>0.4</td>
<td>A course of experiments selected from the topics of diffraction, e/m ratio, magnetic field, RL, RC, RLC circuits, ohmic and non-ohmic devices, atomic spectroscopy, Milikan's experiment, Frank-Hertz experiment, speed of sound, gravitational acceleration, Planck's constant, and physical optics. Prerequisite: Junior standing. Annually.</td>
</tr>
<tr>
<td>PHYS 223</td>
<td>Physical Optics</td>
<td>3.0</td>
<td>Wave theory of light, Maxwell's equations, superposition and polarization, interference, interferometers, diffraction, coherence, lasers, and holography. Annually.</td>
</tr>
<tr>
<td>PHYS 225</td>
<td>Introduction to Astronomy and Astrophysics</td>
<td>3.0</td>
<td>Observation and instruments, photometry and magnitudes, radiation mechanisms, celestial mechanics, stellar spectra and structure, stellar evolution, Milky Way, galaxies, cosmology. Pre or corequisites: MATH 201, MATH 202, and PHYS 210. Annually.</td>
</tr>
</tbody>
</table>
PHYS 226 Solid State Physics 3.0; 3 cr.
Electrons in one-dimensional periodic lattice, vibrations in one-dimensional periodic lattice, geometrical description of crystals, free-electron theory in metals, excitons, plasmons, polarons, lattice dynamics, semi-conductors, magnetic ordering, superconductivity, and electron gas in a magnetic field. Prerequisites: PHYS 235 and PHYS 236. Annually.

PHYS 228 Electronics 3.0; 3 cr.
DC linear circuits, capacitors, inductors and transients, periodic waveforms, diodes, power supplies, operational amplifier, logic gates, timers, multiplexers, flip-flops, and counting circuits. May be repeated for credit. Prerequisite: Consent of department. Each semester.

PHYS 228L Electronics Laboratory 0.3; 1 cr.
DC measurements, periodic waveforms, power supplies, transients, frequency and period measurements, operational amplifiers, and some digital circuits. Pre- or corequisite: PHYS 228. Annually. Fall semester. Students may not get credit for this course unless they pass PHYS 228L.

PHYS 231 Special Topics 3.0; 3 cr.
May be repeated for credit. Prerequisite: Consent of department.

PHYS 232 Special Topics 3.0; 3 cr.
May be repeated for credit. Prerequisite: Consent of department.

PHYS 235 Statistical Physics 3.0; 3 cr.

PHYS 236 Quantum Mechanics 3.0; 3 cr.
Fundamental concepts: Bras, Kets, matrix representation of operators, change of basis; quantum dynamics: time evolution of quantum mechanical systems, spin; translational and rotational symmetry: Schrödinger equation in one and three dimensions; spherical symmetric systems: three-dimensional oscillator, hydrogen atom; theory of angular momentum: rotation operator, addition of angular momenta; time-independent perturbation theory, Zeeman effect, Stark effect, spin-orbit coupling, time-dependent perturbation theory, variational methods. Prerequisites: MATH 212 or MATH 224 (or equivalent) and PHYS 212. Annually.

PHYS 237 Introduction to Plasma Physics 3.0; 3 cr.

PHYS 248 Undergraduate Seminar 1.0; 1 cr.
Prerequisite: Senior standing. Annually.

PHYS 249 Elementary Particle Physics 3.0; 3 cr.
The standard model of elementary particles and their interactions represent the core content of the course. Topics to be discussed include, but are not limited to, relativistic kinematics, the Dirac equation, internal and space time symmetries, the quark model, gauge theories and the basic description of the electromagnetic, weak and strong interactions and their Feynman calculus, spontaneous breaking of symmetries and the Higgs mechanism. Prerequisites: PHYS 236 Quantum Mechanics and/or senior standing.

PHYS 257L Advanced Laboratory 0.6; 3 cr.
A weekly lecture on instrumentation and a selection of six to eight experiments from the following list: transient and steady states of SH-oscillator, coupled oscillators bridge circuits, speed of sound in liquid, prison spectrometer, Frank–Hertz experiment, Planck constant, Currie temperature, magnetic susceptibility, measurement of gravitational acceleration, speed of light, Milikan’s drop oil experiment, the Hall effect, optics, the Faraday effect, and nuclear magnetic resonance. Prerequisite: PHYS 221L. Annually.

36 Credits in Physics

<table>
<thead>
<tr>
<th>Mode of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (6)</th>
<th>Natural Sciences (39)</th>
<th>Quantitative Thought (12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture/Courses (9+12+30 +12)</td>
<td>Required Arabic courses: ARAB 201A or any General Education Arabic communication skills (3)</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP (see CVSP requirements under Civilization Sequence Program)</td>
<td>Two courses: The Department recommends that at least one of them is a level-200 Economics course</td>
<td>Required physics courses (27): PHYS 210(3), 212(3), 213(3), 216(3), 217(3), 220(3), 223(3), 222(3), 226(3), 235(3), 236(3)</td>
<td>Required mathematics and technology courses (12 or 13): MATH 201(3), 202(3), CMPS 200(3), or EECE 230(3)</td>
</tr>
<tr>
<td>Seminar (1)</td>
<td>PHYS 248(1)</td>
<td>Required Physics Labs: PHYS 210L(1), 212L(1), 212L(1)</td>
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</tr>
<tr>
<td>Laboratory (6)</td>
<td>Required Physics Labs: PHYS 210L(1), 212L(1), 257L(3)</td>
<td>The following courses may include a research project: PHYS 222, 226, 231, 232, 235, 236, 249</td>
<td></td>
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</tbody>
</table>

1 Students may not get credit for this course unless they pass PHYS 228L.
The mission of the BA program in Public Administration is to educate students, and help them develop knowledge, skills and abilities in the discipline of public administration. This includes teaching students to become innovative leaders by developing their managerial and analytic skills, thereby preparing them for professional success. The program is designed to provide students with in-depth knowledge and training geared towards the building of a generalist, academic, professional, and ethical background, and to enhance students’ decision-making, analytical and interpersonal skills. We aim to increase our students’ understanding of the political, constitutional, legal, economic, social, cultural, and organizational environments within which they will work.

Graduation Requirements

University Requirements

- Language requirements: 6 credits of English and 3 credits of Arabic.
- General Education requirements: 6 credits of English Communication Skills; 3 credits of Arabic Communication Skills; 12 credits in the humanities including 6 credits of CVSP; 6 credits in the social sciences; 6 credits in the natural sciences, and 3 credits in quantitative thought.

Major Courses: 39 credits of PSPA courses, both for PS and PA majors.

Students majoring in Political Studies are required to complete 39 credits in the department, which must include PSPA 201, PSPA 202, PSPA 203, PSPA 210, PSPA 211, PSPA 213, and either PSPA 253 or PSPA 256. Six additional Political Studies courses, including one senior seminar, are required. These six courses can be selected from PSPA 214-256; PSPA 286; PSPA 288-293; and PSPA 299.

Students majoring in Public Administration are required to complete 39 credits in the department, which must include PSPA 201, PSPA 202, PSPA 203, PSPA 212, PSPA 273, and PSPA 277. Six additional courses are required. Four courses should be taken in one of the sub-fields (Public Management or Public Policy) and the remaining two courses in the other sub-field. The Public Management courses are PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 275, PSPA 278, and PSPA 297. The Public Policy courses are PSPA 260, PSPA 261, PSPA 262, PSPA 263, and PSPA 298. One of these courses should be a senior seminar (PSPA 297 or PSPA 298). PA majors are also required to take the following courses outside the department: one economics course from the General Elective list; one course related to information technology (CMPS 206, CMPS 209 or INFO 200); one course related to statistical analysis (STAT 201, STAT 210, EDUC 227 or PSYC 213) and either SOAN 201 or PSYC 201.

All PSPA majors are recommended to complete PSPA 201, PSPA 202, and PSPA 203 by the end of their second semester in the program. All PSPA majors must take ENGL 203 and ENGL 204 by the end of their third semester in the program. All PSPA majors are expected to choose, after consultation with their adviser, four courses that count as free electives. PSPA majors whose PSPA average falls below 70 will be dropped from the program.

Transfer of Major

Transfer of Major within the Faculty of Arts and Sciences: Transfers to the PSPA major require a grade of 70 in PSPA 201 and PSPA 202, plus a minimum of combined grade average of 70 in ENGL 203 and ENGL 204.
Transfer from one faculty to another within the University: Students who wish to transfer from one faculty to another must complete the application for transfer form available on AUBsis. Students must apply within the deadlines specified in the University Calendar.

Minor in PSPA

Minors for PSPA Majors

Political Studies majors choosing to minor in Public Administration are required to take a minimum of 15 credits. The requirements are PSPA 212; plus four upper-level courses from the following list: PSPA 222, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, or PSPA 278. No courses taken for a major may be counted toward a minor; and vice versa.

Political Studies majors choosing to minor in Public Policy are required to take a minimum of 15 credits. The requirements are PSPA 260 and PSPA 276; plus three upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, or PSPA 278. No courses taken for a major may be counted toward a minor; and vice versa.

Public Administration majors choosing to minor in Political Studies are required to take a minimum of 15 credits. The requirements are one of the following: PSPA 210, PSPA 211 or PSPA 213; and any four upper level courses from the following list: PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 222, PSPA 223, PSPA 225, PSPA 228, PSPA 229, PSPA 231, PSPA 232, PSPA 233, PSPA 234, PSPA 235, PSPA 236, PSPA 237, PSPA 238, PSPA 239, PSPA 250, PSPA 251, PSPA 252, PSPA 253, PSPA 254, PSPA 255, PSPA 256, or PSPA 288. No courses taken for a major may be counted toward a minor; and vice versa.

Minors for Non-PSPA Majors

Non-PSPA majors choosing to minor in Political Studies are required to take a minimum of 15 credits. The requirements are PSPA 201; one of the following: PSPA 210, PSPA 211 or PSPA 213; and any three upper-level courses from the following list: PSPA 214, PSPA 215, PSPA 216, PSPA 217, PSPA 218, PSPA 219, PSPA 221, PSPA 222, PSPA 223, PSPA 225, PSPA 228, PSPA 229, PSPA 231, PSPA 232, PSPA 233, PSPA 234, PSPA 235, PSPA 236, PSPA 237, PSPA 238, PSPA 239, PSPA 250, PSPA 251, PSPA 252, PSPA 253, PSPA 254, PSPA 255, PSPA 256, PSPA 286, PSPA 288, PSPA 290, PSPA 291, PSPA 292, PSPA 293, and PSPA 299.

Non-PSPA majors choosing to minor in Public Administration are required to take a minimum of 15 credits. The requirements are PSPA 202 and PSPA 212; plus three upper-level courses from the following list: PSPA 222, PSPA 257, PSPA 258, PSPA 259, PSPA 272, PSPA 273, PSPA 275, PSPA 277, PSPA 278, PSPA 297, PSPA 298, or PSPA 299.

Non-PSPA majors choosing to minor in Public Policy are required to take a minimum of 15 credits. The requirements are PSPA 202, PSPA 260 and PSPA 276; plus two upper-level courses from the following list: PSPA 223, PSPA 225, PSPA 238, PSPA 250, PSPA 251, PSPA 252, PSPA 259, PSPA 261, PSPA 262, PSPA 263, PSPA 277, PSPA 278, PSPA 297 or PSPA 298.

Course Descriptions

PSPA 101 Issues in Contemporary Politics 3.0; 3 cr.
A course that examines the global context of politics, focusing on the changing world order in the twentieth century. Special attention is given to themes like democratization, civil society, ethnic conflict, human rights, and globalization. Each semester.

PSPA 201 Introduction to Political Science 3.0; 3 cr.
An introduction to the study of politics with emphasis on the basic concepts, ideas, and issues relating to the process of government in the modern state. Each semester.

PSPA 202 Introduction to Public Administration 3.0; 3 cr.
A course on the nature of public administration. Basic concepts, processes, and approaches in the field of public administration are introduced so that the student develops an appreciation for the role of public administration in modern society. Each semester.

PSPA 203 Research Methods 3.0; 3 cr.
A course that focuses on the problems involved in asking and answering questions about political science and public administration. This course presents the various analytical frameworks and methodological tools used for this purpose with emphasis on empirical approach, data collection, and analysis. Students cannot receive credit for both SOAN 210 and PSPA 203. Each semester.

PSPA 210 Introduction to Political Thought 3.0; 3 cr.
An introduction to the main Western and Islamic traditions in political philosophy and political theory. Students cannot receive credit for both PSPA 210 and PHIL 216. Each semester.

PSPA 211 Introduction to Comparative Politics 3.0; 3 cr.
A survey of concepts and issues in comparative politics. This course acquaints the student with basic theoretical frameworks for the study and analysis of political phenomena, and establishes criteria for comparing political systems. This course also closely examines the application of these concepts, frameworks, and criteria in selected countries. Each semester.

PSPA 212 Contemporary Trends in Public Administration and Management 3.0; 3 cr.
A course that deals with the contemporary transformation of the public sector and its relationship with government and society. This course evaluates managerialism in the public sector, privatization, and entrepreneurial government. Each semester.

PSPA 213 Introduction to International Politics 3.0; 3 cr.
A survey of the basic forces and factors determining relations among states, with special emphasis on the international system, foreign policy, national power, the restraints on determinants of state action, contemporary problems and major issues faced by states, and the patterns of interaction that prevail among states. Each semester.

PSPA 214 Early and Mediaeval Islamic Thought 3.0; 3 cr.
The course is an introduction to early and classical Islamic political thought. It focuses on the history, origins, developments and objectives of Islamic political history, theology, jurisprudence and politics as they relate to the state, society, and relations with non-Muslims. The course analyzes the essential concepts and events that make the political core doctrines of Islam: a political system, a political theology and ideology, and a theory of international relations. Comparisons and contrasts between different Islamic schools are to be made and explored. Occasionally.
PSPA 215  Modern Islamic Thought  3.0; 3 cr.
The course is a survey that focuses on major political and ideological issues in the modern world of Islam and deals analytically with the major doctrines, movements, and trends that have been developed during the 19th and 20th centuries. The course starts with the discussion of the ideological and political doctrines of Islamic reformers, then moves to discuss the rise of Islamic movements and their ideologies. Issues like Islamic government, state, religion, revolution, nationalism, and relations with the West, are to be discussed. Annually.

PSPA 216  Western Political Thought from Antiquity to the Renaissance  3.0; 3 cr.
A survey of the main Western traditions, philosophies, and themes in political thought from Greek Antiquity to the Renaissance. The course will combine an in-depth analysis of the main philosophical concepts of the past that are still relevant to contemporary political thought and politics, with a historical analysis of the intellectual, social, and political context in which they emerged and for which they were constructed. Special focus will be given to the Greek polis and the emergence of a discourse on democracy, the relationship between politics and ethics, the search for good government and the just society, and the shift to early Realism in the context of the emergence of the modern state in Europe. Occasionally.

PSPA 217  Modern and Postmodern Western Political Thought  3.0; 3 cr.
A survey of the main Western traditions, philosophies, and themes in political thought from early European Modernity and the Enlightenment to the contemporary era, including Postmodern philosophies. The course will combine an in-depth analysis of the modern and postmodern paradigms in political philosophy, with a historical analysis of the intellectual, social and political context that led to the critique of the modern nation-state, nationalism, and democracy, and the search for new normative orders. Annually.

PSPA 218  Social Theories  3.0; 3 cr.
A survey of the main social theories that have contributed to an empirical understanding of the political at different levels of analysis and from different conceptual frameworks. The course will emphasize an interdisciplinary approach, through a comparison of theories produced in different disciplines (political science, sociology, anthropology, political psychology, economics) that focus on different objects of study (the state, the community, social classes, the individual). Annually.

PSPA 219  Arab Political Thought and Ideologies  3.0; 3 cr.
The aim of the course is to explore various intellectual and political debates in the modern Arab world. The course will provide an overview of the development of modern Arab political thought and will present some of the main political, intellectual, and academic debates in this domain. Topics covered in this course include Arab nationalism, Marxism and Liberalism, modernity and tradition, secularism and Islam, Orientalism and the West, and other topics. Annually.

PSPA 220  Globalization and Culture  3.0; 3 cr.
This course offers a critical exploration of the cultural dynamics of globalization and the politics of the globalisation of culture. It also addresses the spread of (and reaction to) American popular culture abroad and the impact of globalization on American culture and identity. Occasionally.

PSPA 221  Theories and History of the State  3.0; 3 cr.
The aim of the course is to explore "the state" as a political construct and provide a comparative survey of experiences of state-building in the Middle East (including Lebanon). Topics covered include the history of state formation, state-society relations, authoritarianism and democratization, the impact of globalization on the state, and related issues. Occasionally.

PSPA 222  Democracy, Civic Engagement and Leadership  3.0; 3 cr.
The course will introduce students to the principles and processes of civic engagement and leadership within democratic and democratizing systems of governance, and will help them understand the theoretical and practical issues related to the practice of participatory democracy from a comparative perspective. The discussion of the main features of the democratic system will be complemented with an extensive review of specific cases that are relevant to understand the problems that face civic engagement and leadership in different socio-political and cultural contexts. Annually.

PSPA 223  Constitutional Law  3.0; 3 cr.
A course that examines the constitutions and the development of constitutional mechanisms and practices in selected countries, with a focus on the Lebanese constitutional system. Constitutional mechanisms in general and institutional variables are discussed as well as their impact on public policy, democracy, and political stability. Each semester.

PSPA 224  Public International Law I  3.0; 3 cr.
A course introducing the basics of public international law, including its origins, purpose, sources, subjects, and response to international wrongful acts. It explores case studies to illustrate key points. The aim of this course is to build students' understanding of the modern international legal order and its most important principles, and to contextualize its relationship with international politics. Annually.

PSPA 225  Public International Law II  3.0; 3 cr.
A course that, building upon PSPA 224's introduction, deals in more depth with some of the most important fields of public international law such as diplomatic relations, the law of the sea, the regulation of the use of force, international humanitarian law, human rights, international justice or the development of international criminal law. This course makes extensive use of recent case studies and entails an important research component as it deals with some of the most significant developments and debates in contemporary international law. Occasionally. Prerequisite: PSPA 224.

PSPA 226  International Security  3.0; 3 cr.
A course analyzing major issues in international security, including arms control, disarmament, terrorism and environmental degradation in both theory and practice. It covers both traditional and non-traditional security perspectives. Occasionally.

PSPA 227  Paleolite, Prehistoric, and Prehistory  3.0; 3 cr.
The course is a comprehensive survey of the world's prehistory, from the earliest known times to the dawn of civilization. The course will cover major themes in prehistory, including the evolution of human culture, the development of agriculture, the rise of city-states, and the rise of empires.

PSPA 228  Constitutional Law  3.0; 3 cr.
A course that examines the constitutions and the development of constitutional mechanisms and practices in selected countries, with a focus on the Lebanese constitutional system. Constitutional mechanisms in general and institutional variables are discussed as well as their impact on public policy, democracy, and political stability. Each semester.

PSPA 229  Public International Law II  3.0; 3 cr.
A course that, building upon PSPA 228's introduction, deals in more depth with some of the most important fields of public international law such as diplomatic relations, the law of the sea, the regulation of the use of force, international humanitarian law, human rights, international justice or the development of international criminal law. This course makes extensive use of recent case studies and entails an important research component as it deals with some of the most significant developments and debates in contemporary international law. Occasionally. Prerequisite: PSPA 228.

PSPA 230  Water Policy and Policy  3.0; 3 cr.
Water is the key to life, and yet it is a resource that is exploited unevenly across and within states. This course examines key issues of water conflict, cooperation, security and development in both international and domestic spheres. Occasionally.

PSPA 231  Palestinian and Israeli Politics  3.0; 3 cr.
A survey of Palestinian and Israeli politics—political systems, institutions, parties, and processes of governance—in the historical context of the partition of Palestine, the proclamation of the state of Israel, and the establishment of the Palestinian Authority. The course will cover contemporary issues pertaining to the functioning of both systems, to their relationship at the political, economic, (para)military, and territorial levels, as well as the impact of local, regional, and international negotiations on the future political and legal development of the region. Occasionally.
PSPA 232  Conflict and Conflict Regulation  3.0; 3 cr.
A course that contextualizes and explores domestic, regional, and international conflicts as well as the mechanisms for their management or resolution. It focuses on such issues as the linkages between internal and external sources of conflict, the contested nature of conflict resolution concepts, peacemaking, and peace-building. Each semester.

PSPA 233  International and Regional Organizations  3.0; 3 cr.
This course explores the theories, institutional structures, political processes, role and impact of international and regional organizations within the larger context of world politics. Each semester.

PSPA 234  Transnational Politics  3.0; 3 cr.
This course explores issues of global governance beyond the traditional intergovernmental framework. It focuses on the increasingly visible role of non-state actors (social movements, NGOs, global media, transnational corporations) and transnational politics in shaping contemporary global politics. The course investigates whether the process of contemporary globalization has given rise to global civil society. Annually.

PSPA 235  Human Rights and International Politics  3.0; 3 cr.
A course that examines the development and relevance of institutions and instruments concerned with human rights, and then considers problems of human rights issues in selected countries and their impact on regional and global actors. Each semester.

PSPA 236  The Arab-Israeli Conflict  3.0; 3 cr.
A survey of the conflict over Palestine since the 19th century up to the contemporary period. This course focuses on the origins and evolution of the Arab-Israeli conflict both in its regional and international dimensions, covering topics such as the colonial roots, the formation of the state of Israel, the PLO, the 1967 war, up to the second Intifada. Each semester.

PSPA 237  The Modern Middle East in International Politics  3.0; 3 cr.
This course examines the place of the "Middle Eastern" system of states in the international system and in relation to US foreign policy towards the region. It covers the legacies of Western colonialism, Arab nationalism, the Cold War and the continuing intervention of external powers (especially the US), the geopolitics of oil, and the rising influence of Islamist movements and non-state actors. Each semester.

PSPA 238  International Political Economy: From Imperialism to Globalization  3.0; 3 cr.
This course examines the development of the modern world economic system, through an analysis of its main characteristics and an overview of the theories relevant to its understanding. Issues covered in this course include imperialism, colonialism, the international market, globalization, the influences of the world economic system on states and the North-South divide. Annually.

PSPA 239  International Environmental Politics  3.0; 3 cr.
This course serves as an introduction to the field of international environmental politics, exploring the relationship between global political forces and environmental change. A central goal is to critically analyze how environmental problems are framed and solutions found. The course examines the rise of environmentalism in both the North and the South; the emergence of liberal and radical environmental discourse; and the formulation, negotiation and implementation of international environmental regimes and sustainable development policies. Relevant case studies include the international trade in hazardous waste and endangered species; the politics of whaling, ecotourism, GMOs, and climate change; the management of biodiversity, fisheries, ocean and forest regimes; and the relationship between environment and security. Annually.

PSPA 250  Politics of Emerging Countries  3.0; 3 cr.
A survey of politics in key emerging economies such as the BRIC states (Brazil, Russia, India, and China) and others including South Africa and Mexico. The course examines the role of these emerging economies in world politics and their policy-making structures. Annually.

PSPA 251  Politics and Government: United States of America  3.0; 3 cr.
A survey of the main features of the American political system, including the foreign policy making process. Annually.

PSPA 252  European Politics  3.0; 3 cr.
A course that examines contemporary European politics with an emphasis on the European Union, its governance structure, and external relations (particularly toward the Middle East). Occasionally.

PSPA 253  Politics and Government: Middle East  3.0; 3 cr.
A survey of political institutions and processes in the Middle East, with an emphasis on social and political development, the policy-making process and international affairs. Annually.

PSPA 254  Political Development and Social Change  3.0; 3 cr.
A survey of major issues and controversies in political development, theories of social change, and their relevance to developing countries. Topics covered by this course include modernization, state-building, democratization, revolutions, conflicts, authoritarianism, social movements and civil society. Occasionally.

PSPA 255  Islamic Political Institutions  3.0; 3 cr.
A survey that introduces the manner in which Islamic Shari’a was introduced into the political life of the nation-states in the Middle East. It focuses on the causes for its inclusion or exclusion in the constitutions, political institutions and processes, and courts in the Middle East, with an emphasis on legislative process, personal status code, criminal code, as well as social and political development, and their impact on policy-making processes and international relations. Occasionally.

PSPA 256  Politics in Lebanon  3.0; 3 cr.
An overview of Lebanese politics in Mount Lebanon from the mid-nineteenth century to the formation of the Republic of Lebanon. This course deals with the origins, evolution, and workings of the confessional system with emphasis on the period after independence, from the civil war to the present. In addition, it focuses on the main political and social movements that marked Lebanese politics. Each semester.

PSPA 257  Regional and Local Administration  3.0; 3 cr.
A course that deals with the legal aspects, organization, and theories of regional and local administration. This course examines issues of centralization-decentralization, central-regional-local government relations, and balanced development at the national level. Annually.

PSPA 258  Comparative Public Administration  3.0; 3 cr.
An introduction to the governmental, administrative, and political systems of both developed and underdeveloped countries with a focus on political systems and their manifestation in administrative systems. The objectives of this course center upon comparing and contrasting issues and concerns central to public administration systems within a selected set of countries worldwide. To attain these objectives the course will explore an array of interrelated questions and issues such as governance in contemporary societies, including administrative reforms, privatization, ‘empowerment’, the impact of globalization on state administrative structures and policies, devolution, and other concerns relevant to public sector administrators. Annually.
PSPA 259  Public Administration in Lebanon  3.0; 3 cr.
A course that examines the legal aspects, environment, scope, structure, and problems of public administration in Lebanon, with special emphasis on administrative reforms and their institutional products. Annually.

PSPA 260  Introduction to Policy Analysis  3.0; 3 cr.
This is an introductory course to policy analysis. Students should be familiar with the basic concepts and terminology of public policy and public administration. This course provides students with both essential and more advanced methods used in public policy analysis. It covers important components of the process of policy analysis such as identifying data sources and weighing the utility of data; establishing criteria for analyzing policies; assessing policy alternatives; choosing among policies; monitoring policy implementation; and evaluating policies. Annually.

PSPA 261  Applied Research Methods in Public Policy  3.0; 3 cr.
This course covers the fundamentals of research design in the social sciences in general. It introduces students to the several quantitative methods utilized in the field of public policy in addition to the use of computer resources in policy analysis. The students are assumed to have a prior basic knowledge of the scientific methodologies. Annually.

PSPA 262  Political and Agency Management Aspects of Public Policy  3.0; 3 cr.
The purpose of this course is to introduce the students to the different organizational and political factors that are involved in the policy making process. This course is interdisciplinary in nature. It draws upon different theoretical frameworks and empirical scholarly works from several disciplines, and includes case studies. The course focuses on organizational, communicative, and controlling techniques and relevant core competencies for the analysis and solution of problems. Annually.

PSPA 263  Public Policy and the Legal Framework  3.0; 3 cr.
This course introduces students to the legal framework of policy formulation and policy implementation. The students will become familiar with legal materials related to the different aspects of the public policy making process. In addition, the course focuses on the relationships among the lawmaking agencies on the one hand and their relation to the policy-making entities. Specific case studies are included to explore these relationships. Annually.

PSPA 272  The Non-Profit Sector: Formation, Leadership and Governance  3.0; 3 cr.
This course focuses on the economic, social, and legal foundations of the nonprofit sector. The ways in which nonprofit organizations relate to the public and private sectors and the diversity and scope of the nonprofit sector are examined with primary focus on the functions performed by nonprofit organizations and on various patterns of community actions taken in different societies. Annually.

PSPA 273  Human Resources and Personnel Administration  3.0; 3 cr.
A course that examines theories, practice, and problems relating to human resources and personnel administration. This course focuses on key aspects of human resources, planning, and their implications on public policy. Annually.

PSPA 275  Organization and Management  3.0; 3 cr.
A survey of the concepts, principles, and techniques of organization and management with special emphasis on questions of applicability. In this course students will develop attitudes and acquire skills that should enable them to administer organizations effectively and efficiently. Students cannot receive credit for both MNGT 215 and PSPA 275. Annually.

PSPA 276  Public Policy  3.0; 3 cr.
A course that analyzes the nature, scope, and performance of public policy. This course examines the different approaches and models of public policy as well as the actors, instruments, and problems involved; it draws on specific case studies. Annually.

PSPA 277  Public Budgeting  3.0; 3 cr.
A survey of the principles and problems of financial organization and management in the public service with emphasis on fiscal planning, formulation and execution of the budget, financial accountability, control, and other aspects related to the role of the budget in development. Annually.

PSPA 278  Administrative Ethics and Controls  3.0; 3 cr.
This course addresses the moral challenges facing leaders in the public sector. It analyzes the formal and informal means aiming at promoting responsiveness and responsibility in Public Administration. It examines the values and virtues important to sustain ethical leadership, as well as strategies to build strong institutional cultures and support ethical practices in institutions. Students will learn how to identify moral issues in public life and public management. Occasionally.

PSPA 286  Tutorial in Political Studies  3.0; 3 cr. (each)
This course is designed to allow PS students to pursue a course of directed study with PSPA faculty members. It may consist of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis. Students that are beginning their senior year may petition the department for course approval. Occasionally.

PSPA 287  Tutorial in Public Administration  3.0; 3 cr. (each)
This course is designed to allow PA students to pursue a course of directed study with PSPA faculty members. It may consist of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis. Students that are beginning their senior year may petition the department for course approval. Occasionally.

PSPA 288  Special Topics in Political Studies  3.0; 3 cr. (each)
May be repeated for credit. Special Topics courses do not count as a Senior Seminar. Each semester.

PSPA 289  Special Topics in Public Administration  3.0; 3 cr. (each)
May be repeated for credit. Special Topics courses do not count as a Senior Seminar. Each semester.

PSPA 290  Senior Seminar in Social and Political Thought  3.0; 3 cr. (each)
May be repeated for credit. Each semester.

PSPA 291  Senior Seminar in Middle Eastern Politics  3.0; 3 cr. (each)
May be repeated for credit. Each semester.

PSPA 292  Senior Seminar in Comparative Politics  3.0; 3 cr. (each)
May be repeated for credit. Each semester.

PSPA 293  Senior Seminar in International Politics  3.0; 3 cr. (each)
May be repeated for credit. Each semester.

PSPA 294  Tutorial in Political Studies  3.0; 3 cr. (each)
This course is designed to allow PS students to pursue a course of directed study with PSPA faculty members. It may consist of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis. Students that are beginning their senior year may petition the department for course approval. Occasionally.
PSPA 297  Senior Seminar in Organization Theory  3.0; 3 cr.
This senior seminar provides an examination of the development, theoretical structure, major concerns, areas of emphasis and debates in the field of organization theory, from its origins to the present. It takes an interdisciplinary approach and covers the body of empirical findings relevant to organization and management theory, practices and prescriptions. It puts emphasis on those ongoing findings and elements of theory that impact the contemporary study, research, and philosophy in the field of public administration. Annually.

PSPA 298  Senior Seminar in Public Policy and Administration  3.0; 3 cr.
This course focuses on particular public policy issues. It explores the major debates, both theoretical and applied that frame contemporary discussions about public policy. The seminar addresses several topics such as Human Rights policy, Poverty policy, Environmental policy, and Political advocacy. Annually.

PSPA 299  Internship Program  3.0; 3 cr.
A practicum course that explores politics and public administration through a variety of work experiences, both governmental and nongovernmental. Students are expected to perform work for academic credit and submit, as part of their course requirements, written evaluative reports based on their experiences under the guidance of PSPA instructors, as well as an oral presentation at the end of the internship. Students with a general average of at least 78 at the beginning of the senior year may petition the department for internship approval. Annually.

Major in Political Studies: 39 Credits in Political Studies

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<thead>
<tr>
<th>Mode of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (4x(21+15+3))</th>
<th>Quantitative Thought (6)</th>
<th>Natural Sciences (6)</th>
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<tr>
<td>Lectures (9+12+6+36+12)</td>
<td>One approved Arabic course: ARAB 201A (3) or any General Education Arabic communication skills course. (3 Credits)</td>
<td>Two approved English courses: ENGL 203 (3) and ENGL 204 (3). (6 Credits)</td>
<td>Two approved General Education courses. (6 Credits).</td>
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<td>Senior Seminar (3)</td>
<td>One approved PS Senior Seminar: PSPA 290 (3), 291 (3), 292 (3), or 293 (3). (3 Credits)</td>
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<td>Free Electives (12)</td>
<td>Four approved courses that are numbered 200 and above. (12 Credits).</td>
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# Major in Public Administration: 39 Credits in Public Administration

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<thead>
<tr>
<th>Mode of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (6+[21+15+3])</th>
<th>Quantitative Thought (6)</th>
<th>Natural Sciences (6)</th>
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<tr>
<td>Lectures</td>
<td>One required Arabic course: ARAB 201A(3) or any General Education Arabic communication skills course. (3 Credits)</td>
<td>Two approved General Education courses. (6 Credits).</td>
<td>One required economics course from the approved General Education list (3), and either SOAN 201(3) or PSYC 202(3). (6 Credits).</td>
<td>One course related to information technology: CMPS 206(3), CMPS 209(3), or INFO 200(3). (3 Credits).</td>
<td>Two approved General Education Courses. (6 Credits).</td>
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<td>• Two required English courses: ENGL 203(3) and ENGL 204(3). (6 Credits).</td>
<td>• Two approved CVSP requirement courses. (6 Credits).</td>
<td>• Seven required PSPA courses: PSPA 201(3), 202(3), 203(3), 212(3), 273(3), 276(3) and 277(3). (21 Credits).</td>
<td>• One course related to statistical analysis: STAT 201(3), STAT 210(3), EDUC 227(3), or PSYC 213(3). (3 Credits).</td>
<td>• Five required PSPA courses in either:</td>
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<td>• One course related to information technology: CMPS 206(3), CMPS 209(3), or INFO 200(3). (3 Credits).</td>
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<td>– Public Management: Three courses from PSPA 222(3), 257(3), 258(3), 259(3), 272(3), 275(3), 278(3) and two courses from PSPA 260(3), 261(3), 262(3), 263(3), 287(3), 289(3) (15 Credits), or</td>
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<td>Senior Seminar (3)</td>
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<td>Free Electives (12)</td>
<td>• One approved PA Senior Seminar PSPA 297(3) or 298(3). (3 Credits).</td>
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Department of Psychology

Chairperson: Harb, Charles W.
Professors: Dietrich, Arne; Kazarian, Shahe S.
Associate Professor: Harb, Charles W.
Assistant Professors: Al-Jamil, Tima; Najjar Daou, Nidal K.; Saab, Reem;
Slobodenyuk, Nadia
Lecturer: Pawaida, May A.K.
Instructors: Bawab, Suha; Boyadjian, Maral; El Yashruti, Reigna;
Fayad, Yasmine; Najjar, Laian; Nasr, Nour; Rechdan, Joanne;
Younes, Dania

The Department of Psychology offers programs leading to a BA degree in psychology, and to an MA degree in psychology.

BA in Psychology

Mission Statement

The discipline of psychology is dedicated to increasing the scientific understanding of behavior and mental processes at the intrapersonal, interpersonal and group level, and to the application of that understanding to enhance the functioning of individuals, groups, and society. In line with this mission, the Undergraduate Program in Psychology has a threefold mission: to advance and transmit knowledge related to the nature of psychological processes and functioning, to provide a strong foundation in the basic knowledge and skills necessary for research in psychology, and to sensitize students to the applications of psychology in the wider community. This mission embodies the main elements of AUB’s mission which are to foster freedom of thought, respect for diversity, critical thinking, personal integrity, and civic engagement.

Requirements for a BA degree in Psychology

Admission to the psychology program requires a grade of 70 or more in PSYC 101 or PSYC 201, minimum grade of 70 in ENGL 203 and ENGL 204, and a cumulative average above 70 for transfers. For purposes of meeting departmental admission requirements, students are not permitted to take PSYC 101 or PSYC 201 more than twice. While completing PSYC 101 qualifies a student to meet one of the admission requirements to the major, 100 level courses will not be counted towards a major requirement. Prospective majors who obtain a grade below 60 in PSYC 101 or PSYC 201 will not be permitted to take the course a second time for the purpose of meeting the departmental admission requirements. Requirements for majors include PSYC 101 or PSYC 201, PSYC 280, PSYC 282, PSYC 284, and PSYC 288. In addition to these required courses, the student must select eight courses from the following categories: Category 1 (3 out of 5 are required, but all can be taken for credit)(9): PSYC 210(3), PSYC 212(3), PSYC 214(3),

Part time
PSYC 215(3), and PSYC 216(3); Category 2 (3 out of 5 are required, but all can be taken for credit) (9): PSYC 220(3), PSYC 222(3), PSYC 224(3), PSYC 226(3), and PSYC 228(3); Category 3 (the remainder are electives)(6): PSYC 230(3), PSYC 232(3), PSYC 234(3), PSYC 236(3), PSYC 240(3), and PSYC 290(3) and courses in Category 1 and 2 not already chosen.

In addition to these required courses, the student must complete 3 credits in Quantitative Thought numbered 200 or above. Also required are 6 credits in natural sciences. A biology course is recommended.

The requirements for a BA degree in Psychology are 90 credits for students entering the department at the sophomore level, including 39 credits in the major. The distribution of university requirements is as follows:

**University General Education Requirements**

English Communication Skills (6 cr), Arabic Communication Skills (3 cr), Humanities (12 cr) including 6 credits from CYS, Natural Sciences (6 cr), Social Sciences (3 cr), and Quantitative Thought (3 cr). Also note that the Social Science must be an approved General Education course from outside the major.

A **minor in psychology** requires 15 credits: PSYC 101 or PSYC 201, PSYC 280, plus three electives from PSYC 210–236.

A **cognitive science minor** requires 15 credits. PSYC 228 is required. PSYC 228 cannot be counted as a psychology course for the purpose of this requirement. The remaining 12 credits must be chosen from the following courses: PSYC 220, PSYC 222, PSYC 224, PSYC 226, PSYC 280, and PSYC 290; PHIL 221, 222, 223, 257, 258; ENGL 227, 230, 232, 246; EDUC 215, 221, 225, 290; CMPS 287; and BIOL 243, 290F, 290AF-1, 290T-1, on condition that the 12 credits chosen span three of the five disciplines. Only 3 credits of the 15 credits taken for the minor may count toward the student’s major.

**Course Descriptions**

**PSYC 101** Freshman Introduction to Psychological Science 3.0; 3 cr.
A survey of the principles and concepts of modern psychological science. Emphasis is placed on critically examining empirical research investigating human behavior and mental processes. Students who take this course cannot get credit for PSYC 201. Each semester. Prior to Fall semester 2012-13, listed as PSYC 102.

**PSYC 201** Introduction to Psychological Science 3.0; 3 cr.
A survey of the principles and findings of modern psychological science. Emphasis is placed on critically examining empirical research investigating human behavior and mental processes. Students who receive credit for PSYC 101 cannot receive credit for PSYC 201. Each semester. Prior to Fall semester 2012-13, listed as PSYC 202.

**PSYC 210** Lifespan Developmental Psychology 3.0; 3 cr.
A course on psychological development from the prenatal period to late adulthood. Students who receive credit for EDUC 225 cannot receive credit for PSYC 210. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 229.

**PSYC 212** Social Psychology 3.0; 3 cr.
A course on the scientific study of how individuals think, feel, and behave in regard to other people, and how individuals’ thoughts, feelings, and behaviors are affected by other people. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 211.

**PSYC 214** Adult Abnormal Psychology 3.0; 3 cr.
An introduction to the research, history, and theories of abnormal behavior in adults and a critical examination of the definition, classification, prevalence, etiology and treatment of adult abnormal behavior. Topics covered include anxiety, post-traumatic stress, depression, mania, borderline personality, substance abuse, schizophrenia, and sexual abnormalities. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 217.

**PSYC 215** Child Abnormal Psychology 3.0; 3 cr.
An introduction to the psychological disorders of childhood and adolescence, including attention deficit hyperactivity disorder, conduct disorders, autism, mood and anxiety disorders. The course begins with an understanding of abnormal behavior and proceeds to cover symptomatology, the major theories of causality, and treatment interventions. Prerequisite: PSYC 201 or PSYC 101. Annually.

**PSYC 216** Personality Psychology 3.0; 3 cr.
An introduction to the research, theories, and measurement of personality with a critical examination of the influence of personality on behavior. The course surveys biological, psychodynamic, trait, humanistic, behavioral, social learning, and cognitive perspectives to the understanding of human personality and their application to individuals and organizations. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 225.

**PSYC 220** Psychology of Learning and Behavior 3.0; 3 cr.
A course on the principles of learning and behavior. The psychology of learning, or behavioral psychology, introduces students to the psychology of learning and behavior analysis by examining the classical and operant (instrumental) conditioning paradigms, from an experimental perspective. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 221.

**PSYC 222** Behavioral Neuroscience 3.0; 3 cr.
An introduction to the neural basis of the mind and behavior. The course surveys the structure and organization of the human brain and examines how complex behavior and mental processes arise from it. Prerequisite: PSYC 201 or PSYC 101. Registration for PSYC 222 is not open to Biology students, who may register for the cross-listed course, BIOL 243. Annually. Prior to Fall semester 2012-13, listed as PSYC 237.

**PSYC 224** Sensation and Perception 3.0; 3 cr.
A course on how humans sense and perceive the environment. Topics covered include the anatomy and physiology of the sensory systems, types of stimuli affecting sensory systems, higher perceptual processing, and current knowledge and theories of our perceptual abilities. The course also emphasizes the relationships between perceptual processes and other higher cognitive functions. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 219.

**PSYC 226** Cognitive Psychology 3.0; 3 cr.
An introduction to human cognitive processes, including perception, attention, memory, language, imagery, categorization, problem solving, reasoning and decision-making. These cognitive processes are examined with regard to human brain functioning. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 233.
PSYC 228  Introduction to Cognitive Science  3.0; 3 cr.
An introduction to the interdisciplinary study of cognitive science which involves research about the workings of the mind from the fields of psychology, linguistics, philosophy, education, computer science, neuroscience, anthropology, engineering, and others. The course aims to provide students with an appreciation for the range of disciplinary perspectives and methods, and the applications of cognitive science to everyday life. Annually. Prior to Fall semester 2012-13, listed as PSYC 251.

PSYC 230  Clinical Psychology  3.0; 3 cr.
An introduction to the history and development of the science and practice of clinical psychology with a critical examination of training models, approaches to clinical problems, methods of assessment, choice of empirically validated interventions, prevention strategies and career opportunities. The course surveys clinical and research activities (assessment, therapy, and consultation), settings (clinical, hospital, school, court, and private practice), and professional issues (roles, ethics, and laws). Prerequisite: PSYC 214 or PSYC 215. Annually. Prior to Fall semester 2012-13, listed as PSYC 239.

PSYC 232  Health Psychology  3.0; 3 cr.
An introduction to the field of health psychology with a critical examination of the biopsychosocial model of health and the ecological model of health outcomes. The course explores the impact of five systems on individual health outcomes: the individual (including physiology), the family/community, physical and social environments, healthcare systems and health policy. A variety of infectious diseases and chronic illnesses will be used to illustrate the roles of these systems in explaining health. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 241.

PSYC 234  Positive Psychology  3.0; 3 cr.
An introduction to the history and development of the scientific study of positive experiences, positive traits, and positive institutions with a critical examination of the field's theoretical and philosophical assumptions, methods of assessment, and applications to promote personal growth and fulfillment. The course surveys such topics as personal strengths, optimism, resilience, gratitude, forgiveness, humor, love, sexual intimacy, emotional intelligence, happiness, life satisfaction, and the ability to create positive environments. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 242.

PSYC 236  Culture and Psychology  3.0; 3 cr.
The course aims to sensitize students to the importance of culture in psychological processes, and focuses on indigenous, cultural, and cross-cultural psychological theories and findings. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 247.

PSYC 240  Special Topics in Psychology  3.0; 3 cr.
A course that provides a general overview of an area of psychology that is not normally covered by the department’s offerings. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 235.

PSYC 280  History and Systems of Psychology  3.0; 3 cr.
A course that examines the philosophical foundations of psychology. There is special emphasis on the historical development of scientific conceptions of human behavior and mental processes in the context of contemporary psychological systems. Prerequisite: PSYC 201 or PSYC 101. Each semester. Prior to Fall semester 2012-13, listed as PSYC 227.

PSYC 282  Research Design in Psychology  3.0; 3 cr.
This course is the first part of the required research sequence for students majoring in psychology. It provides students with a solid foundation in the basic quantitative research methods and design, addresses ethical issues and validity in psychological research, and introduces students to statistical analyses that will be needed for PSYC 284, PSYC 290, and other research-related courses. Prerequisite: PSYC 201 or PSYC 101. Annually. Prior to Fall semester 2012-13, listed as PSYC 213.

PSYC 284  Statistical Analyses in Psychology  3.0; 3 cr.
This course is the second part of the required research sequence for students majoring in psychology. It introduces the student to bivariate and multivariate statistical analyses in psychological research and combines lectures and SPSS-based Lab sessions. Prerequisite: PSYC 282. Annually. Prior to Fall semester 2012-13, listed as PSYC 223.

PSYC 288  Undergraduate Seminar in Psychology  3.0; 3 cr.
A review of significant research in major areas in psychology. Prerequisites: PSYC 282 and senior standing. Pre- or corequisite: PSYC 284. Annually. Prior to Fall semester 2012-13, listed as PSYC 293.

PSYC 290  Undergraduate Research Project in Psychology  3.0; 3 cr.
This course requires students to plan, conduct, and write up a full empirical study. The course is meant to build upon and further develop the research and data analysis skills acquired in the required research sequence courses. Prerequisites: PSYC 282 and PSYC 284 or consent of the department. A minimum grade of 75 in both PSYC 282 and PSYC 284 is required. Annually. Prior to Fall semester 2012-13, listed as PSYC 243.

PSYC 292  Senior Tutorial in Psychology  3.0; 3 cr.
Prerequisites: PSYC 282 and 284, senior standing, and a minimum average of 80 in the major. Offered on request. Prior to Fall semester 2012-13, listed as PSYC 291.

PSYC 298  Directed Study in Psychology  3–6 cr.
A tutorial course offered to psychology students with an average of 85 or above in their major at the beginning of their senior year. This tutorial consists of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis on the work. Students with averages lower than 85 may be admitted to directed study at the discretion of the department. Offered on request. Prior to Fall semester 2012-13, listed as PSYC 299.
## 39 Credits in PSYC

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<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (39)</th>
<th>Natural Sciences (6)</th>
<th>Quantitative Thought (3)</th>
<th>Social Science Outside Major</th>
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<td>Lecture Courses (9+12+39+6+3+3)</td>
<td>• Required Arabic course: ARAB 201A or any General Education Arabic communication skills (3)</td>
<td>• Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>• Required PSYC courses (15): PSYC 101(3) or PSYC 201(3), 280(3), 282(3), 284(3), 288(3) and eight courses from the following three categories (24):</td>
<td>• Two natural science courses (3) numbered 200 and above. (A BIOL course is recommended.)</td>
<td>• Required: 3 credits in Quantitative Thought numbered 200 or above</td>
<td>• Required: 1. (3)</td>
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<td>Seminar (3)</td>
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<td>• Required (3): PSYC 288(3)</td>
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<td>Laboratory (6)</td>
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<td>• Required (3): PSYC 282(3), 284(3)</td>
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1 Plus 18 free elective credits
Department of Sociology, Anthropology, and Media Studies

Chairperson: Hanafi, Sari
Director of Media Studies: Melki, Jad
Professors: Dajani, Nabil; Hanafi, Sari; Khalaf, Samir; Saumarez-Smith, Richard
Associate Professors: Kiwan, Dina; Scheid, Kirsten
Assistant Professors: Farah, May; Melki, Jad; Perdigon, Sylvain; Wick, Livia
Lecturer: Fathallah, Zeina; Nasser, Khaled; Saber, Dima; Tarabey, Lubna
Instructors: Agha, Dina; Boustany, Nora; Bibi, Karma M.; Daou, Mark; Khouri, Rami; Mallat, Sarah; Osman, Zeina; Sabban, Sarah; Yeghiayan, Heghnar

BA in Sociology and Anthropology

Mission Statement
The mission of the SOAN degree offered by the Department of Sociology, Anthropology, and Media Studies is to make students aware of the different contributions of anthropology and sociology. The aim is to train students in the conceptual, research, and applied tools of these two components. Through independent, critical, and advocacy fieldwork, attention is given to the historical and cross-cultural heritage of Arab society and its relation to the rest of the world.

Admission
Admission to the sociology-anthropology program requires a minimum grade of 70 in ENGL 203 and ENGL 204, and a grade of 70 or more in one of the following: SOAN 101, SOAN 103, SOAN 201, or SOAN 203. If admission to SOAN is based on SOAN 101 or SOAN 103, any additional SOAN or any social science course is required.

Requirements
The requirements for a BA in Sociology-Anthropology are 90 credits for students entering the department at the sophomore level and 120 for those entering as freshmen, including 39 credits in the major. Required courses include: SOAN 101 or SOAN 103 or SOAN 201 or SOAN 203, and SOAN 210 or SOAN 216, and SOAN 211, SOAN 212, SOAN 213, SOAN 237, a SOAN seminar,

\* Part time
and 18 additional SOAN credit hours (SOAN 205 and above). The distribution of university requirements is as follows:

**University General Education Requirements**

English Communication Skills (6cr), Arabic Communication Skills (3cr), Humanities (12cr) including 6 credits from CVSP, Natural Sciences (6cr), and Quantitative Thought (3cr). Also note that one social science must be an approved General Education course from outside the major.

**Course Descriptions**

**SOAN 101** Freshman Sociology 3.0; 3 cr.
An introduction to the principles and concepts of sociology to prepare students for majoring in sociology. Students who take this course cannot receive credit for SOAN 201. Each semester.

**SOAN 103** Reading Other Cultures 3.0; 3 cr.
An introduction to the study of other cultures drawing on film, ethnographic case studies, and topical debates. This course presents basic concepts in the comparative study of culture, methods of observing and interpreting other cultures, a sense of how knowledge about other cultures is constructed, and tools to develop a critical awareness of one's own cultural traditions. Note that this course is classified as a humanities, not as a social science course. Students may take it to fulfill the university’s humanities requirement but not the University’s social sciences requirement. Each semester.

**SOAN 201** Introduction to Sociology 3.0; 3 cr.
An introduction to the study of social phenomena. Basic concepts, principles, and methods common to the study of society are employed for the analysis of structure and change in society. This course includes the structure and origin of some basic human institutions such as family, kinship, religion, and language. A student who has received credit for SOAN 101 cannot receive credit for SOAN 201. Each semester.

**SOAN 203** Introduction to Anthropology 3.0; 3 cr.
An introduction to socio-cultural anthropology. Anthropology offers comparative perspectives on the ways people live in the world. In doing so, it challenges some of our commonly held assumptions about what is natural and universal. The course will explore anthropology’s approaches, concepts and methods emphasizing case studies from different settings. Each semester.

**SOAN 210** Research Methods 3.0; 3 cr.
A survey of the basic techniques and designs of social research, including both quantitative and qualitative methods, the relationship between micro and macro approaches to society, and the interplay between theory and research. Alternate years.

**SOAN 211** Analysis of Social Data 3.0; 3 cr.
A survey of basic statistical techniques used in analyzing social and behavioral data. Students participate in the analysis of research data by applying various analytical techniques using computer packages. They will also interpret research findings and write a research report. Annually.

**SOAN 202** History and Theory in Anthropology 3.0; 3 cr.
A survey of some of the major theoretical perspectives and critical issues of classical and contemporary anthropological theory. Special focus is placed on the intellectual history of the discipline, an analysis of the contexts in which it developed and tools to recognize and critically evaluate different perspectives on culture and society. Annually.

**SOAN 215** Anthropology of America 3.0; 3 cr.
A critical examination of conceptions of "mainstream" or "dominant" American culture. Using ethnographic case material, the course explores cultural systems and social structures in the contemporary United States, offering an introduction to anthropological approaches to the study of complex societies. Note that this course is classified as a humanities, not as a social science course. Students may take it to fulfill the university’s humanities requirement but not the University’s social sciences requirement. Alternate years.

**SOAN 216** Hands-On Anthropology 3.0; 3 cr.
An introduction to the techniques, theories, and debates concerning ethnographic fieldwork. What do anthropologists actually do and what is unique about anthropological research? This course explores the politics and ethics of research, kinds of observation, effective interviewing strategies, note-taking, ways of ‘coding’ or indexing information, data analysis, and approaches to writing. Alternate years.

**SOAN 217** Anthropology of the Body 3.0; 3 cr.
An examination of cultural and historical variations in perceptions and experiences of the human body. The course focuses on the ways the human body is culturally constructed and socially experienced, through case studies of labor, sport, health, illness, sexuality, gender, display, and religious ritual. Annually. Note that this course is classified as a humanities, not as a social science course. Students may take it to fulfill the university’s humanities requirement but not the University’s social sciences requirement.

**SOAN 218** Anthropology of Medicine and Science 3.0; 3 cr.
This course explores science and medicine from a cross-cultural and historical perspective. Students examine how scientific and medical practices are imbued with and shaped by social meanings and politics. They explore how the institutions of science and medicine construct truth, reality, nature, disease, health, body and mind and how they connect with markets and other institutions. Occasionally.

**SOAN 220** City and Society 3.0; 3 cr.
An introduction to some of the leading conceptual and methodological perspectives for the study of transformations in human settlements. The course explores issues associated with the evolution of cities, their spatial and cultural features, and the social production of informal space and the gendering of space. Changing trends and patterns in Third World urbanization are explored with special focus on the Arab World, global, and post-modern cities. Alternate years.
Department of Sociology, Anthropology, and Media Studies

SOAN 221  Political Anthropology  3.0; 3 cr.
This course explores the everyday practices of the larger structures that create and perpetuate power. It emphasizes students’ awareness of the state apparatus, non-state political systems and modes of political exclusion that shape the experience of power locally and trans-nationally. It uses prominent schools of thought, among them Marxism, feminism, Foucauldian and post-colonial theories to provoke critical analyses of power in our own lives. Alternate years.

SOAN 222  Family and Kinship  3.0; 3 cr.
The course examines, from a comparative perspective, different forms of family and kinship organization, their relation to production and systems of exchange. Special focus is placed on processes of initiation and reproduction, and cultural expression of relatedness. Alternate years.

SOAN 223  Social Inequality: Conflict and Consensus  3.0; 3 cr.
The course explores theories of social inequality. It addresses issues such as class, status, and gender inequalities and points to sources of conflict and consensus. Arguments for and against equality are canvassed. Alternate years.

SOAN 224  Sexuality and Society  3.0; 3 cr.
The course provides a comparative conceptual framework to explore the changing nature of sexuality in society. Special focus is placed on the social construction of sexual identities, sex and the body, the place of desire and the changing form of romantic, erotica and pornography, the commodification of intimacy, sexual ethics and sexual prolifics in a globalized world. The course also focuses on the dynamics of male-female relations in Arab society. Alternate years.

SOAN 225  Gender and Culture  3.0; 3 cr.
An examination of gender holistically and cross-culturally from a social-anthropological perspective. This course examines how meanings of sex variation are constructed and gender is performed by individuals and groups in different societies. It studies the roles of women and men in ritual, in economic and political systems, and in other social arenas. Note that this course is classified as a humanities, not as a social science course. Students may take it to fulfill the University’s humanities requirement but not the University’s social sciences requirement. Annually.

SOAN 226  Religion and Society  3.0; 3 cr.
A course that examines the relationship between society and religion, including both formal institutions and informal processes, which deal with the supernatural. This course studies the origin and development of ritual and religious functions for both the individual and society. Alternate years.

SOAN 227  Cultural Boundaries and Identities  3.0; 3 cr.
Analysis of cultural boundaries and identities. A comparative study of ethnicity and other identity categories and related issues such as cultural hybridity and nationalism with emphasis on the Middle East. Alternate years.

SOAN 228/ MCOM 220  Arab Media and Society  3.0; 3 cr.
An in-depth examination of the political, social, economic, and technological effects of old and new Arab media systems on modern Arab society, with an emphasis on Lebanon and the Arab East region. It focuses on probing the development and current state of print, broadcast and new media systems in the region. Annually.

SOAN 229/ MCOM 221  Communication Theory  3.0, 3 cr.
An overview of the ways in which mass communication has been viewed by social scientists and by practitioners, with a focus on the range of issues studied and questions raised, and the schools, approaches, and trends in the field. Annually.

SOAN 232  Conflict Analysis and Resolution  3.0; 3 cr.
An overview of the field of conflict analysis and resolution. This course covers the history of conflict studies, theories of conflict, and methods of dispute resolution. Annually.

SOAN 237  Arab Culture and Society  3.0; 3 cr.
A study of contemporary Arab society: its complexity, diversity, and internal dynamics. This course considers social structures, social groups, cultural patterns, and processes and agents of social and cultural change, and examines current debates on major issues in Arab culture and society. Each semester. Prior to Fall semester 2012-13, listed as SOAN 214.

SOAN 238  Special Topics  3.0; 3 cr.
A course that provides a general overview of an area in the humanistic social sciences that is not normally covered by the department’s offerings. May be repeated for credit. Occasionally.

SOAN 239  Special Topics  3.0; 3 cr.
A course that provides a general overview of an area in anthropology, communication, or sociology that is not normally covered by the department’s offerings. May be repeated for credit. Occasionally.

SOAN 240  Seminar in Human Rights and Cultural Differences  3.0; 3 cr.
A seminar that provides students with an introduction to the history, concepts, institutions, and applications of human rights. Although drawn mainly from a Western perspective, applications are canvassed from the Middle East as well. Discussions cover philosophical foundations of human rights law; discrimination, xenophobia, and racism; civil, political, social, and economic rights; women’s rights; children’s rights; rights of minorities and indigenous people; and migrant workers’ rights. Alternate years.

SOAN 241  Seminar in the Sociology of Deviance  3.0; 3 cr.
The seminar explores the role of leading theoretical perspectives for understanding the changing meanings, nature, and forms of deviance in a cross-cultural context. Primary concern is to identify conceptual, methodological, moral, and political issues in the study of substantive social problems such as violent crime, alcoholism and drug abuse, prostitution, homosexuality, suicide, mental disorders, corporate crime, and other emerging forms of global deviance. Alternate years.

SOAN 242  Seminar in Globalization and Migration  3.0; 3 cr.
An introduction to a range of issues related to theories of migration with particular emphasis on the peculiarities of contemporary globalization. Theoretical considerations include assumptions and case studies from sociology, economics, political economy, and anthropology. Concepts such as network theory, transnationalism, and the international division of labor are used to illuminate issues such as citizenship and identity, refugees, forced migration, nationalism, and ethnicity as they relate to the migratory experience. Alternate years.

SOAN 243/ MCOM 261  Seminar in Media Studies  3.0; 3 cr.
An undergraduate seminar on the role of communication in society. The content areas may change. May be repeated for credit. Annually.

Department of Sociology, Anthropology, and Media Studies

SOAN 239 Special Topics  3.0; 3 cr.
A course that provides a general overview of an area in the humanistic social sciences that is not normally covered by the department’s offerings. May be repeated for credit. Occasionally.

SOAN 224 Sexuality and Society  3.0; 3 cr.
The course provides a comparative conceptual framework to explore the changing nature of sexuality in society. Special focus is placed on the social construction of sexual identities, sex and the body, the place of desire and the changing form of romantic, erotica and pornography, the commodification of intimacy, sexual ethics and sexual prolifics in a globalized world. The course also focuses on the dynamics of male-female relations in Arab society. Alternate years.

SOAN 225 Gender and Culture  3.0; 3 cr.
An examination of gender holistically and cross-culturally from a social-anthropological perspective. This course examines how meanings of sex variation are constructed and gender is performed by individuals and groups in different societies. It studies the roles of women and men in ritual, in economic and political systems, and in other social arenas. Note that this course is classified as a humanities, not as a social science course. Students may take it to fulfill the University’s humanities requirement but not the University’s social sciences requirement. Annually.

SOAN 226 Religion and Society  3.0; 3 cr.
A course that examines the relationship between society and religion, including both formal institutions and informal processes, which deal with the supernatural. This course studies the origin and development of ritual and religious functions for both the individual and society. Alternate years.

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Analysis of cultural boundaries and identities. A comparative study of ethnicity and other identity categories and related issues such as cultural hybridity and nationalism with emphasis on the Middle East. Alternate years.

SOAN 228/ MCOM 220 Arab Media and Society  3.0; 3 cr.
An in-depth examination of the political, social, economic, and technological effects of old and new Arab media systems on modern Arab society, with an emphasis on Lebanon and the Arab East region. It focuses on probing the development and current state of print, broadcast and new media systems in the region. Annually.
SOAN 245 Seminar in Transitional Justice 3.0; 3 cr.
The seminar is an exploration of the strategies and courses of action societies confront as they consider legacies of past human rights abuses or atrocities. It examines the ways in which states and the international community attempt to achieve justice in periods of political transition. Some of the leading theories and applied dimensions will be critically assessed in the light of the operation of international and domestic criminal justice, historical and administrative justice. Annually.

SOAN 250 Seminar in Art and Culture 3.0; 3 cr.
A cross-cultural exploration of art as an idea, an object, a history, and a way of interacting with the world. How is art a universal category? This course applies anthropological theories to the study of art and art theories to the study of human society. Particular attention is paid to local resources and archives. Note that this course is classified as a humanities, not as a social science course. Students may take it to fulfill the University’s humanities requirement but not the University’s social sciences requirement. Occasionally.

SOAN 251 Seminar in Anthropological Thought 3.0; 3 cr.
An investigation of the major theories guiding anthropological thinking today, through a historically contextualizing overview. This course introduces students to a range of theoretical propositions concerning such topics as agency, structure, subjectivity, power, and the politics of representation by reading primary texts from landmark figures in sociocultural anthropology. Occasionally.

SOAN 252 Cannibals, Liars, Spies: Controversies in the Study of Humans 3.0; 3 cr.
An investigation of the cases that have shaken the discipline of anthropology and/or sociology. This course uses some exciting issues such as cannibalism, lying, and spying to enter into some of the core issues that concern the study of humans. Occasionally.

SOAN 290 Special Topics Seminar 3.0; 3 cr.
SOAN faculty or visiting professors and recognized scholars might be invited to offer seminars to explore relevant dimensions of their research in progress. May be repeated for credit. Occasionally.

SOAN 299 Directed Study 3–6 cr.
A tutorial course offered to SBS students with an average of 85 or above in their major at the beginning of their senior year. This tutorial consists of independent research, original creative compositions, or directed reading, and includes the presentation of a report or thesis on the work. Students with averages lower than 85 may be admitted to directed study at the discretion of the department. Occasionally.

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### 39 Credits in SOAN

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (39)</th>
<th>Natural Sciences (6)</th>
<th>Quantitative Thought (3)</th>
<th>Social Science Outside Major (3)</th>
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<tr>
<td>Lecture Courses</td>
<td>9(12)+19+6=34+3(3)</td>
<td>Required 6 credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Required 18 credits including 10 credits from CVSP</td>
<td>Required 3 credits</td>
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<td>ARAB 201A or any General Education Arabic communication skills (3)</td>
<td>Required English courses: ENGL 201(3), 204(3)</td>
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| Seminar (3)       | Required (3): SOAN 240(3), 241(3), 242(3), 243(3), 245(3), 250(3), 251(3) or 252(3) |
| Laboratory (3)    | SOAN 211(3) |

1 Plus 21 free elective credits
2 SOAN courses count towards the SOAN major as well as the Anthropology and Sociology minors as described on p. 295.
BA in Media and Communication
Mission Statement
The BA in Media and Communication offers students a broad-based multidisciplinary liberal arts curriculum grounded in the social sciences that balances media theory, research, and practice, and emphasizes critical thinking, excellent writing, media literacy, and innovation in the rapidly evolving media field and industry. In addition to exploring media theories, students learn scientific research methods and systematic and critical inquiry into the nature, processes and consequences of traditional and evolving media, and develop solid digital media skills that prepare them for work in the media industry and for thriving in an information-technology driven age. The program offers a regional and global scope, focusing on the role of media in Arab society, and bringing forth issues and principles of freedom of the press and media ethics and social responsibility. The program stresses the AUB’s commitment to creative and critical thinking and civic responsibility by emphasizing media literacy principles that aim to graduate citizens who can effectively and critically access, analyze, utilize and create media messages.

Admission
Students wishing to major in Media and Communication are accepted provisionally until they have achieved an average grade of 70 or more in MCOM 201, MCOM 202 and MCOM 203, and an average grade of 70 or more in ENGL 203 and ENGL 204. Students admitted as media and communication majors must maintain an average of 70 or more in their first three semesters in major courses in order to remain in the program.

Transfer to Media and Communication from other departments within FAS is competitive and requires approval by the media studies program. Students will be considered for transfer to Media and Communication if they obtain an average grade of 70 or more in MCOM 201, MCOM 202 and MCOM 203, and a grade of 70 or more in ENGL 203. If they have taken any additional MCOM courses, the average grade of all MCOM courses must be 70 or more. If they have taken ENGL 204, their average grade in ENGL 203 and ENGL 204 must be 70 or more.

Requirements
The requirements for a BA degree in Media and Communication are 90 credits for students entering the department at the sophomore level, including 40 credits in the major, and at least 36 credits of General Education courses, as required by the university.

Requirements for the BA program are MCOM 201, MCOM 202, MCOM 203, MCOM 210, MCOM 211, MCOM 220, MCOM 221, MCOM 296 (1 credit), at least three credits worth of MCOM 295A/B/C, and an additional 15 credits in elective MCOM courses. Students are recommended to take SOAN 237. In addition, students must satisfy all General Education requirements. Students formally exempted from the Arabic Language Requirement are strongly advised to take courses in Arabic as a foreign language.

In addition, to the core media and communication areas, the program covers three cognate sub areas: strategic and integrated communication (MCOM 230-233), digital media and news (MCOM 240-242), and political communication and media activism (MCOM 250-252). Students are advised to complete at least three courses in one cognate sub area, depending on their career pursuits, but may opt to take courses from more than one sub area.

University General Education Requirements
English Communication Skills (6cr), Arabic Communication Skills (3cr), Humanities (12cr) including 3 credits from CVSP sequence I courses and 3 credits from CVSP sequence II courses, Natural Sciences (6cr), Quantitative Thought (3cr), and Social Sciences (6cr) of which at least one social sciences course must be from outside the major.

Course Descriptions
MCOM 201 Introduction to Media Studies 3.0; 3 cr.
An introduction to the field of media studies, its concepts and theories, and the various modern media industries and professions in today’s world. The course aims to help students become better informed about career options in this field and more discerning media consumers. Each Semester.

MCOM 202 Digital and Media Literacy 3.0; 3 cr.
Introduces digital information literacy or the ability to effectively access, analyze, evaluate and create digital media. Examines how media messages shape politics, culture and society, and explores new media production skills, including blogs, podcasts, photo and video manipulation. Each Semester.

MCOM 203 News Reporting and Writing 3.0; 3 cr.
An introduction to the reporting and writing of various news stories based on reliable information gathered through interviewing, research, and observation. Formats include basic newspaper and magazine articles, online news, press releases, and other journalistic formats, with emphasis on accuracy, concise presentation, meeting deadlines, and objective and ethical reporting. The course covers news styles, an expanded news vocabulary, sentence structure, story organization and clean writing. Each Semester.

MCOM 204 Interpersonal Communication 3.0; 3 cr.
An introduction to the processes of human communication and interaction, in face-to-face settings and in small groups. It includes both verbal and non-verbal forms of communication and relies on group projects in the form of simulations of communication situations. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 210 Research Methods in Media Studies 3.0, 3 cr.
An introduction to the design and implementation of research methodology in media studies. It covers formulating research problems, reviewing scientific literature, designing instruments, and utilizing data collection and analysis techniques, both quantitative and qualitative. Students participate in actual research projects and apply various techniques of data collection and analysis to interpret research findings. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 211 Media Law and Ethics 3.0, 3 cr.
A survey of Lebanese, Arab and International media laws and regulations, and their application within the realms of journalism, public relations, advertising, digital media, and entertainment, with an exploration of ethical guidelines, moral values, and social responsibilities of media scholars, practitioners and educators. Annually. Prerequisite: MCOM 201 or MCOM 202.
MCOM 220 Arab Media and Society 3.0; 3 cr.
An in-depth examination of the political, social, economic, and technological effects of old and new Arab media systems on modern Arab society, with an emphasis on Lebanon and the Arab East region. It focuses on probing the development and current state of print, broadcast and new media systems in the region. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 221 Communication Theory 3.0, 3 cr.
An overview of the ways in which mass communication has been viewed by social scientists and by practitioners, with a focus on the range of issues studied and questions raised, and the schools, approaches, and trends in the field. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 230 Public Relations 3.0; 3 cr.
The course introduces the profession of public relations through a strong emphasis on fundamentals, such as history and research. Emerging issues, such as technology, ethics, and the international aspects of public relations are considered through examining PR strategies, tactics, and case studies. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 231 Advertising 3.0; 3 cr.
The course introduces the student to the core concepts and practices of advertising. It examines the impact of new media and research methods, with an emphasis on integrated communications and the role of ad agencies. Students learn how to assess the effectiveness of advertising, and how to create a successful ad campaign. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 232 Public Speaking and Media Interviews 3.0, 3 cr.
An introduction to public speaking, speech writing, and dealing with press interviews and media appearances. Students learn to write speeches and deliver them effectively to different live and online audiences, and use visuals and slides shows effectively. They also learn how to handle print, broadcast, and online journalists, and deal with recorded and live radio and TV interviews and talk shows. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 233 Marketing Communication 3.0; 3 cr.
The course examines theories and techniques in marketing communication activities, including strategic planning, marketing research, consumer behavior, market segmentation and positioning, and development of a marketing mix. It provides students with the needed knowledge base to research and evaluate a company's marketing situation and develop effective communication strategies and tactics. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 240 Specialized News Reporting and Writing 3.0; 3 cr.
The course explores specialized reporting and writing techniques, including feature stories, opinion columns, profiles, in-depth series, and narrative journalism. It aims to enable students to report and write effectively across news genres and to master transferable communication skills useful beyond the journalism profession. Each semester the course covers some specialized and emerging journalism themes, including investigative reporting, data journalism, covering conflict, trauma, and violence, technology journalism, non-fiction narrative, and others. Annually. Prerequisite: MCOM 203 or Instructor permission. Formerly SOAN 206.

MCOM 241 Broadcast Media 2.2; 3cr.
The course introduces the students to the history of the electronic media, examining the impact of the new media on communication. The course has an interdisciplinary nature, drawing on the expertise of AUB faculty in the fields of communication, science and technology, history, politics, and economics. Annually. Prerequisite: MCOM 203.

MCOM 242 Digital and Multimedia News 3.0; 3 cr.
An introduction to digital and multimedia news writing, reporting, researching, producing, and disseminating online. The course covers basic digital and Web design principles, photojournalism, audio reporting, video journalism, news blogging, social media reporting, CMS managing, multiplatform publishing, and writing for a converged news environment. It also covers emerging new media issues, such as interactivity, information architecture, and individualization. Annually. Prerequisite: MCOM 203.

MCOM 250 Public Opinion 3.0; 3 cr.
A general study of the nature of public opinion, and the interplay between psychological and socio-cultural processes in the formation and dissemination of public opinion. An attempt is also made to explore the impact of public opinion on media and socio-cultural change. Measurements of public opinion are also explored. Annually.

MCOM 251 Political Communication Campaigns 3.0; 3 cr.
Introduces students to the subfield of political communication, covering its main theories, research methods, and modern applications and strategies. Students gain theoretical and working knowledge of political campaign operations, political press offices, the roles of a political press secretary, media advisor, and communication director, and the technologies used in modern political campaigns. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 252 Media Activism for Social Change 3.0; 3 cr.
An introduction to the theories and strategies of media use for non-violent activism and advocacy campaigns and social movements, with a focus on principles of civic activism in the era of digital media convergence. The course balances theory and skills by examining case studies of media activism from around the world and using digital media tools with a stress on digital tools and civic activism principles to develop social and political change campaigns for civil society groups. Annually. Prerequisite: MCOM 201 or MCOM 202.

MCOM 254 Social Communication 3.0; 3 cr.
The course explores the nature of persuasion today and examines strategies for critically evaluating persuasive communication, stressing the importance of adapting persuasive messages to society's cultural beliefs and values, as well as to the economic and social structures that govern the society. It aims at moving beyond traditional theories to improve the student's understanding of how to respond to and evaluate persuasive communication in the era of communication technology. Occasionally. Prerequisite: MCOM 201 or MCOM 202.

MCOM 261 Seminar in Media Studies 3.0; 3 cr.
An undergraduate seminar on the role of media in society. The content areas may change. May be repeated for credit. Occasionally. Prerequisite: MCOM 201 or MCOM 202.

MCOM 260 Persuasion in the Media Age 3.0; 3 cr.
The course explores the nature of persuasion today and examines strategies for critically evaluating persuasive communication, stressing the importance of adapting persuasive messages to society's cultural beliefs and values, as well as to the economic and social structures that govern the society. It aims at moving beyond traditional theories to improve the student's understanding of how to respond to and evaluate persuasive communication in the era of communication technology. Occasionally. Prerequisite: MCOM 201 or MCOM 202.

MCOM 270 Global Media Literacy 3.0; 3 cr.
This course explores how distinctive global media shape views of politics, culture and society within nations, across regions and internationally. It analyzes information, values and underlying messages conveyed via various forms of media. It will develop research methods, designs and instruments that examine the accuracy of various media messages. The research designs will be later implemented in the afternoon course (MCOM 281). Note: this course is part of a study abroad program. Students need to apply to the Media Studies Program to enroll. Each summer. Corequisite: MCOM 281. Prerequisite: Instructor permission.
MCOM 281 Global Change, Cooperation and News 3.0; 3 cr.
A summer abroad course built around global problems of contemporary importance. The class will be broken into cooperative teams that will apply analytic frameworks, research tools and concepts derived from the morning course (MCOM 280) to examine a global event, issue or problem as it is represented regionally. Note: this course is part of a study abroad program. Students need to apply to the Media Studies Program to enroll. Each summer. Corequisite: MCOM 280. Prerequisite: Instructor permission.

MCOM 290 Special Topics Seminar 3.0; 3 cr.
MCOM faculty or visiting professors and recognized scholars might be invited to offer seminars to explore relevant dimensions of their research in progress. May be repeated for credit. Occasionally.

MCOM 291 Special Topics (Humanities) 3.0; 3 cr.
A humanities course that provides a general overview of an area in media studies that is not normally covered by the department’s offerings. May be repeated for credit. Occasionally.

MCOM 292 Special Topics (Social Sciences) 3.0; 3 cr.
A social sciences course that provides a general overview of an area in media studies that is not normally covered by the department’s offerings. May be repeated for credit. Occasionally.

MCOM 295A/B/C Media Lab 1 cr.
A hands-on media lab that may be offered as a workshop or a series of regular classes where students learn a specific set of professional skills within one of the MCOM program’s areas of specialization. May be repeated for credit. Each semester. Prerequisite: Instructor permission.

MCOM 296 Internship 1 cr.
A summer period of guided work experience supervised by the MCOM Internships and Workshops Coordinator and designed to acquaint students with a specific media/communication specialization. A hands-on media lab that may be offered as a workshop or a series of regular classes where students learn a specific set of professional skills within one of the MCOM program’s areas of specialization. May be repeated for credit. Each semester. Prerequisite: Instructor permission.

MCOM 299 Directed Study 3–6 cr.
A tutorial course offered to MCOM students with an average of 85 or above in their major at the beginning of their senior year. This tutorial consists of independent research, original creative compositions, or directed reading, and includes the presentation of a report, project, or thesis on the work. Students with averages lower than 85 may be admitted to directed study at the discretion of the department. Occasionally.

40 Credits in MCOM

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (40)</th>
<th>Natural Sciences (6)</th>
<th>Quantitative Thought (3)</th>
<th>Social Science Outside Major (3)</th>
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<tbody>
<tr>
<td>Lecture Courses</td>
<td>Required</td>
<td>Required credits in the humanities: 12 credits including 6 credits from CVSP</td>
<td>Required</td>
<td>Required 6 credits</td>
<td>Required 3 credits</td>
<td>Required 3 credits</td>
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<td>Required</td>
<td>Required</td>
<td>Required 201(3), 202(3), 203(3), 210(3), 211(3), 220(3), 221(3)</td>
<td>Required</td>
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<td>23(3)</td>
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<td>Arabic courses:</td>
<td>Required</td>
<td>Required 23(3), MCOM 201(3), 202(3), 203(3), 210(3), 211(3), 220(3), 221(3)</td>
<td>Required</td>
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<td>23(3)</td>
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<tr>
<td>ARAB 201A or any General Education Arabic communication skills (3)</td>
<td>Required</td>
<td>Required 201(3), 202(3), 203(3), 210(3), 211(3), 220(3), 221(3)</td>
<td>Required</td>
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<td>23(3)</td>
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<tr>
<td>Required English courses: ENGL 203(3), 204(3)</td>
<td>Required</td>
<td>Required 201(3), 202(3), 203(3), 210(3), 211(3), 220(3), 221(3)</td>
<td>Required</td>
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<td>23(3)</td>
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<td>Required 204–299</td>
<td>Required</td>
<td></td>
<td>23(3)</td>
<td>23(3)</td>
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<td></td>
<td></td>
<td>Recommended: SOAN 237(3)</td>
<td>Required</td>
<td></td>
<td>23(3)</td>
<td>23(3)</td>
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</tbody>
</table>

Media Studies: Diploma in Media Communication

Mission Statement
The Media Studies program offers a diploma in media communication with a balance of practical and theoretical courses. The Diploma in Media Communication prepares students to pursue professional careers in various media industries. Holders of this diploma will be capable of handling professional tasks in media institutions (journalism, public relations and advertising), as well as in governmental, non-governmental, and public institutions.

Admission
For admission to the diploma program, students may enroll in the diploma while pursuing any AUB major, and may complete the diploma during their undergraduate studies or after they complete their BA/BS, or partially before and partially after. Current AUB students working for their bachelor’s degree at AUB apply to the Media Studies program directly. Non-AUB students should apply to the Office of Admissions as special students working for the diploma in media communication. These applications will be reviewed by the Media Studies Program. Completion of a bachelor’s degree is a requirement for admission of non-AUB students to the diploma program.

Requirements
Students qualify for the diploma in media communication upon completion of the program of study, attaining a cumulative average of 70 or above in its courses, and receiving the recommendation of the Media Studies Program. For completion of this program, 21 MCOM credit hours are required (4 required courses, 3 elective courses) with a cumulative average of 70. The four required courses are MCOM 201, MCOM 202, MCOM 203 and either MCOM 220 or MCOM 221. The three electives should be chosen from the rest of the MCOM course list.

Minors in Sociology, Anthropology, and Media Studies

Anthropology: three core courses (SOAN 203 or SOAN 212, SOAN 222 or SOAN 225, and SOAN 221 or SOAN 227) and two electives from the following: SOAN 212, SOAN 215-217, SOAN 220–227, SOAN 232, SOAN 237, SOAN 240–242, SOAN 250-252, and SOAN 290 (if selected topic in Anthropology).

Communication: three core courses (MCOM 202, MCOM 203, MCOM 220) and any two MCOM electives.

Sociology: three core courses (SOAN 101 or SOAN 201, SOAN 213, SOAN 237) and two electives from the following: SOAN 210, SOAN 220, SOAN 222, SOAN 223, SOAN 224, SOAN 225, SOAN 232, SOAN 240-242 SOAN 245 and SOAN 290 (if selected topic in Sociology).

Human Rights and Transitional Justice: The requirements are: SOAN 245, SOAN 240 or PSPA 235, and three electives from the following: SOAN 221, MCOM 250, MCOM 251, SOAN 232, PSYC 211, PHIL 216, PHIL 252, PSPA 232. Students majoring in sociology-anthropology should take at least three courses from other than the SOAN courses.
The Anis Makdisi Program in Literature (AMPL)

Director: El-Bizri, Nader
Advisory Committee: Dallal, Ahmad (Provost); Harb, Sirene; Khairallah, Assaad; Makdisi, Saree (UCLA)

The Anis Makdisi Program in Literature (AMPL) was inaugurated in October 2002.

Objectives

The AMPL promotes and supports interdisciplinary dialogue and different approaches in the study of literature following the tradition initiated by Anis K. Makdisi. The aim of this program is to encourage and develop scholarly interest in the humanities in general and in literature in particular, and to foster intellectual exchange among members of different departments, students, and visiting scholars.

Activities

Program activities include:

• an annual Anis K. Makdisi memorial lecture by a leading scholar in literature or a noted author of poetry or prose. All lectures are published by the program.

• a series of seminars on various issues and topics in literature and cultural studies offered by local, regional, and international scholars, novelists, and artists. The primary aim of the seminars is to enrich the study and the teaching of literature at AUB by providing wide discussion forums.

• informal gatherings (lectures, discussions, colloquia) as a venue for scholarly debate for the academic community in Beirut.

Scholarships

The Program offers two scholarships every year:

• The Anis K. Makdisi Graduate Fellowship to support graduate studies in literature at AUB
• The Anis K. Makdisi Scholarship in Literature for undergraduate studies

Website: www.aub.edu.lb/fas/ampl/Pages/index.aspx
Center for Arab and Middle Eastern Studies (CAMES)

Director: Hazbun, Waleed
Assistant Director: Saidi, Aliya R.
Professor: Khalidi, Tarif A. (Sheikh Zayid Bin Sultan Professor of Islamic and Arab Studies)
Visiting Professor: Traboulsi, Fawwaz
Visiting Assistant Professor: Tell, Tariq
Lecturer: Kozah, Mario
Visiting Lecturer: Sayigh, Rosemary
Instructors: Labaki, Marie-Therese; Kanawati, Rima

The Center for Arab and Middle Eastern Studies (CAMES) is an interdepartmental, interdisciplinary unit that seeks to enhance the understanding of the Middle East and Islamic civilization and to encourage informed scholarship in all academic disciplines. CAMES is committed to the study of the Arabic language and offers courses at all levels in coordination with the Department of Arabic and Near Eastern Languages, as well as a seven-week intensive Arabic language course in the summer.

CAMES offers a MA program in Middle Eastern Studies (See Graduate Catalogue) and a select number of courses at the undergraduate level. To complement students’ course work and to promote scholarship about the Middle East at AUB, the center also sponsors visiting lectures and conference and hold occasional events such as film showings and readings.

Courses

**MEST 201**  Introduction to the Middle East  3.0; 3 cr.
This course provides a introductory survey of the history, politics, political economy, international relations, and cultures of the contemporary Middle East.

**MEST 210**  Special Topics in Middle Eastern Studies  3.0; 3 cr.

**MEST 240**  Introduction to Lebanese Arabic  5.0; 5 cr.
This course is for foreign speakers of Arabic only. The course builds proficiency in Lebanese Arabic through the introduction of the grammatical features of the Lebanese dialect and the practice of interactive functional skills, including listening comprehension, conversation tasks, and vocabulary building. For undergraduate and graduate students. Consent of instructor required. Each semester.
**MEST 241  Intermediate Lebanese Arabic**  
5.0; 5 cr.
This course is for foreign speakers of Arabic only. Intermediate Lebanese Arabic is a continuation of MEST 240 Introduction to Lebanese Arabic. The course emphasizes the further development of conversational skills in Lebanese Arabic, and therefore targets primarily speaking and listening skills. Knowledge of the Arabic alphabet is required to join MEST 241. This course concentrates on increasing vocabulary and command of syntax enabling students to reach a higher level of fluency. *For undergraduate and graduate students. Consent of instructor required. Prerequisite: MEST 240 or placement based on a placement interview. Each semester.*

**MEST 242  Advanced Lebanese Arabic**  
3.0; 3 cr.
This course is the continuation of the sequence begun in MEST 241 Intermediate Lebanese Arabic and MEST 240 Introduction to Lebanese Arabic. Like the preceding courses, it focuses on spoken rather than written Arabic, and will therefore target primarily the oral/aural skills; speaking and listening. Knowledge of the Arabic alphabet is required to join MEST 242. The course is designed to meet the needs and expectations of non-native young adults and adults who are seeking to develop a comfortable level of proficiency in a variety of complicated communicative tasks and social situations. *For undergraduate and graduate students. Consent of instructor required. Prerequisite: MEST 241 or placement based on a placement interview. Each semester.*
The Center for American Studies and Research (CASAR) aims to promote dialogue about issues in American studies through teaching, and outreach. The center offers a minor in American studies and sponsors conferences, seminars, and public lectures. It also promotes research activities particularly in the area of American encounters with the Middle East.

Students pursuing CASAR’s minor in American Studies are required to complete a minimum of 15 credit hours. All CASAR students are required to take the core course, AMST 215, in addition to one course from AMST 220, 230, 240, 265/266, 298, HIST 200, 271, 272, 273, 274, 278/279, PSPA 251; SOAN 215 plus one course from AMST 275/276, 299, CVSP 260AM, ENGL 201, 224, 225, 226; plus two additional courses chosen from any of the above or from the following (with the stipulation that no more than one from this list may be counted): ARCH 023, CVSP 208E, ENGL 215, 216, 218, 219, 222, 241, 242, PHIL 249, 263A, PSPA 234, 237. All AMST courses carry humanities credit except AMST 265/266 and AMST 298.

Courses

**AMST 215**  Introduction to American Studies  3.0; 3 cr.
This course begins with the question: What is America? Its approach is to explore the complex encounters that have shaped the cultures of the United States, beginning with the colonial juxtaposition of Europeans, Native Americans, and Africans. Subsequent encounters with Latinos, Asians, and Arabs reveal the connections between foreign and domestic concerns. Cultural fictions and cultural exclusions have helped to sustain unity among many Americans, but sub-national and transnational identities call this into question. *Annually. Equivalent to HIST 278/279.*

**AMST 220**  Shock of Modernity in America  3.0; 3 cr.
Examines how Americans dealt with the first onslaught of commercial capitalism, industrial technology, and new modes of communication in the decades before the Civil War. A surge of nationalism and social tension fueled an orgy of expansion that created a continental super-state. The wrenching economic, social, and cultural changes of this era continue to resonate in the United States and in societies confronting modernity today. *Annually.*
AMST 230  Cultural Geography of North America  3.0; 3 cr.
An examination of the geography of cultures in the United States and Canada through multiple frameworks including regions, languages, religions, ethnicity, and gender. This course explores the roots and implications of these cultural patterns and considers cultural dynamics at several scales: the household, the city, the region, the nation, and the continent. It also investigates the economic and industrial evolution of cities and regions, the dynamics of public versus private space, the effects of mobility, the dynamics of border zones, diasporic communities, and globalization. Annually. Equivalent to HIST 278/279.

AMST 240  America in the Middle East/ The Middle East in America  3.0; 3 cr.
This course historicizes contemporary United States military and economic involvement in the Middle East by considering the cultural history of U.S./Middle East relations from the mid-19th century to the present. An emergent area of transnational study within American Studies, studies of U.S./Middle East cultural relations are focused on policy, economic, cultural, and affective dimensions. Students will engage the field by analyzing primary documents, reading literature, and viewing visual and popular culture. Offered Annually.

AMST 265/266  Special Topics in American Society  3.0; 3 cr.
A term-specific interdisciplinary course focusing on some aspect of American society. May be repeated for credit. This course carries social science credit. Offered occasionally.

AMST 275/276  Special Topics in American Humanities  3.0; 3 cr.
A term-specific interdisciplinary course focusing on some aspect of American arts. May be repeated for credit. This course carries humanities credit. Offered occasionally.

AMST 298  Tutorial in American Society  3.0; 3 cr.
A tutorial course offered to seniors completing the minor in American Studies who have an overall average of at least 80 and at least an 85 in the minor courses. This tutorial consists of independent research or directed reading in some aspect of American society, and includes the preparation of a report or thesis on the work. This course can be taken for 3 or 6 credits. This course carries social science credit. Offered on request.

AMST 299  Tutorial in American Humanities  3.0; 3 cr.
A tutorial course offered to seniors completing the minor in American Studies who have an overall average of at least 80 and at least an 85 in the minor courses. This tutorial consists of independent research or directed reading in some aspect of American arts and includes the preparation of a report or thesis on the work. This course can be taken for 3 or 6 credits. Offered on request.
Center for Behavioral Research (CBR)

Director: Khalaf, Samir G.
Executive Committee: Dietrich, Arne; El-Cheikh, Nadia; Jarrar, Maher

The center encourages, coordinates, and sponsors interdisciplinary research in the behavioral and social sciences and the humanities. It also promotes dissemination of research findings through special workshops, seminars, and publications.

Programs and activities of the CBR include international lecture series, bi-weekly discussions, and visiting fellowships to facilitate contacts with innovative and regional world scholars. The center also sponsors collaborative research and symposia with other universities and foundations, and provides stipends to graduate students.
Center for English Language Research and Teaching (CELRT)

Director: Shaaban, Kassim A.
Professors: Ghaith, Ghazi M.; Shaaban, Kassim A.
Associate Professors: Choueiri, Lina G.; Zenger, Amy A.
Assistant Professor: Arnold, Lisa

The Center has five main functions:

- In cooperation with the Departments of English and Education, it sponsors a program leading to an MA degree in the Teaching of English as a Foreign Language (TEFL).
- It maintains a computer-assisted language learning facility and a Materials Center comprising a collection of reference books, textbooks, journals, MA theses, reports, and visual aids.
- In cooperation with the Office of the Vice President for Regional and External Programs (REP), it offers consultation services and assistance in Lebanon and the region in all aspects of English language teaching, including program evaluation, curriculum design, materials development, developing and administering assessment tools, and teacher training.
- It engages in research in theoretical and applied linguistics and in language teaching and language learning.
- In cooperation with the Department of Education, it conducts TEFL workshops for elementary and secondary school teachers.
Science and Mathematics Education Center (SMEC)

Director: Amin, Tamer
Professors: BouJaoude, Saouma; Jurdak, Murad
Associate Professor: Vlaardingerbroek, Barend
Assistant Professors: Amin, Tamer; El-Mouhayar, Rabih; Khishfe, Rola

The overall mission of the Science and Mathematics Education Center is four-fold:

• to conduct and support quality research on the teaching and learning of science and mathematics at the pre-school, elementary, and secondary levels
• to contribute to the development of quality science and mathematics teaching and research professionals
• to design and provide ongoing professional development for science and mathematics teachers in Lebanon and abroad
• to effect a positive influence on the quality and status of school science and mathematics education locally, regionally, and internationally.

The center currently accomplishes its mission through the performance of a variety of functions including, but not limited to:

• designing and teaching science and mathematics education courses for pre-service teachers and master’s level graduate students in cooperation with the Department of Education
• designing and conducting research on teaching, learning, and teacher professional development in science and mathematics
• designing and developing instructional materials in science and mathematics for students and teachers
• maintaining a current science and mathematics curriculum library for use by pre-service and in-service teaching professionals
• providing outreach consultation in science and mathematics education for schools, institutions, and governments regarding curriculum design, the design of instructional environments, methods of evaluation, and professional development for teachers
• providing in-service professional development for teachers and subject-matter coordinators through special courses, workshops, institutes, conferences, or through participation in professional development initiatives sponsored by AUB or other institutions and organizations.
University Preparatory Program (UPP)

Director: Harkous-Rihan, Samar
Lecturers: Harkous-Rihan, Samar; Jureidini, Najwa
Instructors: Abiad, May; Awwad, Mohammad; Ghaith, Nadin; Halabi, Maha; Hallak, Sandy; Harake, Rima; Hassan, Han; Karam, Marriane; Kharoub, Naim; Kastl, Houssam Saghbine, Paul
Assistant Instructor: Ashkar, Nicholas

The University Preparatory Program (UPP) is a unit within the Faculty of Arts and Sciences. Its main objective is to address the specific English language needs of students who have completed high school with strong academic records but are unprepared to function in all-English curricula at the university level. The program also aims to develop the science and mathematics content competencies and computer skills of its students, as well as develop the requisite academic literacy, study skills, and information library skills needed for success in university studies.

UPP is a one year program at the rate of 25 contact hours per week. Its curriculum follows an integrated approach to the teaching of language skills (listening, speaking, reading, writing,) and a student-centered approach to the teaching of science and mathematics. Furthermore, the curriculum incorporates study skills, pronunciation training, and conversational English, depending on individual needs. The development of computer literacy, preparation for the critical reading part of the SAT reasoning test, and cultural orientation, are also emphasized.

Applicants must have completed at least twelve years of schooling, or the equivalent, before beginning the program, and must submit a UPP application with all supporting material. Completed applications are reviewed, and students are notified of their acceptance or non-acceptance to UPP in due course.

Accepted applicants to UPP are assigned to a learning level based on their performance on a special English language test. This test measures the English language proficiency of learners and is used to place students into three proficiency levels. Other diagnostic tests specifically prepared for the program are used to determine the mastery level of various language skills and elements (listening, speaking, reading, writing, grammar, and vocabulary). In addition, applicants receive developmentally-appropriate instruction based on their performance on science, math, and computer skills tests.

Promotion to a higher level is not automatic; learners must demonstrate that they have successfully met the instructional objectives set for the current level. The placement test might be administered again to serve as an indicator of the progress made by the learners over the period of one semester. Exit out of the program and into Sophomore is on the basis of passing the UPP sequence of courses and attaining the scores on the TOEFL and SAT tests needed for admission to regular AUB programs. However, students wishing to join the Freshman year will need to attain the minimum average required for admittance. Furthermore, all UPP applicants to AUB must present a letter of good performance from the Program Director. They should also maintain a good attendance record. Students who miss more than one-fifth of the sessions of any section in the first ten weeks of the semester (five weeks in the case of the summer term) will be dropped from the program.

It is important to stress that students need to complete the program, even if they attain the needed TOEFL and SAT scores before the semester is finished. Failing to complete the program jeopardizes students’ chances of admission to AUB.

The UPP also offers an Intensive English Summer Course for newly admitted graduate students coming from outside AUB who have not fulfilled the English Language Requirement. This Course (20 contact hours per week) aims at enabling these students to function effectively in all-English curricula.

Courses

**UPEN 001**
This course is designed for beginning UPP students who have little or no knowledge of English. It provides learners with basic listening, speaking, reading, and writing skills, enabling them to understand and take part in English conversations, in addition to reading simple stories and responding to them in writing.

**UPEN 002**
This course is designed for low-intermediate UPP students who possess limited language skills but can initiate conversations and read and/or write a paragraph or several paragraphs. Word-building and study skills, in addition to more sophisticated reading and writing skills, are introduced to enable these college-bound students to cope with the tasks required of them in the future. There is also emphasis on orientation to the American model of education, and to living in a diverse ethnic and cultural environment.

**UPEN 003**
This course is designed for high intermediate UPP students who can communicate well both in conversation and in writing. It serves as a transition from intensive English courses to regular academic study. Students read various texts, give oral presentations, receive cultural orientation, and practice their academic writing and basic research skills.

**UPEN 004**
**SAT Writing and Critical Reading**
This course prepares students for the writing and critical reading sections of the Scholastic Aptitude Test (SAT Reasoning) required of all undergraduate students joining AUB. Emphasis is placed on critical reading skills, college writing skills, vocabulary building, and standardized test-taking strategies.

**UPMA 001A**
**SAT Math**
This course prepares students for the math section of the Scholastic Aptitude Test (SAT Reasoning) required of all undergraduate students joining AUB. Emphasis is placed on mathematical terminology, arithmetic skills and concepts, word problems, geometric concepts and reasoning, in addition to standardized test-taking strategies.

**UPSC 001A**
**Science**
This course is a science literacy course that introduces students to major concepts in the physical and life sciences and their applications in everyday life. It emphasizes in-depth conceptual understanding of science concepts by using a variety of teaching approaches. Additionally, the course introduces students to scientific terminology in English to prepare students to take science courses at the university level.
**UPIT 001A  Information Technology**  0 cr.
This course is a computer literacy course that introduces students to computers and their importance in society. It provides essential acquaintance for students with no previous background in computers. The course covers the basic terminology in terms of hardware, software, communication, and the Internet. In addition, a great part of the course is dedicated to the practical use of basic application software (Microsoft Word, Excel, PowerPoint).

**UPHU 001A  Humanities**  0 cr.
This course aims to introduce students of UPP to the humanities, through a look at how the human has attempted to understand and express itself, its values, its condition, and its history. This will be addressed through a close encounter with selections ranging in time and space (from the ancient classics, through the Medieval cultures, down to the 19th and 20th Centuries), and from a varied array of expressions in the humanities (literature, philosophy, and various forms of the arts).
The Writing Center

Director: Zenger, Amy A.

The Writing Center aims to enhance writing at AUB by conducting research and by supporting student writers and teachers of writing. The center promotes the many uses of writing: as a tool for thinking, as a way to demonstrate learning and as a means of expression. It seeks to maintain professional affiliations with writing centers in this region and internationally.

The Writing Center works with administrators, faculty members, and students to support writing in courses in each of the majors, in accordance with General Education guidelines.

The Writing Center also offers free, one-hour writing consultations to members of the AUB community. All undergraduate and graduate students, faculty, and staff are welcome to discuss their writing with a tutor.

The main Writing Center office is located in Ada Dodge Hall, room 214. Tutoring is also offered 9 am to 5 pm, Monday through Friday, in West Hall, room 336, and in Jafet Library, second floor reading room. Schedule appointments online at http://www.rich75.com/aub Contact the center by phone at AUB extension 4077 or 3157 or by e-mail at az07@aub.edu.lb.
The Zaki Nassif Program for Music (ZNPM)

Academic Committee: Jarrar, Maher; Jureidini, Wadi; Kim, Thomas; Kurani, David; Nassif, Nabil (Chairperson); Sabra, Ramzi

The Zaki Nassif Program for Music was inaugurated in December 2004.

The Program aims to preserve and promote the musical heritage of Zaki Nassif and to foster excellence in the teaching of music by contributing to its advancement through a variety of activities that include:

- Reinstating and sustaining musical studies programs and music curricula at AUB.
- Recruiting scholars and new faculty members to initiate music courses and programs at the department of Fine Arts and Arts History in AUB Faculty of Arts and Sciences.
- Organizing competitions, concerts, conferences and seminars.
- Inviting professional musicians and academics to the University.
- Awarding prizes, scholarships, and fellowships to students in the name of Zaki Nassif.
Suliman S. Olayan School of Business (OSB)

Officers of the School

Peter F. Dorman  President of the University
Ahmad Dallal     Provost, ex-officio
Salim Chahine    Acting Dean
Dima Jamali      Associate Dean
Moueen Salameh  Registrar, ex-officio
Salim Kanaan    Director of Admissions, ex-officio
Lokman Meho     University Librarian, ex-officio

Professional Staff

Carla Sayegh Hilton  OSB Executive Director
Fida Kanaan     Director of Executive Education
Rula Karam      EMBA Officer
Elia Khater     Chief Solutions Officer
Nada Khalidy Kouzi  Executive Officer
Maya El Helou Shaib  Senior Graduate Program Officer

Program Directors

Salim Chahine    Director of the MBA Program
Wassim Dbouk     Director of the Master's Program in Finance
Riad Dimechkie  Director of the Executive MBA Program
Dima Jamali      Director for MHRM Program
Antoine Sabbagh  Director of the Undergraduate Program

Center Director

Bijan Azad  Director, Center for Innovation Management and Entrepreneurship

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Suliman S. Olayan School of Business (OSB)

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The Finance, Accounting, and Managerial Economics Track

Convener: Khalil, Samer
Professors: Chahine, Salim; Safieddine, Assem
Associate Professor: Khalil, Samer
Assistant Professors: Dbouk, Wassim; Ghanem, Abdel Jalil; Jamali, Ibrahim; Mazboudi, Mohamad; McNamara, Steven; Rkein, Ali; Saade, Sameer; Safar, Walid; Termos, Ali
Instructors: El-Hajj, Sana; Hout, Bassima; Tannir-Fawaz, Lina; Uwaydah-Mardini, Rania

The Management, Marketing, and Entrepreneurship Track
Convener: Sidani, Yusuf
Professors: Jamali, Dima; Vanhonacker, W
Associate Professors: Rebeiz, Karim; Sidani, Yusuf
Assistant Professors: Al-Horr, Hadi; Afionui, Fida; Apaydin, Marina; Bastian, Bettina; Daouk, Lina; El Jurdi, Hounaïda; Kamei, Yehia; Karam, Charlotte; Khakhar, Priyan; Khoury, Haitham; Leigh, Laurence; Yehia, Nadine; Zeidan, Mohamad-Jamal
Senior Lecturers: Abdallah, Hanin; Dimechkie, Riad; Kettaneh, Tarek
Lecturer: Thornberry, Jon
Instructors: Kfouri, Michael; Khoul-Hanna, Leila; Lanteri, Alessandro; Panos, Hagop

The Business Information and Decision Systems Track
Convener: Fleszar, Krzysztof
Professors: Hindi, Khalil1; Osman, Ibrahim H.
Associate Professors: Azad, Bijan; Fleszar, Krzysztof
Assistant Professors: Anouze, Abdel Latief; Arabji, Reina; Araman, Victor; Bou Hamad, Imad; Feghali, Antoine; King, Nelson; Moussawi, Lama; Nasr, Walid; Yorke-Smith, Neil
Lecturer: Majdalani, Elias
Instructors: Geutcherian, Rita; Salamoun Sioufi, Randa

History and Overview
Business education at AUB started in 1900 and was provided either by a department or a semi-autonomous school under the University’s Faculty of Arts and Sciences for approximately one hundred years. In celebration of the hundred-year anniversary of offering business programs, AUB established in September 2000 an independent School of Business (later named the Suliman S. Olayan School of Business, OSB) as the sixth faculty of the University.

To date, AUB has graduated over 6,500 students from its undergraduate business programs and over 1,300 from its graduate business programs. Since its formal establishment as a distinct school, OSB has grown its full-time faculty complement from 13 in the academic year 2000-01 to 56 today. It now graduates approximately 350 students from its undergraduate program and 60 students from its graduate programs every year.

OSB currently offers five degree programs: an Executive Master of Business Administration (herein referred to as the Executive MBA), a Master of Business Administration (herein referred to as the MBA), a Masters in Finance1 (herein referred to as the MF), a Masters in Human Resource Management (herein referred to as the MHRM) and a Bachelor of Business Administration (herein referred to as the BBA).

The First AUB Faculty to Be Named
In June 2003, the AUB School of Business was named the Suliman S. Olayan School of Business, in honor of the late international Saudi businessman and AUB trustee whose family has always been a major supporter of AUB.

This watershed event triggered a series of major developments intended to broaden and deepen the delivery of quality undergraduate and graduate business programs at AUB. An entire new curriculum was introduced for the BBA and MBA degrees in the fall of 2001. Both degrees were redesigned to follow leading trends in international business education. In the spring of 2004, OSB launched the Executive MBA program in response to the professional development needs of senior corporate leaders in the region. In 2012, OSB introduced a Specialized Masters in Finance1 and a Specialized Masters in Human Resource Management to its suite of graduate degree program offerings as part of its strategy to better serve the region, increase its graduate enrollment and further enhance AUB’s global brand as the regional business education leader.

Accreditation
The degree programs of OSB are accredited by the Association to Advance Collegiate Schools of Business (AACSB International). Requiring rigorous quality audits and adherence to best academic practices, AACSB accreditation, which is attained by less than five percent of business schools worldwide, is the international quality-assurance standard for business education programs.

Our Vision
To become globally recognized as the leading business school in the MENA area in terms of academic research, teaching excellence and business impact.

Our Mission
Building on over a century of prominence in business education, the Suliman S. Olayan School of Business (OSB) is committed to providing quality undergraduate and graduate programs aimed at developing business leaders in, for or from the Middle East region and beyond. The School’s undergraduate program (BBA) accentuates a liberal arts-based operational focus whereas the Executive MBA has a distinct leadership and strategy orientation. The MBA program imparts globally current, regionally relevant general management competencies to the next generation of business leaders and the specialized Masters programs are designed to graduate expert practitioners. OSB’s role in knowledge dissemination and service is reinforced by the School’s...
into career opportunities in business. The program combines business and arts and sciences in a rigorous learning environment to help students gain a holistic understanding of the social, cultural and economic environment in which they operate. The curriculum's liberal arts-based operational focus is deeply grounded in analytics, while emphasizing soft skill areas such as leadership, decision-making and ethical reasoning.

Admission to the Program

Normally, there are two admission deadlines a year; in February, for enrollment in the following fall, and in November, for enrollment in the following spring.

Criteria for Admission to the BBA Program

Students are admitted as sophomores to the BBA program either through direct admission, through transfer from other Faculties at AUB or through transfer from other universities. Students may also be admitted as junior transfers from other Faculties at AUB or from outside AUB.

Direct Admission

These students are normally admitted directly from secondary school into the sophomore class at OSB. For complete and detailed information regarding admission to the University, see the Admissions section of this catalogue. All admissions are decided by the University Unified Admissions Committee.

Transfer into OSB

As per OSB's bylaws, all transfer decisions are made by the school's Undergraduate Admissions Committee.

Transfer from the Freshman Class of the Faculty of Arts and Sciences

Eligibility conditions are:
- successful completion of at least 24 credits
- a minimum cumulative average of 77
- a minimum grade of 70 in MATH 101, MATH 102 or MATH 203

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Transfer from other Faculties at AUB

Non-OSB students at AUB, other than those from the freshman class of the Faculty of Arts and Sciences, may apply for a transfer to OSB in order to pursue a BBA degree. To be eligible for an internal transfer, the applicant must:
- have completed at least 24 sophomore credits (or 54 credits including freshman credits)
- not be on probation
- have achieved a minimum overall cumulative average of 77. Students with a minimum overall

OSB currently offers a bachelor's degree in business administration (the BBA).

Undergraduate Program: The BBA Program

OSB currently offers a bachelor's degree in business administration (the BBA).

Philosophy

The BBA program is for university entrants focused on translating their thinking and interests
cumulative average of less than 77 maybe considered for an internal transfer provided they have taken a minimum of 15 credit hours of business courses and provided they have a minimum cumulative average of 80 in these business courses.

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

It is important to note that for transfer purposes, late freshman students who have taken more than 30 credits but less than or equal to 45 credits are treated as freshman students (i.e., they must meet freshman transfer requirements).

Transfer from Outside AUB (Other Universities)

Students currently pursuing an undergraduate degree at another university in Lebanon or abroad may apply for transfer to the OSB sophomore or junior class. To be eligible for admission to AUB and to OSB’s business program, the applicant must:

- be transferring from an appropriately accredited university or institution of higher education recognized by AUB
- have completed at least 24 sophomore credits (or 54 credits inclusive of the freshman year)
- have achieved a minimum overall cumulative average equivalent to the AUB average of 77.

As stated in the General University Academic Information section of the catalogue, applicants should meet the English Language Proficiency Requirement before registration.

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

It is important to note that:

- transfer of credit is considered only for courses completed in the five-year period preceding the proposed date of joining the BBA program
- a student transferring to OSB from another institution will not normally be granted equivalency credits for core business courses. Core business courses are: ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 230, BUSS 240, BUSS 245, BUSS 248, BUSS 249, DCSN 200, DCSN 205, FINA 210, INFO 200, MKTG 210, and MNGT 215
- the student must have achieved a grade equivalent to 77 or higher at AUB in each of the courses for which transfer of credit is sought
- the Undergraduate Student Academic Affairs and Curriculum Committee reserves the right to require the student to sit for an exemption test prior to the approval of transferred courses. Exemption tests are available for a non-refundable fee of $100 per test. An exemption test may be taken only once.

Business as a Second Degree

The OSB Undergraduate Admissions Committee evaluates all applications for the BBA as a second degree and makes recommendations to the Dean. To be eligible for admission, the student must have a first degree from an appropriately accredited institution of higher education recognized by AUB with a cumulative average of no less than 75 (or its equivalent).

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Dual Degree

Students may, upon approval of the Faculty concerned, complete the requirements for a second degree while registered in another Faculty at AUB. In such a case, a student will be granted two degrees at the same time upon graduation. If tuition differences, students will pay the higher of the tuitions. To be eligible for a dual degree with OSB, the applicant must:

- have completed at least 24 sophomore credits (or 54 credits including freshman credits)
- not be on probation
- have achieved a minimum overall cumulative average of 77.

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places for the term in question.

Information about deadlines and applications are available on the following link: http://www.aub.edu.lb/registrar/Documents/pdfdoc/dualdegree.pdf

Business as a Minor Field of Study

Students who wish to obtain a minor in business are required to:

- complete a minimum of 18 credit hours in the following business courses: ACCT 210 (Financial Accounting, 3 cr.), DCSN 200 (Operations Management, 3 cr.), FINA 210 (Business Finance, 3 cr.), INFO 200 (Foundations of Information Systems, 3 cr.), MGT 210 (Principles of Marketing, 3 cr.) and MNGT 215 (Fundamentals of Management and Organizational Behavior, 3 cr.)
- pass the required six courses (ACCT 210, FINA 210, MNGT 215, INFO 200, and DCSN 200), and
- maintain a minimum overall average of 77 in all business courses taken.

It is important to note that:

- no business courses required by the Faculty in which the student is pursuing his/her major field of study (the "major Faculty") may be counted toward the business minor. In cases where a student has taken business courses as a requirement by the student’s major Faculty, the student must take additional business electives to achieve the total 18 credits required for the minor. In all cases, course prerequisites, as stipulated in OSB’s curriculum, apply and are strictly enforced.

Academic Policies

For more information on registration requirements, categories of students, class attendance, correct use of language, cross registration, course (and credit) loads, dean’s honor list, directed study, disclosure of student records, English proficiency, grading system, graduation with distinction and high distinction, and policy on transfer within the University, refer to the General University Academic Information section of this catalogue.

Other OSB-specific academic rules and regulations follow.
Academic Advisers
Each BBA student is assigned an academic adviser who plays the role of a mentor. The adviser communicates the culture of the institution, mainly as it relates to “life-long learning, personal integrity and civic responsibility and leadership” (AUB Mission Statement), and plays an important role in guiding students through a curriculum that balances broad liberal arts exposure with deep knowledge of business fundamentals. In addition, the adviser helps the students in assessing future graduate studies opportunities and career choices.

Classification of Students
A BBA student shall be considered to have completed a class level (i.e. freshman, sophomore, junior or senior) when s/he has successfully completed 30 or more credits beyond the requirements for the previous class. A student may be granted a certificate stating that s/he has completed a class only when s/he has completed the specified courses in the regular program for that class and has acquired the requisite number of credits.

The credit requirements are as follows:

<table>
<thead>
<tr>
<th>Class Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the completion of the freshman class:</td>
<td>30 credits</td>
</tr>
<tr>
<td>For the completion of the sophomore class:</td>
<td>60 credits (cumulative)</td>
</tr>
<tr>
<td>For the completion of the junior class:</td>
<td>90 credits (cumulative)</td>
</tr>
</tbody>
</table>

Credit Load
Students may register for up to 17 credit hours in a regular academic semester (e.g. fall or spring) and 10 credit hours in the summer term. Junior and senior, but not sophomore, students who wish to increase their credit load to 18 credit hours in a semester must have completed ENGL 203 and ENGL 204 and then petition the OSB Undergraduate Student Academic Affairs and Curriculum Committee for permission to do so. Normally, junior and senior students with an overall average of at least 80 or an average of at least 80 in the last two semesters are given such permission.

The credit load of a student who is in his/her first semester on probation (P1) shall not be fewer than 12 credit hours and shall not exceed 17 credit hours. The load of a student who continues to be placed on probation (P2) shall not be fewer than 12 credit hours and shall not exceed 13 credit hours.

Students who are registered in the BUSS 245 course (the internship) may register for no more than 3 other credit hours, provided that the other course(s) taken do not conflict with the working hours of the summer internship. Honor students may petition to be allowed to register for a maximum of 7 credit hours, including the internship.

Internship Requirements
All BBA students must successfully complete the internship requirement (BUSS 245). Normally, the internship takes place in the summer term directly following the completion of the junior year. Students must register for the summer internship (through an online application on the OSB website) by March 15, and provide the school with an employer’s acceptance by April 15. All students applying for the internship program must:

- be juniors;
- have completed by the end of the spring semester: FINA 210, MNGT 215, MKTG 210, and INFO 200;
- have completed by the end of the fall semester:
  a) at least 38 credit hours if they were admitted to the University as sophomores
  b) or at least 68 credit hours if they were admitted to the University as freshmen.

Normally, student should solicit their own internships. All internships are approved by the Internship and Placement Office.

Internship Guidelines
- The internship is normally two months in duration and takes place during the summer term (i.e., any two months between May 27 and August 31)
- The student must comply with the policy of the host company regarding working days and working hours
- The work week must not be less than 5 working days
- Working hours are according to host company policies
- The student will be supervised by a faculty member from OSB and the work supervisor at the company throughout the internship period
- The internship is graded. The grade is based on the evaluations of both the direct work supervisor and the OSB faculty supervisor
- The internship grade is included in the computation of the student’s overall average.

Academic Probation
Placement on Academic Probation
University regulations apply; refer to the General University Academic Information section of this catalogue.

In addition, note that:
- Students who are attending 4 courses including BUSS 211 i.e. with a load of 11 credits are subject to probation regulations
- If a student on probation drops the whole semester, then that semester is not counted for continued probation purposes.

Removal of Probation
University regulations apply; refer to the General University Academic Information section of this catalogue.

Dismissal
University regulations apply; refer to the General University Academic Information section of this catalogue.
Readmission

University regulations apply; refer to the General University Academic Information section of this catalogue.

Transfer credits are considered after evaluation of a student's coursework. The student must have achieved a minimum grade equivalent to the AUB average of 77 in each of the courses for which transfer of credits may be granted.

Regulations on readmission also apply to students who are dropped from other AUB Faculties and apply for admission to OSB.

Readmission of students dropped from the school by the Undergraduate Student Academic Affairs and Curriculum Committee requires the approval of that Committee, whereas readmission of students dropped from other AUB Faculties requires the approval of the OSB Admissions Committee.

Failing and Repeating Courses

University regulations apply; refer to the General University Academic Information section of this catalogue.

A student who at the end of the senior year fails to fulfill the graduation requirements pertaining to cumulative grade averages and is not dismissed must repeat the courses with low grades, in order to raise the overall averages to the required minimums.

Incompletes

A student who, at the end of a term, receives an incomplete grade for missing a major requirement of a course (e.g., final examination, term project or paper) must present a valid excuse in order for him/her to apply for permission to complete that course. Medical reports and/or qualified professional opinions issued by an AUB employee, AUBMC doctor or by the University Health Services are normally accepted. Should there be a question about the validity of an excuse, the OSB Undergraduate Student Academic Affairs and Curriculum Committee may not allow the student to sit for a makeup.

In order to receive permission to complete a course, the student (or his family members) must, within 72 hours of the final exam date, submit to the OSB Undergraduate Student Academic Affairs and Curriculum Committee a makeup request (form available at the OSB Student Services Office) approved by the instructor, along with evidence of a valid excuse. If granted permission, the makeup must be completed within one month of the start of the next regular semester. In rare and exceptional circumstances, the OSB Undergraduate Student Academic Affairs and Curriculum Committee may grant the student additional time. A student who has already sat for a final examination may not re-take that examination.

Incomplete course work is reported as an “I” followed by a numerical grade reflecting the evaluation of the student, based on available information. The evaluation is based on a grade of zero on all missed work and is reported in units of five. If the work is not completed within the period specified, the “I” is dropped and the numerical grade becomes the final grade.

Examinations and Quizzes

Undergraduate business courses, other than tutorial and seminar courses, have final examinations, unless otherwise authorized by the OSB Undergraduate Student Academic Affairs and Curriculum Committee. In all courses in which final examinations are given, a student would not receive a passing grade without taking a final examination. Even though final examinations are not required in tutorial and seminar courses, the instructor may choose to give a final examination.

At the beginning of each semester, the instructor announces the examinations and quizzes policy that s/he intends to follow. The instructor assumes final responsibility for dealing with students missing an examination or a quiz during the term. Normally, students who miss an announced examination or quiz during the term must present an excuse considered valid by the instructor. Only then may the instructor allow the student to take a makeup.

Cross-Registration

A business student who wants to register for a course at another recognized institution must meet all requirements for cross-registration as stipulated in the General University Academic Information section of this catalogue.

Study Abroad

A business student who started his/her undergraduate program at AUB and wishes to study abroad may seek prior approval from the OSB Undergraduate Student Academic Affairs and Curriculum Committee to spend up to one year and earn up to 30 credits at another university.

A business student who wants to register for a course at another recognized institution must present a study abroad plan and apply for approval to the OSB Undergraduate Student Academic Affairs and Curriculum Committee.

Graduation Requirements

Graduation requirements for the Bachelor of Business Administration (BBA) are as follows:

- A minimum of six semesters beginning with the sophomore class is required.
- A maximum of six calendar years is allowed for graduation of students who begin with the sophomore class, four calendar years for juniors and two calendar years for seniors. A student who fails to complete his/her degree program within these specified times must petition the OSB Undergraduate Student Academic Affairs and Curriculum Committee for an extension.
- A student transferring to AUB from another recognized institution of higher learning must register in the final three regular semesters and must complete at least 45 credits at AUB, of which a minimum of 24 credits must be in business before s/he is allowed to graduate with a BBA. For purposes of this requirement, two summer sessions shall be considered equivalent to one semester.
- A transfer student from within AUB must meet the residency requirement before s/he graduates with a BBA degree. The residency requirement stipulates that a student must spend a minimum of one regular semester (i.e. fall or spring) and one summer session in the school, during which s/he must complete a minimum of 24 credits, 12 of which are business credits. During this period, the student must meet all minimum academic standards set forth by the school.
• Completion of a minimum of 90 credits for students who enter as sophomores. With the approval of the OSB Undergraduate Student Academic Affairs and Curriculum Committee, tracks may establish programs that exceed these minimum credit requirements.

• Completion of 48 credits in business courses comprising 39 credits of core courses and 9 credits of business electives in a concentration area. Students must achieve a cumulative average of at least 70 in these 48 credits.

• For students to graduate with a concentration, the 9 credits in the concentration area must be completed with a cumulative grade average of at least 70. Normally a maximum of one course completed outside OSB may count toward the concentration upon the approval of the track convener.

• Completion of three required zero-credit business workshops.

• Successful completion of the Assurance of Learning Requirements.

• When a student repeats a course, the highest grade obtained in the course is used in computing the student’s average for graduation purposes. The student may repeat any course s/he chooses.

• Grades of 70 or more in at least 50 credits numbered 200 or above.

• All Arabic-speaking business students (except those officially exempted) must satisfy the Arabic language requirements and all students entering at the sophomore, junior or senior level must take one Arabic course.

• All business students must take English communication skills courses as determined by placement upon matriculation, and these required courses may be taken immediately on matriculation and must be continued without interruption until completed through ENGL 208. For example, a student entering at the lowest level may take five semesters of English (Intensive ENGL 100A or 100B if required 102, 203, 204, and 208); a student entering at the third level must take 3 semesters (203, 204, and 208; i.e., nine credits). A student who enters at ENGL 204 must take, in addition to this course, ENGL 208 and any other elective course from the offerings of other AUB faculties.

• All business students must take MATH 203, MATH 204, and CMPS 209. A student who is exempted from MATH 203 must take, in addition to MATH 204 and CMPS 209, any other non-business elective course from offerings at other AUB faculties.

• All business students must take ECON 211 and 212.

• As per the University General Education requirement, all business students must take two courses (six credits) from the General Education Humanities List 1. In addition, apart from BUSS 215 which is designated as a humanities course for the General Education requirement (List 2), a student must take one course (three credits) from either List 1 or List 2 of the General Education Humanities courses.

• All business students must take two Natural Sciences from the General Education Natural Sciences courses.

• All Business students must satisfy the General Education requirements as specified for all AUB students.

• Students already holding a bachelor’s degree outside business and wishing to obtain a BBA must complete, after admission, 48 business credit hours. However, students who have completed a minor in business or have taken 18 or more business credit hours prior to applying for the BBA as a second degree must take no fewer than 30 business credit hours. All second-degree students must also fulfill other non-business graduation requirements.

• All senior-level BBA students must complete an online survey (through the OSB website) in order to be cleared for graduation.

Program Outline

The undergraduate program, leading to a BBA degree, requires students to complete 120 credit hours for those beginning at the freshman level and 90 credit hours for those joining the University as sophomores. Of the total required credit hours, the BBA program requires that 48 credit hours, including a one credit internship program, be satisfactorily completed in business courses, with the remainder allocated to liberal arts/non-business courses. In addition and as a condition for graduation, all students are required to complete successfully three zero-credit pass/fail workshops designed to enhance their soft skills.

Assurance of Learning Requirements

To comply with AACSB Assurance of Learning guidelines and standards, all students are required, as a condition for graduation, to complete successfully during their last semester work assigned by the school for this purpose.

Business Requirements

Of the total required credit hours, 48 must be satisfactorily completed in business courses. Of these 48, a general business core comprising 39 credit hours is common to all business students. In addition to this general business core (which includes the three zero-credit workshops mentioned above), the student must complete 9 additional credit hours of business electives in one of the following concentration areas: accounting, finance, management, marketing, entrepreneurship and business information and decision systems. All courses qualifying as business electives must be offered by OSB. Students who do not opt for a concentration must complete the 39 core credit hours in addition to at least 9 credit hours in free business electives.

A student may also choose a second concentration by taking an additional 9 credit hours. Thus a business student who chooses to pursue two concentrations must complete 9 credits in each concentration. A BBA student is allowed to graduate with a maximum of two concentrations, and the student must declare concentration(s) (or lack thereof) no later than the end of the junior year.

Required Core Business Courses (39 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 210</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 215</td>
<td>Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 200</td>
<td>Business Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 201</td>
<td>Business Law</td>
<td>2</td>
</tr>
<tr>
<td>BUSS 215</td>
<td>Business Ethics</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 230</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 239</td>
<td>Business Communication Skills Workshop</td>
<td>0</td>
</tr>
<tr>
<td>BUSS 240</td>
<td>Strategic Career Planning Workshop</td>
<td>0</td>
</tr>
<tr>
<td>BUSS 245</td>
<td>Internship/PRACTICUM</td>
<td>1</td>
</tr>
<tr>
<td>BUSS 248</td>
<td>Developing Business Plans Workshop</td>
<td>0</td>
</tr>
<tr>
<td>BUSS 249</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>DCSN 200</td>
<td>Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>DCSN 205</td>
<td>Managerial Decision Making</td>
<td>3</td>
</tr>
</tbody>
</table>
### Non-Business, General Education Requirements

Starting at the sophomore level, of the required 90 credit hours of the BBA program, 42 credit hours must be satisfactorily completed in non-business courses. These include 9 credit hours of English, 6 credit hours of economics (social sciences), 12 credit hours of humanities including BUSS 215 (considered a List 2 General Education Humanities course), 6 credit hours of mathematics (quantitative thought), 3 credit hours of computer science (quantitative thought), 3 credit hours of Arabic and 6 credit hours of Natural Sciences. For a list of specific required non-business courses, refer to the next section.

Students who have taken required non-business courses in their freshman year are exempted from them in the sophomore year. These students must, however, take additional free electives to fulfill the credit hour minimum of 42 required for graduation.

### Program Delivery

A proposed study plan for the BBA program is presented next.

## Year I

Freshman Year  Total Credits 30

Refer to the Admissions section of this catalogue.

## Year II

All the below courses are required of every student unless otherwise indicated.

<table>
<thead>
<tr>
<th>Semester 1 (Fall)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 203 Academic English</td>
<td>3</td>
</tr>
<tr>
<td>MATH 203 Mathematics for Social Sciences I</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 210 Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ECON 211 Elementary Microeconomic Theory</td>
<td>3</td>
</tr>
<tr>
<td>CMPS 209 Computers and Programming for the Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total 15**

<table>
<thead>
<tr>
<th>Semester 2 (Spring)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 204 Advanced Academic English</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 239 Business Communication Skills Workshop</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total 15**

## Year III

### Semester 3 (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFO 200 Information Systems Design and Development</td>
<td>3</td>
</tr>
<tr>
<td>MNGT 215 Fundamentals of Management and Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 215 Management Accounting</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 210 Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Humanities I Any course from the General Education Humanities List 1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total 15**

### Semester 4 (Spring)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSS 200 Business Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 215 Business Ethics</td>
<td>3</td>
</tr>
<tr>
<td>DCSN 205 Managerial Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>Natural Sciences Natural Sciences</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 208 English for International Business</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total 15**

## Year III Summer Session

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSS 245 Internship/Practicum</td>
<td>1</td>
</tr>
</tbody>
</table>

## Year IV

### Semester 5 (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARAB Basic Arabic Communication Skills, or Readings in Arabic Literature or any higher level Arabic course based on the Arabic placement test</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 211 Business Law</td>
<td>2</td>
</tr>
<tr>
<td>BUSS 230 Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>BUSS 240 Strategic Career Planning Workshop</td>
<td>0</td>
</tr>
<tr>
<td>Business Elective For Concentration Students: Business Elective from the area of concentration For Generic Students: Any Business Elective</td>
<td>3</td>
</tr>
<tr>
<td>Humanities I Humanities (List 1)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total 14**
Undergraduate Business Courses

Undergraduate Business Course Prefixes

BBA courses all have a prefix labeled after the discipline name: ACCT (accounting), DCSN (Business Decision Systems), ENTM (Entrepreneurship), FINA (Finance), INFO (Business Information Systems), MKTG (Marketing), and MNGT (Management). A detailed description of courses under each discipline is available in its respective track section. Interdisciplinary and integrative courses that do not belong to a particular discipline are labeled by the prefix BUSS.

BUSS Courses

BUSS 200  Business Data Analysis  3 cr.
This course covers basic statistical concepts and introduces some advanced concepts and tools that are useful for decision-makers in business and management. Topics include descriptive statistics, probability distributions, statistical inference (hypothesis testing and analysis of variance) from small and large samples of data, correlation and regression, non-parametric statistics. An emphasis will be given to the understanding and applicability of statistical analysis, and interpretation of the output of analyses using Excel spreadsheet tools and short real-life cases. Business majors only. Prerequisites: MATH 204, CMPS 209.

BUSS 211  Business Law  2 cr.
The main objective of the course is to help business students understand the Lebanese and American legal aspect of common business activities and the formation and functioning of commercial companies along with the related ethical principles. Business majors only. Prerequisite: MNGT 215.

BUSS 215  Business Ethics  3 cr.
This is an introductory course that provides students with an overview of business ethics at the individual, organizational, and societal level. Issues such as corruption, sexual harassment, fair trade, fraud, whistle-blowing, corporate social responsibility, ethical norms, ethical values, environmental responsibility and many more will be examined both in the international as well as local Lebanese context. Ultimately, the course is designed to not only introduce students to a wide array of current ethical issues in business but to also foster skills related to critically analyzing the ethical and social dimensions of business-related problems in order to build more ethically-informed rationales for decision making. General Education/Humanities list II course. Prerequisite: MNGT 215.

BUSS 230  Managerial Economics  3 cr.
Managerial Economics is the use of economic theory and mathematical and statistical techniques in order to examine how a firm can make economic decisions given the constraints it faces. Topics covered include: goals of the firm, marginal analysis, demand theory and estimation, time series and forecasting, theory of production and estimation, cost theory and estimation, pricing and output determination under different market structures, game theory, and pricing in practice. Business majors only. Prerequisites: ECON 211, BUSS 200.

BUSS 235  Macro Business Analysis  3 cr.
A course that combines theory with cases that require group work and discussions. The theoretical part of this course covers monetary, fiscal, and exchange rate policy, and an overview of economic development strategies. Cases are used to train students in developing rigorous arguments to analyze interactions between firms in domestic as well as global economic scenarios. Business majors only. Prerequisite: ECON 212.

<table>
<thead>
<tr>
<th>Semester 6 (Spring)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSS 248</td>
<td>Developing Business Plans Workshop</td>
</tr>
<tr>
<td>BUSS 249</td>
<td>Strategic Management</td>
</tr>
<tr>
<td>Business Elective</td>
<td>For Concentration Students: Business Elective from the area of concentration. For Generic Students: Any Business Elective</td>
</tr>
<tr>
<td>Business Elective</td>
<td>For Concentration Students: Business Elective from the area of concentration. For Generic Students: Any Business Elective</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>Natural Sciences</td>
</tr>
<tr>
<td>Humanities I or II</td>
<td>Any course from the General Education Humanities List 1 or 2</td>
</tr>
<tr>
<td></td>
<td>Total 15</td>
</tr>
</tbody>
</table>

It is important to note the following:

- Philosophy and Economics Bacc II majors must take MATH 203 and MATH 204. Math and Science BACC II majors must take only MATH 204 and an additional elective to substitute for MATH 203 as per the minimum credit hour requirements for degree completion. International Baccalaureate Diploma holders who have completed either a) the Math Higher Level examination with a grade of 6 or above or b) the further Math Subsidiary Level examination with a grade of 6 or above or c) the Math Methods Subsidiary Level with Further Calculus examination with a grade of 6 or above, are also exempted from MATH 203. They must take only MATH 204 and an additional elective to substitute for MATH 203 as per the minimum credit hour requirements for degree completion.

- In order to complete the Humanities requirement, students must complete 12 credit hours of Humanities courses. 6 credits must be completed from Humanities List 1. In addition, 3 credits must be completed from either Humanities List 1 or Humanities List 2. The remainder of the requirement may be fulfilled by BUSS 215 (Humanities List 2). Please refer to the catalogue General Education section for more detail.

- Natural Sciences courses must be chosen as per the university General Education guidelines (please refer to the catalogue General Education section).

- The Business Communication Skills workshop, the Strategic Career Planning workshop and the Developing Business Plans workshop are graded on a P/F basis.

- ECON 213, EDUC 219, EDUC 227, ENMG 500, AGSC 212, STAT 201, STAT 210, as well as any other course that significantly overlaps with OSB core courses cannot be given equivalence to OSB required courses. These courses cannot be counted for credit as business or non-business free electives.

- Courses that may significantly overlap with business elective courses, such as SOAN 231, SOAN 234, SOAN 235, and SOAN 243, may be taken as free electives. However, students will not receive credit for any of these courses if they have taken the respective equivalent business elective.

- Students who are exempted from any required courses such as MATH 203, ENGL 203 and Arabic have to meet the 90 credit-hour graduation requirement by taking additional free electives.
BUSS 239  Business Communication Skills Workshop  0 cr.
A ten-hour workshop designed to introduce students to the various communication skills needed in a typical work environment. Mastering these skills plays a profound role in shaping and advancing professional careers in all types of industries and work scopes. The workshop introduces specific guidelines for the effective use of a variety of communication skills in the workplace, in an interactive manner simulating the work environment. Business majors only.

BUSS 240  Strategic Career Planning Workshop  0 cr.
A ten-hour workshop designed to build awareness of changing career patterns and major personal and professional influences that impact future careers. Issues such as preparing for joining the labor market, basic career guidance, understanding career stages, and practicing self-assessment are emphasized. Business majors only. Corequisite: BUSS 245

BUSS 245  Internship/Practicum 1 cr.
A summer period of guided work experience under faculty supervision by a mentor, and corporate guidance by a preceptor, designed to acquaint students with the world of work and help them acquire core values and basic skills necessary for an understanding of the global economy. Business majors only. Prerequisites: FINA 210, MNGT 215, MKTG 210, INFO 200 and business junior standing.

BUSS 246  Honors Seminar in Business 3 cr.
A tutorial research course that can be counted for any undergraduate concentration. This course involves directed readings and emphasizes individual original and independent research in any business-related area. This course requires, among other things, that the student prepare an honors research paper under the supervision of one or more faculty members in the particular area of concentration. The honors paper is normally presented at a school seminar. Prerequisite: approval of track convener.

BUSS 247  Project  3 cr.
A practicum course that can be counted for any undergraduate concentration. This course focuses on analysis of contemporary business issues and problems. The project requires, among other things, that the student works on a problem faced by one of the local or regional businesses, and recommends a set of possible solutions under the supervision of one or more faculty members in the particular area of concentration. The results of the project are normally presented in a meeting in the presence of representatives from the business subject to the consulting assignment. Prerequisite: approval of track convener.

BUSS 248  Developing Business Plans Workshop  0 cr.
A ten-hour workshop focusing on starting your own business from inception to IPO, passing through the stages of feasibility study, VC financing, launching, and operating. Business majors only. Prerequisites: ACCT 215, FINA 210, MNGT 215, MKTG 210, BUSS 200, BUSS 215, INFO 200, DCSN 205.

BUSS 249  Strategic Management 3 cr.
A course that exposes students to the strategic management process of local, regional, and multinational corporations. Emphasis is placed on identifying the tools needed for strategic analysis of the firm and the industry, and on comprehending the key strategic issues that managers face in managing corporations. Business majors only. Prerequisites: ACCT 215, FINA 210, MNGT 215, MKTG 210, BUSS 200, INFO 200, DCSN 200.

FAME Track Courses

In addition to the 42 credit general undergraduate requirements from outside the school (listed earlier) and the 39 credits required in the business core (ACCT 210, ACCT 215, BUSS 211, BUSS 215, BUSS 230, BUSS 239, BUSS 240, BUSS 245, BUSS 248, BUSS 249, DCSN 200, DCSN 205, FINA 210, INFO 200, MKTG 210, MNGT 215), the track requires students wishing to follow one of its general concentrations, either Accounting or Finance to take 9 credits of any course in the concentration area.

Accounting Courses

ACCT 210  Financial Accounting  3 cr.
An introduction to financial accounting that covers the use, interpretation, and analysis of the principal financial statements and other sources of financial information from a national and international perspective.

ACCT 215  Management Accounting  3 cr.
A course that covers the use, interpretation, and analysis of management accounting information for management decision-making, planning, and control of operations. The focus is on cost behavior, cost measurement, budgeting, performance measurement and evaluation, responsibility accounting, and product costing. Business majors only. Prerequisite: ACCT 210.

ACCT 217  Strategic Managerial Accounting  3 cr.
In-depth coverage of topics such as value chain analysis, activity-based costing, JIT systems, analysis of firm's cost structures, and the provision and use of information for strategic decisions. A rigorous analysis of some widely-used financial and non-financial measures, such as Return on Investment, EVA, and the balanced scorecard is also undertaken. Business majors only. Prerequisite: ACCT 215.

ACCT 221  Intermediate Financial Accounting I  3 cr.
This is the first of two professional courses in this area. This course covers concepts and standards of external financial reporting, systems to record and prepare financial accounting information, content and presentation of basic financial statements, and financial reporting issues of assets. Business majors only. Prerequisite: ACCT 210.

ACCT 222  Cost Accounting  3 cr.
A course on accounting in manufacturing operations; cost concepts and classifications; cost accounting cycle; accounting for materials, labor, and burden; process cost accounting; budgeting; standard costs; cost reports; direct costing and differential cost analysis; cost-volume-profit analysis and gross profit analysis. Business majors only. Prerequisite: ACCT 215.

ACCT 223  Intermediate Financial Accounting II  3 cr.
Continuation of ACCT 221. This course covers financial reporting issues relating to liabilities, ownership equity, selected financial reporting issues, and financial reporting disclosure. Business majors only. Prerequisite: ACCT 221.

ACCT 230  Introduction to External Auditing  3 cr.
An introduction to auditing and the professional responsibilities of a career in accounting. Topics included the legal and ethical responsibilities of accountants; professional auditing standards; international auditing standards; the acquisition, evaluation, and documentation of audit evidence; reports on the results of the engagement, evaluation in internal control, compliance testing, substantive testing, and statistical sampling and auditing EDP. Business majors only.
ACCT 231 Fraud Examination and Internal Audit
A course on fraud examination and internal audit. This course covers concepts and topics of fraud detection, deterrence, and prevention; types of financial statement and occupational fraud; and investigation and interviewing techniques. It also covers functions of internal audit, audit committees and corporate governance, planning and performing the internal auditing engagement, and coordination of internal auditing and external auditing. Business majors only. Prerequisite: ACCT 215.

ACCT 232 Accounting Information Systems
A course that explores in detail several typical Accounting Information System (AIS) application subsystems, such as order entry/sales, billing/receivables/cash receipts, inventory/purchasing/accounts payable/cash disbursements, payroll, and materials planning/production. This course includes understanding, documenting, designing, using, and auditing these application subsystems. Business majors only. Prerequisites: ACCT 210, INFO 200.

ACCT 235 Taxation
A study of the Lebanese Tax Code and its application as it relates to individuals and business entities. This course includes the laws governing direct taxation (income tax), indirect taxation (stamp duty and VAT), and the basic principles of the National Social Security Fund (NSSF). Business majors only. Prerequisite: ACCT 210.

ACCT 240 Fund Accounting
A course that provides an alternative perspective of accounting that meets the needs of not-for-profit and governmental organizations. This course involves the interpretation and use of fund accounting as a means of reporting and controlling activities. Business majors only. Prerequisite: ACCT 215.

ACCT 241 Profit Planning and Budgeting Control
A broad view of profit planning and control. Topics covered include sales planning and control, planning production, materials purchase and usage, planning and controlling direct labor costs and overhead, planning expenses, planning and controlling capital expenditures, and completion and application of the profit plan. Business majors only. Prerequisite: ACCT 215.

ACCT 246 International Accounting
A course on selected topics faced by professional accountants in international business, including financial reporting standards, foreign currency, budgeting, management control, and performance evaluation. Business majors only. Prerequisite: ACCT 215.

ACCT 250 Special Topics
1, 2, or 3 cr.
A course that deals with special issues and concerns in accounting not included in regular courses. This course may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.

ACCT 251 Accounting Tutorial
0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: Approval of track convener.

Finance Courses
FINA 210 Business Finance
This course teaches the tools that determine and analyze the major decisions a financial manager has to make, including identification of the firm’s goals, time value of money, use of discount cash flow models, capital budgeting under certainty, capital structure as it relates to cost of capital, dividend policy, and ethics in finance. Prerequisite: ACCT 210.

FINA 215 Financial Markets and Institutions
A study of the functions and operations of financial institutions. This course covers analysis of existing financial systems, money and capital markets, banks and non-bank financial intermediaries, term structure of interest rates, and securities markets including the stock and bond exchanges. Business majors only. Prerequisite: FINA 210.

FINA 218 Risk Management in Financial Institutions
This course covers the role of risk management in the financial institutions industry, use of insurance in risk management, quantitative and qualitative measures of risk, management of interest rate fluctuations, credit risks and policies, gap analysis, management of market risks and foreign exchange risk, management of operational and sovereign risks, portfolio analysis, the role of asset and liability management, and risk control processes. Business majors only. Prerequisite: FINA 210.

FINA 220 Investment Management
A study of the operations of securities markets, investment policies, valuation of individual securities, and techniques of investing in securities. This course also introduces students to analysis of investment information, evaluation of risks and returns, and principles of portfolio selection in investment decisions. Business majors only. Prerequisite: FINA 210.

FINA 222 Valuation Methods
This course covers techniques used by investment bankers and analysts for enterprise valuation. The techniques used are divided into intrinsic valuation and relative valuation. Intrinsic valuation includes dividend discount models, free cash flow to equity, free cash flow to firm. Relative valuation measures are price-to-earnings, price-to-sales, price-to-book, price-to-cash flow. The focus is on applications and insights as to when and why we use one measure versus another. Business majors only. Prerequisite: FINA 210.

FINA 225 Commercial Bank Management
Defines functions, operations, and objectives of commercial banks as compared to other financial institutions. The course studies the management aspects of commercial banks, financial analysis of bank statements, liquidity management, assets and liability management, profitability, capital adequacy, credit analysis, trade finance, and banking regulations. Business majors only. Prerequisite: FINA 210.

FINA 227 Insurance
An operational approach to risk management in business and personal affairs. The major thrust of this course is to introduce students to the various types of insurance contracts including life, health, property, and liability insurance, and how to measure and manage risk. This course also covers reinsurance and the know-how to make the best use of insurance contracts and coverage. Business majors only. Prerequisite: FINA 210.
FINA 288  Credit and Risk Analysis  3 cr.
The goal of this course is to learn to focus on “Risk” as a basic income-generating product of banks and financial institutions. The aim is to have the student acquire the tools used by financial institutions to identify, review, analyze and measure risk. The student will learn to establish adequate pricing and structuring of bank credit facilities and of third party financing. The course will introduce risk concepts, risk ratings, and risk review procedures. It will concentrate on financial spread sheet and ratio analysis and will allow the assessment of various risk aspects of corporations. Business majors only. Prerequisite: FINA 210.

FINA 230  International Financial Management  3 cr.
An analysis of the opportunities, problems, and financial decisions confronting multinational companies. The focus of this course is on understanding international regulatory and environment differences, access to money and capital markets, use of derivatives to hedge exchange rate risk, exposure to political risk and other types of risk, and international diversification. Business majors only. Prerequisite: FINA 210.

FINA 232/ENTM 232  Real Estate Management  3 cr.
This course is designed to give the student a general overview of the real estate space. Topics include an introduction to real estate markets (sources of demand), real estate finance, project evaluation, elements of real estate law, appraisals, property development and property management. Business majors only. Prerequisite: FINA 210.

FINA 234  Real Estate Finance and Investment  3 cr.
This course examines selected issues in real estate finance and investment: Techniques for analyzing financial decisions in property development and investment; property income streams, pro forma analysis, equity valuation, taxes, risk types, and sensitivity analysis. It also introduces the fundamentals of mortgage securitization and public markets in real estate securities. Business majors only. Prerequisite: FINA 210.

FINA 235  Personal Financial Planning  3 cr.
A course that deals with planning and managing personal finance. This course focuses on topics such as the financial planner’s role and environment, cash flow budgeting, consumer credit, debt management, insurance, taxation and financial planning, retirement planning, estate planning and wills, personal bankruptcy and insolvency, and preparation of financial plans. Business majors only. Prerequisite: FINA 210.

FINA 240/DCSN 220  Financial Simulation Modeling  3 cr.
This course introduces elements of computerized simulation, including modeling deterministic and stochastic systems, generation of random numbers and variables, and probability and statistics related to modeling, validating, running, and interpreting computer simulations. Simulation projects on corporate finance issues, and investment and portfolio analysis form an integral part of the course. Prerequisite: BUSS 200 or equivalent.

FINA 241/ENTM 241  Venture Capital Management  3 cr.
This course provides students with an understanding of the approaches and techniques used by Venture Capitalists to: assess the prospects of success of a venture; develop and negotiate investment terms including valuation; monitor the investee and understand exit routes such as trade sale and IPO. It also provides the student with conceptual and practical knowledge about key operating and strategic aspects of an entrepreneurial business, from the pre-commercial stage to IPO. Business majors only. Prerequisite: FINA 210.

FINA 242  Advanced Venture Capital and Private Equity  3 cr.
This course covers special types of financing for capital investment proposals. The course will use the case approach to assess the organization and strategies of the private equity industry, the use of financial and economic tools in Leveraged Buyout and venture capital investing, types of private equity transactions, study of transactions with options and hybrid financing structures, financing of IPOs, incubators, and corporate venture capital. Business majors only. Prerequisites: FINA 210 and FINA 241/ENTM 241.

FINA 243  Private Banking  3 cr.
This course offers students the opportunity to learn how to manage high net worth client relationships. It tackles client approach techniques as well as the financial know-how, knowledge of markets’ functioning, products, and services. Business majors only. Prerequisite: FINA 210.

FINA 247  Case Studies in Finance  3 cr.
This course provides a deep understanding of the financing issues that firms must deal with, using the case approach. The topics covered include cost of capital for a multidivisional firm, capital structure and estimation of debt benefits, pricing Initial Public Offerings (IPOs), Leveraged Buyout (LBO), mergers and acquisitions, warrants and convertible, and financial distress. Business majors only. Prerequisite: FINA 210.

FINA 250  Special Topics  1, 2, or 3 cr.
A course that deals with special issues and concerns in finance not included in regular courses. This course may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.

FINA 251  Finance Tutorial  0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration when existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: approval of track convener.

MM&E Track Courses

In addition to the 42 credit general undergraduate requirements from outside the school (listed earlier) and the 39 credits required in the business core (ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 230, BUSS 239, BUSS 240, BUSS 245, BUSS 248, BUSS 249, DCSN 200, DCSN 205, FINA 210, INFO 200, MKTG 210, MNGT 215), the track requires students following one of its concentrations, either Management, Marketing or Entrepreneurship, to take 9 credits of any course in the concentration area. Students may choose to pursue an HR focus within management by taking MNGT 220 and two of the following: MNGT 218, MNGT 225, MNGT 229, and any HR-designated MNGT 250 course. MKTG 222 is a required course for all marketing concentration students.

Entrepreneurship Courses

ENTM 220  Managing a Small Business for Growth  3 cr.
An identification of the management, organization, and operational issues critical to the growth of small business enterprises. This course emphasizes the resolution of managerial problems from the perspective of small business focusing mainly on marketing, finance and HR areas. It is targeted at junior and senior students who expect to hold senior management positions in SMEs. Prerequisite: MNGT 215.
ENTM 225   Business Environment of the Firm  3 cr.  
A course that focuses on how to analyze the impact of the environment on small firms, the growing role of NGOs and stakeholders in shaping strategies, with special emphasis on the role of government policy. Prerequisite: MNGT 215.

ENTM 230   Decision Making Skills for Entrepreneurs  3 cr.  
This course will introduce the theories, processes, skills, and techniques relating to effective decision-making at the individual and group level. Good decision makers know how to recognize decision situations, how to represent the essential structure of the situations, and how to analyze them. This course will move back and forth between formal models and behavioral, descriptive models to help students understand and improve their native decision making abilities. Prerequisite: MNGT 215.

ENTM 232/ FINA 232   Real Estate Management  3 cr.  
This course is designed to give the student a general overview of the real estate space. Topics include an introduction to real estate markets (sources of demand), real estate finance, project evaluation, elements of real estate law, appraisals, property development and property management. Business majors only. Prerequisite: FINA 210.

ENTM 235   Family Business: Issues and Solutions  3 cr.  
A course that focuses on family businesses: their importance, structure, governance, management, challenges; issues of succession, inheritance, family versus non-family management, and rivalry between siblings, cousins, or across generations. Prerequisite: MNGT 215.

ENTM 241/ FINA 241   Venture Capital Management  3 cr.  
This course provides students with an understanding of the approaches and techniques used by Venture Capitalists to: assess the prospects of success of a venture; develop and negotiate investment terms including valuation; monitor the investee and understand exit routes such as trade sale and IPO. It also provides the student with conceptual and practical knowledge about key operating and strategic aspects of an entrepreneurial business, from the pre-commercial stage to IPO. Business majors only. Prerequisite: FINA 210.

ENTM 250   Special Topics  1, 2, or 3 cr.  
A course that deals with special issues and concerns in entrepreneurship not included in regular courses. This course may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.

ENTM 251   Entrepreneurship Tutorial  0.5-3 cr.  
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: approval of track convener.

ENTM 270   Launching a New Venture  3 cr.  
This course focuses on the founding and development of new business organizations. It identifies the prerequisites for successful new ventures, the threats to their survival, and the practical actions entrepreneurs may take to overcome them and successfully grow their venture. Prerequisites: MNGT 215 and FINA 210.

Management Courses

MNGT 215   Fundamentals of Management and Organizational Behavior  3 cr.  
A course that focuses on the management of the modern organization and the employees within, preparing students for their role as future managers and leaders. It explores essential management concepts, processes and techniques from an organizational behavior perspective. Main topics covered include management history and evolution, motivation, decision-making, leadership, power and politics, learning and perception, communication, managing groups and teams, and human resource management. General Education/Social Science list I course. Prerequisite: ENGL 204.

MNGT 218   Advanced Topics in Organizational Behavior  3 cr.  
This course provides an advanced perspective of the field of organizational behavior including social learning theory/organizational behavior models, managerial activities/behaviors, cross-cultural/ international research, and leadership. It introduces the research methodology in organizational behavior and provides an exposure to contemporary practices of select organizational behavior topics. Prerequisite: MNGT 215.

MNGT 220   Human Resource Management  3 cr.  
This course introduces the principles of human resource management. It helps students acquire the basic HRM concepts and equips them with the tools necessary for the effective management of people in organizations. Main topics covered include strategic HRM, planning and staffing, training and development, performance management, compensation, career management and global HRM. Prerequisite: MNGT 215.

MNGT 225   Employee Development  3 cr.  
This is a senior level, seminar style course that is designed to expose students to employee training and development within an organization. Specifically, it is designed to help students develop skills that will enable them to effectively design, implement, and evaluate training systems from an applied perspective. The course also sheds light on career planning and development as essential functions in maintaining competency, motivation, and commitment. Prerequisites: MNGT 215, MNGT 220.

MNGT 229   Contemporary Issues in Human Capital Management  3 cr.  
This course addresses contemporary issues in human resource management theories and practices in terms of their ability to have a positive impact on organizational results and to encourage desired employee attitudes and behaviors. Main topics examined pertain to organizational culture, international HRM, diversity and work life balance, downsizing, employee participation, knowledge management, employment ethics, emotions at work, flexibility and workplace bullying. Prerequisite: MNGT 215.

MNGT 230   International Management  3 cr.  
A course on the management function in a global economy. Topics covered include substantive and stylistic challenges for senior and middle management in international cross continent corporations and conglomerates, standardization and diffusion of authority and operations, mobility and self-reinvention, and integration and differentiation. Prerequisite: MNGT 215.

MNGT 250   Special Topics  1, 2, or 3 cr.  
A course that deals with special issues and concerns in management not included in regular courses. This course may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.
Marketing Courses

MKTG 210  Principles of Marketing  3 cr.
An overview of marketing activities including marketing inputs in strategic planning, global marketing, marketing research, analysis of buyer behavior, market segmentation and positioning, and development of the marketing mix elements. Prerequisite: ENGL 204.

MKTG 215  Services Marketing  3 cr.
An overview of the process of marketing services. This course includes a study of the characteristics of services and their marketing implications, developing marketing strategies, creating value, pricing and promoting the service performance, and ensuring a positive customer experience. Business majors only. Prerequisite: MKTG 210.

MKTG 220/ INFO 220  E-Commerce/ Electronic Marketing  3 cr.
An overview of electronic marketing development and its impact on marketing transactions and management of organizations. Topics covered include e-marketing as an economic and strategic approach; business to business and business to consumer e-commerce and e-marketing; management of an e-marketing project; and financial, legal, and security issues. Business majors only. Prerequisite: MKTG 210, INFO 200.

MKTG 222  Marketing Research  3 cr.
A course that provides thorough coverage of various marketing research tools along an applied orientation, including a systematic analysis of the steps comprising the marketing research process, starting with research problem definition and terminating with data collection, analysis, and presentation. Business majors only. Prerequisites: MKTG 210, BUSS 200.

MKTG 225  Marketing Communications  3 cr.
An overview of promotion management and integrated marketing communications. Topics covered include behavioral foundations of marketing communications, environmental influences on marketing communications, and the promotion management process and its execution. Business majors only. Prerequisite: MKTG 210. Students cannot receive credit for both SOAN 231 and MKTG 225 or for both SOAN 235 and MKTG 225.

MKTG 230  Sales Management  3 cr.
An overview of selling and sales management. Topics covered include sales management functions and strategies, developing the selling function, sales goals and structure, building a sales program, and leading and motivating the sales force. Business majors only. Prerequisite: MKTG 210.

MKTG 235  Retailing and Merchandising  3 cr.
This course examines the opportunities and problems faced by marketers in contemporary retail formats. The principle issues involved in retailing are explored, including store location and layout, merchandise planning, buying and selling, category management, and coordination of store activities. Overall the course allows students to develop appropriate skills and knowledge for effective and efficient decision making in the contemporary retail environment. Business majors only. Prerequisite: MKTG 210.

MKTG 238  Public Relations  3 cr.
This course focuses on the communication between an individual or organization and the public to promote stakeholder acceptance and approval. Students explore traditional and emerging components of the public relations process through mass media, as well as the needs of different types of businesses, such as corporations, non-profit organizations, and government offices. Business majors only. Prerequisite: MKTG 210. Students cannot receive credit for both SOAN 236 and MKTG 238.

MKTG 240  Consumer Behavior  3 cr.
A course that focuses on the customer as the key to market success. Topics covered include the roles of a customer, market values a customer seeks, determinants of customer behavior, the customer's mindset, customer decision-making, and customer-focused marketing. Business majors only. Prerequisite: MKTG 210.

MKTG 245  International Marketing  3 cr.
An overview of the scope and challenge of international marketing. Topics covered include the cultural environment of global markets, assessing global market opportunities, and developing and implementing global marketing strategies. Business majors only. Prerequisite: MKTG 210.

MKTG 250  Special Topics  1, 2, or 3 cr.
A course that deals with special issues and concerns in marketing not included in regular courses. It may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.

MKTG 251  Marketing Tutorial  0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration when existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: approval of track convener.

BIDS Track Courses

In addition to the 42 credits of general undergraduate requirements from outside the school (listed earlier) and the 39 credits required in the business core (ACCT 210, ACCT 215, BUSS 200, BUSS 211, BUSS 215, BUSS 230, BUSS 239, BUSS 240, BUSS 245, BUSS 248, BUSS 249, DCSN 200, DCSN 205, FINA 210, INFO 200, MKTG 210, MNGT 215), the track requires all students concentrating in Business Information and Decision Systems to take any combination of elective courses totaling 9 credits from the Decision Systems courses (denoted by DCSN) and the Information Systems courses (denoted by INFO).

Decision Systems Courses

DCSN 200  Operations Management  3 cr.
A foundational overview of how managers make strategic decisions in operating a firm, whether in manufacturing or service sectors, thereby giving their firms a sustainable competitive advantage in a global marketplace. The course focuses on the systematic planning, design, and operations analysis of the main processes required for the production of goods and the delivery of services. Specific topics include operations strategy framework; product and service design; customer order management; process design and management; capacity and material planning; statistical quality control and management; inventory and supply chain. Students are expected to have some prior familiarity with Microsoft Excel. CMPS 209 or equivalent is recommended.
DCSN 205  Managerial Decision Making  3 cr.
An introduction to the tools and techniques of modern managerial decision-making, using spreadsheets as a modelling and analysis tool. The course addresses formulation of models that can be used to analyze complex problems taken from various functional areas of management, including finance, marketing, operations, and human resources. The goal is to understand how business decisions are reached, what tradeoffs are made, and how outcomes depend on the underlying data. Decision-making is studied: under certainty (linear, integer and non-linear programming; networks; project management; and multi-objectives); under uncertainty (decision analysis and decision trees) and under risk (simulation). Software tools such as Microsoft Excel, Excel Solver Add-in, Tree Plan, Risk Solver Platform, and Microsoft Project will be used for hands-on experiences. Business majors only; Prerequisite: MATH 204 and CMPS 209.

DCSN 210  Business Logistics  3 cr.
Addresses the planning, organizing, and controlling of such activities as transportation, inventory maintenance, facility location, order processing, purchasing, warehousing, materials handling, packaging, customer service standards, and product scheduling. The course is specifically designed to help managers analyze and resolve challenges encountered in the real business world and a competitive environment.

DCSN 215  Advanced Managerial Decision Making Models  3 cr.
Addresses advanced models for decision making from functional areas of management, including finance, marketing, operations, and human resources, through case studies and use of applications software. Prerequisite: DCSN 205.

DCSN 220/ FINA 240  Financial Simulation Modeling  3 cr.
Introduces elements of computerized simulation, including modeling deterministic and stochastic systems, generation of random numbers and variables, and probability and statistics related to modeling, validating, running, and interpreting computer simulations. Simulation projects on corporate finance issues, and investment and portfolio analysis form an integral part of the course. Prerequisite: BUSS 200 or equivalent.

DCSN 230  Special Topics  1, 2, or 3 cr.
Special issues and concerns in business decision systems not included in regular courses. This course may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.

DCSN 251  Decision Systems Tutorial  0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: approval of track convener.

Management Information Systems Courses

INFO 200  Foundations of Information Systems  3 cr.
Introduces information systems that raise productivity, create customer value and sustain competitive advantage. The course shows how the integration of information technology and information systems in the organization’s work processes adds value for the business and its customers. It focuses on the following topical areas: competitiveness, functional information systems, e-commerce and supply chain systems, business intelligence systems, and systems development. Prerequisite: CMPS 209 or equivalent.

INFO 205  Information Systems Design and Development  3 cr.
This course emphasizes the issues facing business and management in the design and development of information systems: properly formulating business problems; targeting the appropriate processes and functions; delineating the planned data needs and user groups; estimating the value of the solution; and the requisite design and implementation processes, phases, and timeframe. Cases will underscore these issues and problems in the context of practical design and development projects. Prerequisite: INFO 200.

INFO 210  Business Database Systems  3 cr.
This course introduces the central role of database management systems (DBMS) and their applications in the business IT/IS environment, including an overview of database design, implementation, query and use based on using features of a commercial structured query language-based (SQL) DBMS. The course includes a case study that requires a basic information model (conceptual/physical design) and the development of a multiple table database satisfying a real business need. Prerequisite: INFO 200.

INFO 215  Managing Information Technology Resources  3 cr.
This course introduces the management of IT/IS as a critical business resource. It examines information economics and business strategy; IS strategies; data resources; IS support provided to business processes and decisions; technical (hardware/network/telecommunication) infrastructure of IS; IS maintenance policies and procedures; staffing and funding approaches for IS services; and IS security measures. Prerequisite: INFO 200.

INFO 220/ MKTG 220  E-Commerce/ Electronic Marketing  3 cr.
This course is an overview of electronic marketing development and its impact on marketing transactions and management of organizations. Topics covered include e-marketing as an economic and strategic approach; business to business and consumer e-commerce and e-marketing; management of an e-marketing project; and financial, legal, and security issues. Prerequisites: MKTG 210, INFO 200.

INFO 225  Enterprise Systems Design and Implementation  3 cr.
Introduces the problems of coordination in business caused by insufficient integration of systems and processes. The course offers solutions through a combination of enterprise systems (enterprise resource planning) and enterprise application/data integration. A semester-long project requires students working in teams to develop a business integration solution through the application of systems integration principles based on use of software. Prerequisites: INFO 200, DCSN 200.

INFO 230  Knowledge Management  3 cr.
This course addresses capturing, transferring, sharing, and managing knowledge. Topics include understanding knowledge; knowledge management systems life cycle; knowledge creation; capturing knowledge; knowledge transfer and knowledge sharing; learning from data; data mining; and ethical and legal issues. Prerequisite: INFO 200.

INFO 232/ ACCT 232  Accounting Information Systems  3 cr.
A course that explores in detail several typical Accounting Information System (AIS) application sub-systems, such as order entry/sales, billing/receivables/cash receipts, inventory, purchasing/accounts payable/cash disbursements, payroll, and materials planning/production. This course includes understanding, documenting, designing, using, and auditing these application subsystems. Business majors only. Prerequisites: ACCT 210, INFO 200.
INFO 250  Special Topics  1, 2, or 3 cr.
Special issues and concerns in business information systems not included in regular courses. This course may be repeated for credit when the topics vary. Prerequisites vary with the topic and are noted in the course schedule. Credits depend on the course offered. Prerequisite: approval of track convener.

INFO 251  Information Systems Tutorial  0.5-3 cr.
Tutorials provide opportunities for students to pursue directed study readings and preliminary research relevant to their concentration where existing courses do not offer the required subject matter. Tutorials include a presentation of a report on the work. Prerequisite: approval of track convener.
Faculty of Engineering and Architecture (FEA)
Faculty of Engineering and Architecture (FEA)

Officers of the Faculty

Peter F. Dormian  President of the University
Ahmad Dallal  Provost, ex-officio
Makram Suidan  Dean
Fadl Moukalled  Associate Dean
Moueen Salameh  Registrar, ex-officio
Salim Kanaan  Director of Admissions, ex-officio
Lokman Meho  University Librarian, ex-officio

Faculty Administrative Support

Ghada Kamar Najm  Executive Officer
Alia Kazma Serhal  Student Services Officer
Lara Touma  Financial Officer

Historical Background

As early as 1913 the University recognized the need for engineering education and training in the Middle East, and courses in this field were offered in the School of Arts and Sciences. By 1944 sufficient additional courses had been added to permit the granting of the degree of Bachelor of Science in Civil Engineering. The last class in this program graduated in June 1954. In 1951 a separate School of Engineering was established and curricula were initiated in civil engineering, mechanical engineering, electrical engineering, and architectural engineering. The years from 1951 to 1954 were a transitional period of continuous development toward the new curricula, established in 1954. In 1963 a program leading to the degree of Bachelor of Architecture was introduced, replacing the bachelor of architectural engineering program, the last class of which graduated in June 1966. In that year the school was renamed the Faculty of Engineering and Architecture. Since then curricula have been under constant review with changes introduced as necessary to keep pace with modern technology, to conform to sound developments in engineering and architecture education, and to meet the evolving needs of the region. In 1986 a new undergraduate major in computer and communications engineering was added within the Department of Electrical and Computer Engineering. In 1992 a new major in graphic design was added within the Department of Architecture and Design. In 2006 the name of the degree was changed to Bachelor of Fine Arts in Graphic Design. In 2006 the name of the Electrical Engineering degree was changed to Electrical and Computer Engineering. In 2009 two new programs offering BS degrees were added to the FEA. A Construction Engineering Program in the CEE department and a Chemical Engineering Program currently housed in the Mechanical Engineering Department.

Accreditation

The American University of Beirut, Bachelor of Engineering (BE) programs in civil engineering, computer and communications engineering, electrical and computer engineering, and mechanical engineering have been accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012. This is one of the most respected and internationally renowned accreditation organizations in the USA. ABET accreditation demonstrates a program’s commitment to providing its students with a quality education.

Mission

The Faculty of Engineering and Architecture (FEA) at the American University of Beirut is a leading professional school in the Middle East. The FEA offers educational programs of the highest standards, advances knowledge through research and scholarly creative work of its faculty and students, and provides services to the community at large, while addressing the needs of Lebanon and the region. The FEA undergoes continuous improvement to maintain a challenging and intellectually stimulating environment, and prepares its students to be lifelong learners, innovators, and professionals capable of being leaders in their chosen careers, committed to personal integrity, and civic responsibility.

Undergraduate Programs

The Faculty of Engineering and Architecture offers programs of study leading to the degrees of Bachelor of Architecture (BArch), Bachelor of Fine Arts in Graphic Design (BFA), and the degree of Bachelor of Engineering (BE), with majors in civil engineering, computer and communications engineering, electrical engineering, computer engineering, mechanical engineering, and chemical engineering. The curriculum of the BArch degree extends over 14 terms (ten 16-week semesters and four eight-week summer terms), totaling 192 weeks. Although the program is completed in five calendar years, it is equivalent to a program of six academic years that does not include summers. The curriculum of the BE degree and that of the BFA degree is each divided into 11 terms (eight 16-week semesters and three eight-week summer terms), totaling 152 weeks. This duration is equivalent to five academic years, without summers, but the program is completed in four calendar years. There is a short break after each term and a one-month vacation between summer and fall terms. The Faculty also offers a Bachelor of Science (BS) degree in Construction Engineering and a Bachelor of Science (BS) degree in Chemical Engineering. The curriculum of both BS degree programs require the completion of 110 credit hours, after the freshman year, of course work over three years, including two summer terms.

The Faculty reserves the right to make changes in the curriculum, course content, and regulations as it deems appropriate, and without prior notice.

Admissions

Admission to First Year

Admission is by the selection of a limited number of the most promising, eligible applicants. All candidates for admission to the Faculty of Engineering and Architecture must have completed the pre-professional educational requirements of the candidate’s country and the
approved freshman program in the Faculty of Arts and Sciences of this University as described in this catalogue, or a program recognized as equivalent. The certificates, recognized for admission to the first year in the Faculty of Engineering and Architecture, are listed under Secondary Certificates in the section on Admissions in this catalogue. Holders of the technical baccalaureate (BT) are eligible for admission only to the same major as that of the BT.

More specifically, to be eligible for admission to the first year in the Faculty of Engineering and Architecture, a candidate must

- Demonstrate an acceptable level of proficiency in English, as specified under Admissions in this catalogue
- Sit for the required SAT I tests as specified in the relevant section in Admissions in this catalogue
- Satisfy the Faculty of Engineering and Architecture requirements on character recommendation, as well as academic grounds

Students admitted to the first year are required to take all the major engineering, architecture, or graphic design courses specified in their respective programs.

**Admission of Transfer Students**

Students attending recognized institutions of higher learning, including AUB, may apply for transfer to any of the engineering, architecture, or graphic design majors in the FEA. These students are eligible for consideration for admission to any of Terms I through VI (Term VIII for architecture) depending on availability of places and subject to the following conditions. Normally, students will not be admitted to the architecture or graphic design programs in the middle of the academic year. Students must

- Have completed the equivalent of the sophomore class at the college or university from which they are transferring
- Have attained a minimum cumulative average of 2.7 out of 4.0 (75 out of 100 for AUB students)
- Have taken at least 12 credits of math and basic science courses at the sophomore level or higher and attained a total average in these courses of at least 3.0 out of 4.0 (77 out of 100 for AUB students)
- Have satisfied the university English requirements for admission
- Students from outside AUB applying for transfer to the architecture or graphic design majors are required to submit portfolios of their work; students from within AUB applying for transfer to the architecture or graphic design majors are encouraged to submit portfolios of their work.

Applications of transfer students are evaluated and approved by the departments and the Admissions Committee of the Faculty. The term in which the student is placed, and the complete program of study in the major in which s/he is admitted, are determined by the department concerned depending on the number of credits completed at the institution from which the student is transferring.

**Non-degree Students**

Refer to page 41 in this catalogue.

Students may, upon approval of the Faculty concerned, complete the requirements for a second degree while registered in another Faculty at AUB. In such a case, a student will be granted two degrees at the same time of graduation. If tuition differs, students will pay the higher of the tuitions. Information about deadlines and applications are available on the following link: http://www.aub.edu.lb/registrar/Documents/pdfdoc/dualdegree.pdf

**Students working for Dual Degree**

Students may, upon approval of the Faculty concerned, complete the requirements for a second degree while registered in another Faculty at AUB (or in the same faculty if there are two different degree structures). In such a case, a student will be granted two degrees at the same time of graduation. If tuition differs, students will pay the higher of the tuitions. Information about deadlines and applications are available on the following link: www.aub.edu.lb/registrar/Documents/pdfdoc/dualdegree.pdf

**Students working for a Double Major**

Students may, upon approval of the faculty, earn more than one major in the same degree structure within the faculty of engineering (both BS or BE degrees) which means that the student earns one degree with a double major. In such case, one diploma will be issued with both majors indicated. Students enrolled in a double major must satisfy requirements of both majors and must satisfy at least 15 credit hours over and above the requirements of both majors. Information about deadlines and applications are available on the following link: www.aub.edu.lb/registrar/Documents/pdfdoc/doublemajor-application.pdf

**Residence Requirements**

Students of the Faculty of Engineering and Architecture must meet the following minimum residence requirements:

- **Engineering or Graphic Design Majors**: A student must register in residence at the Faculty of Engineering and Architecture for the last four regular semesters and should complete at least 50 credits during this period.
- **Architecture Major**: A student must register in residence at the Faculty of Engineering and Architecture for the last five regular semesters and should complete at least 65 credits during this period.

**Academic Rules and Regulations**

For information on Categories of Students, Correct Use of Language, Grading System, Graduation with Distinction and High Distinction, and Placement on the Dean's Honor List, see pages 49–67 in this catalogue.

**General Education Program Requirements**

Students in the CCE, ECE and ME departments are expected to satisfy the following distribution requirements of humanities/social sciences courses:
Applied Energy Minor Program Structure

The applied energy minor has two components. The first is a core of courses that provides a foundation for the understanding of energy science and technology. The second component is a customized series of electives and labs, selected by each student in close consultation with a special faculty advisor for the applied energy minor. A student wishing to complete the minor is required to complete a minimum of 20 credits: 9 credits from the list of core courses, and 11 credits from the list of elective courses.

Required Core Courses (9 credits)
The core courses include courses from three domains related to energy studies: one course in fundamental energy science, one course in energy technologies, and one course in energy management and economy as follows:

- **Fundamental Energy Science Course**
  - MECH 310  Thermodynamics I  3 cr.
  - or CIVE 340  Fluid Mechanics and Laboratory  3 cr.
  - or CHEM 217  Thermodynamics and Chemical Dynamics  3 cr.

- **Energy Technologies Course**
  - EECE 675 Renewable Energy Systems  3 cr.

- **Energy Management and Economy Course**
  - ECON 333 Energy Economics and Policy  3 cr.

Elective Courses (Minimum of 11 credits)
Elective courses are selected from two lists. List A includes technical courses from chemical, mechanical, and electrical engineering majors at the undergraduate and master's levels. List B includes courses in management, sciences, and the social sciences. The student must take a minimum of five credits from list A and a minimum of three credits from list B.

A student's status is changed to that of a higher year if his/her cumulative number of failed, withdrawn or unregistered credits from the regular credit hour requirements does not exceed seven.

Change of Major within the Faculty
All changes of major are subject to approval by the department to which the change is requested. The receiving departments will determine the new study plans for students accepted to a new major.

Minor in Applied Energy
The minor in applied energy is open to all FEA students who are interested in the energy domain and in renewable energy applications. Students seeking professional careers that will focus on energy, the environment, sustainable applications in buildings, and energy systems may find this minor attractive. The minor in applied energy is offered by the Faculty of Engineering and Architecture rather than by an individual department.

Students who have completed at least 60 credits at the sophomore level and higher, and who have a cumulative average of 70 or more, may apply by completing a minor application form available in the Dean's Office. The minor will be indicated on the transcript of the student who completes all the requirements described below. A minimum grade of 70 is required for a course to count toward the fulfillment of the minor.
List A

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<th>Course</th>
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List B

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</table>

Minor in Biomedical Engineering

The minor in Biomedical Engineering is open to all AUB students. Students who have completed at least 60 credits at the sophomore level and higher, and who have a cumulative average of 70 or more, may apply by completing a minor application form available in the ECE department. The minor will be indicated on the transcript of the student who completes all the requirements described below, and who obtains an average in the minor courses of 70 or more.

The minor requirements are divided into a set of core courses and a set of elective courses.

**Core Courses**

**For engineering students:**
- ECE 401 (1 cr.)
- BIOL 201 (4 cr.)
- BIOL 202 or PHYL 246 (4 cr.)
- One core course (3 cr.) chosen from EECE 601, EECE 603, or MECH 633
- One elective course from list A below (3 cr.)
- One elective course from list A, B, or C below (3 cr.)

Minimum number of credits: 18

**For biology students:**
- ECE 401 (1 cr.)
- BIOL 201 (4 cr.)
- BIOL 202 (4 cr.)
- PHYS 228 (3 cr.) and PHYS 228L (1 cr.) or equivalent, and EECE 601 (3 cr.) or CIVE 210 (3 cr.) or equivalent, and MECH 634 (3 cr.)
- One elective course from list A below (3 cr.)
- One elective course from list A, B, or C below (3 cr.)

Minimum number of credits: 19

**For all other students:**
- ECE 401 (1 cr.)
- BIOL 201 (4 cr.)
- BIOL 202 or PHYL 246 (4 cr.)
- PHYS 228 (3 cr.) and PHYS 228L (1 cr.) or equivalent, and EECE 601 (3 cr.) or CIVE 210 (3 cr.) or equivalent, and MECH 634 (3 cr.)
- One elective course from list A, B, or C below (3 cr.)

Minimum number of credits: 19

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**List A**

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**List B**

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</table>
Elective Courses
List A: EECE 601, EECE 602, EECE 603 (unless the student takes EECE 694, in which case either EECE 694 or 603 counts toward the minor), EECE 604, EECE 605, MECH 633, MECH 634
List B: MECH 532, MECH 606, MECH 607, MECH 624, MECH 631, MECH 641/EECE 661, EECE 693, EECE 694 (unless the student takes EECE 603, in which case either 694 or 603 counts toward the minor)
List C: BIOL 202, BIOL 223, BIOL 225, BIOL 244, BIOL 263, BIOL 268, PHYL 202, PHYL 246

Minor in Chemical Engineering
The minor in chemical engineering, currently offered in the Mechanical Engineering Department, is open to all engineering students in majors other than chemical engineering.

Minor Program Requirements (21 credits)
Student taking the minor are required to complete 21 credits of course work: 15 credits of core courses, and six credits of elective courses from the list given below.

Required Core Courses (15 credits)
• MECH 310 Thermodynamics I 3 cr.
• CHEN 311/MECH 314 Introduction to Fluids Engineering 3 cr.
• CHEN 312 Separation Processes 3 cr.
• CHEN 411 Heat and Mass Transfer Operations 3 cr.
• CHEN 417 Reactor Engineering and Reactor Design 3 cr.

Elective Courses (6 credits) selected from the following courses
• CHEN 314 Chemical Engineering Thermodynamics 3 cr.
• CHEN 451 Process Instrumentation and Measurements 3 cr.
• CHEN 470 Chemical Process Design 3 cr.
• CHEN 480 Safety and Loss Prevention 3 cr.
• CHEN 515 Mechanical Unit Operations 3 cr.
• CHEN 531 Principles of Corrosion 3 cr.
• CHEN 570 Process Synthesis and Optimization 3 cr.
• CHEN 571 Chemical Product Design 3 cr.
• CHEN 612 Desalination 3 cr.
• CHEN 672 Polymer Science 3 cr.
• CHEN 673 Engineering of Drug Delivery Systems 3 cr.

Minor in Engineering Management
The Engineering Management Program offers a minor in engineering management that can be pursued by undergraduate engineering and architecture students, as well as by students from related majors, starting as early as the fall semester of their third year of enrollment. Only students who have a cumulative average of 70 or more are eligible to apply for the minor. To satisfy the requirements of the minor, a student must earn 18 credits of course work from the engineering management course offerings.

• At least nine of the total requirement of 18 credits must be fulfilled from the six undergraduate courses offered by the program, which must include ENMG 400: Engineering Economy. These nine credits must also include either ENMG 500: Engineering Management I, or ENMG 501: Engineering Management II.
• The other nine credits can be satisfied by taking courses either from the list of undergraduate courses or from the elective graduate courses offered by the program.
A minimum grade of 70 is required for a course to count toward the fulfillment of a minor in engineering management. Additionally, a cumulative average of 75 or above in all the minor courses is required.
Department of Architecture and Design

Chairperson: Musfy, Leila
Graduate Coordinator: Fawaz, Mona
Architecture Coordinator: Najjar, Karim
Professors: Al-Harithy, Howayda; Musfy, Leila
Associate Professors: Aribid, George; Fawaz, Mona; Harb, Mona; Maasri, Zeina; Sadek, Walid; Saleiba, Robert; Shorto, Sylvia
Assistant Professors: Abedini, Reza; Ghaibeh, Lina; Gharbieh, Ahmad; Najjar, Karim
Visiting Assistant Professor: Graef, Alexander
Senior Lecturers: Azar, Kamal; Haddad, Walid; Hassan, Sinan; Jamal, Sany; Ksermelli, Simone; Nader, Marc; Samara, Rana; Serof, Gregoire; Yared, Maya; Zeibeh, Hani
Lecturers: Abboud, Rania; Abou Rahme, Dahna; Alamuddin, Hana; Aramouny, Carla; Assi, Naji; Baki, Fadi; Barclay, Ahmad; Boyadjian, Rafi; Feschfesch, Antoine; Freiji, Mayda; Genz, Bettina; Haddad, Rana; Hajjar, Majdi; Hallaj, Omar; Imam, Hatem; Kanaan, Joy; Karanouh, Rena; Khoury, Ahmed; Mahmoud, Samir; Mallat, Bernard; Nader, Karim; Najm, Wagih; Nasrallah, Maha; Richani, Sandra; Saikali, Maya; Traboulsi, Jana; Yeretzian, Aram; Zahreddine, Hassan
Instructors: Abi Hanna, Margheritta; Apelian, Khajag; Captan, Lara; Hachem, Pascal; Kharwagi, Bassam; Kerbaj, Mazen; Khoury, Roula; Maasri, Ghassan; Youssef, Shawki; Zein, Najla; Zoghbi, Pascal

The Department of Architecture and Design offers programs at both the undergraduate and graduate levels. The undergraduate level programs are in architecture and graphic design. The graphic design program leads to the professional degree of Bachelor of Fine Arts in Graphic Design (BFA).

Architecture

Mission Statement

The bachelor of architecture program offers students a first professional degree that qualifies them to practice architecture. The program aims to graduate well rounded intellectuals, critical thinkers, and skilled professional architects who are committed to the advancement of the field and the practice; and who have a sense of responsibility for the built environment and the natural resources. Design is approached as a research-oriented process that is culturally grounded, theoretically informed and technically advanced so as to enable graduates to become lifelong learners and to take a leading role in the professional practice both in Lebanon and the region.

Program Description

The architecture program comprises a total of 174 credit hours normally taken over five years. The curriculum is structured as follows: 1) Two foundation years, first and second, with core requirements in design, technical, and history courses which offer students basic skills and knowledge in design and related areas. 2) Two advanced years, third and fourth, with core requirements in advanced design, technical, history and theory courses, reinforced by the distribution electives. The design studios at this level are thematic vertical studios. 3) Final year, fifth year, with a one-year design thesis and project and advanced electives.

The degree requirements in architecture consist of the following:

- 129 credit hours of mandatory core courses
- 15 credit hours of approved ArD/FEA field electives
  - 3 credit hours in Category A: Representation
  - 6 credit hours in Category B: History and Theory
  - 6 credit hours in Category C: Technology and Professional Practice
- 6 credit hours of free electives in consultation with the academic adviser

To meet the General Education Requirements of AUB (24 credits must be taken outside the department)

- 6 credit hours of English including ENGL 206
- 3 credit hours of Arabic Communication Skills course as per placement test
- 6 credit hours of approved electives in humanities
- 3 credit hours of an approved elective in social sciences
- 3 credit hours of an approved elective in natural sciences
- 3 credit hours of an approved elective in quantitative thought

Curriculum for the Degree of Bachelor of Architecture

First Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
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<tr>
<td>ARCH 100 Basic Design</td>
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<td>ARCH 111 Technical Drawing</td>
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<td>ARCH 121 History of Ancient Art and Architecture: From Caves to Catacombs</td>
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<tr>
<td>ARCH 151 Statics and Mechanics of Solids</td>
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### Department of Architecture and Design

#### Second Year

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<td>General</td>
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<td>ARCH 242</td>
<td>Building Construction I</td>
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**Total 16**

#### Third Year

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<td>ARCH 325</td>
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**Total 16**

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**Total 16**

### Course Descriptions

#### Mandatory Core Courses

**Basic Design**

Basic Design is an introductory studio course that provides an initial practical involvement in issues pertaining to design and architecture. The student is introduced and called upon to engage in thinking through applied practices about various questions concerning pictorial space, urban space, representation, physical gesture, objects and structures of organization. The aim of the projects is to expose students to basic design principles and train them in foundation studio skills.

1. b. stands for billing
ARCH 101 Architecture Design I – Architecture and Place 7 cr.
This studio centers on the dialectic of architecture and place. Through exercises, notions of habitation, site, and place are explored. Initial introduction to simple structural systems, low-tech sustainable strategies and site analysis are conducted. Though the studio navigates within fairly simple assignments, it nonetheless pursues the full range of scales and complexities of a complete architecture project; it is the opportunity to clearly set the pace of what a complete project of architecture requires and engages. The final exercise is thus comprehensive and should be developed with appropriate drawings and models. In addition, precedent analysis plays a central role in articulating the exercises and bridging over the history sequence. Prerequisite: ARCH 100.

ARCH 111 Technical Drawing 4 cr.
This is a course in descriptive geometry and graphic communication in architecture. Students learn to use drawing tools. They acquire techniques of representation of 3D and space on 2D surfaces, including orthogonal (plans, sections, and elevations), paraline (axonometrics and isometrics), and perspective drawings. Applications cover construction of shades and shadows.

ARCH 121 History of Ancient Art and Architecture: From Caves to Catacombs 3 cr.
The first course in the History of Art and Architecture sequence surveys the origins and development of prehistoric times to the end of the third century CE. We question meanings of the term art through objects associated with the rituals surrounding death and burial. While considering formal development, we also look at artifacts in their cultural context, relating them to myth, literature, and the development of technology. Local field trips are an important component of the class.

ARCH 122 History of Medieval Art and Architecture 3 cr.
This course is the second in the History of Art and Architecture sequence required for students in Architecture and Graphic Design. It covers medieval art and architecture from the fourth to the fourteenth centuries, including Byzantine, Ummayyad, Abbasid, Fatimid, Romanesque, Gothic, Ayyubid, and Mamluk art. The course is an analytic study of major developments, artists, and monuments. It emphasizes processes of cultural productions, their ideological framework, and socio-political significance. Prerequisite: ARCH 121 or consent of instructor.

ARCH 151 Statics and Mechanics of Solids 4 cr.
An introduction to vector forces and moments; equilibrium of rigid bodies in 2-D and 3-D; free body diagrams; frames and machines; centers of gravity and moments of inertia; design of trusses, beams with shear and moment diagrams; introduction to material properties; stresses, strains, and their relationship; normal, shearing stresses. The course also provides an introduction to indeterminate structures.

ARCH 152 Analysis and Design of Structures I 4 cr.
Review of normal and shearing stresses and combined stresses; an introduction to column design and buckling; cable design; physical properties of various materials used in construction: timber, steel, aluminum, copper, and others; and the deformation of structural elements under loads using moment area and conjugate beam method; indeterminate structures by approximate methods and Moment Distribution method; design and selection of the structural elements according to loads applied with practical assignments; selection of materials and pre-dimensioning the structure elements. Prerequisite: ARCH 151.

ARCH 201 Architecture Design II 7 cr.
Mid-Density Housing and Tectonic
This studio focuses on applying and developing concepts acquired in the first year into larger, more complex programs and sites with an introduction to mid-density urban dynamics and low-rise, multi-unit housing building. While basic structural and low-tech sustainable strategies are addressed, the focus is placed on exploring diverse materials and assembly methods, in relation to their tectonic language and implication. Prerequisites: ARCH 101 and a combined grade average of 70 in ARCH 100 and ARCH 101.

ARCH 202 Architecture Design III 7 cr.
Mid-Density Public Building and Structural Strategies
This studio introduces the definition of public buildings (museum, theater, school, etc.) within mid-density urban conditions. Questions of private to public scales are addressed. While site planning, tectonics, low/high tech sustainable strategies are integrated into design process, particular focus is placed on structural strategies. Students are introduced to historical urban analysis and documentation. Prerequisite: ARCH 201.

ARCH 213 Computer Aided Design 3 cr.
This course is an introduction to the CAD world and its 2D implementation in the architectural field. Students learn the tools and techniques to translate their hand drawn design sketches into digital format, from basic conceptual diagrams to fully loaded architectural drawings, meeting the high standards of design-firm expectations.

ARCH 223 History of Post-Medieval Art and Architecture 3 cr.
The course is a study of art and architecture during the post-medieval period with a special emphasis on the fifteenth and sixteenth century Mediterranean world. It is the third in the history of art and architecture sequence required for students in architecture and graphic design. The post-Medieval period covered by the course includes the Italian Renaissance and the Ottoman Empire with emphasis on cultural encounters and exchange between East and West. Prerequisites: ARCH 121, ARCH 122 or consent of instructor.

ARCH 224 History of Modern Art and Architecture: 1760–1945 3 cr.
The last course of the History of Art and Architecture sequence surveys the development of Western art and architecture from 1760 to 1945. Thinking beyond the established canon, the course critically addresses the political, aesthetic, institutional, and cultural forces that have contributed to shaping this canon. Problems we encounter when we acknowledge that art is a cultural product include the uneasy fit of style-period categories or the isms of art, gender, historical definitions of the avant-garde, the consumption and display of art; and the status of the artist in society. Prerequisites: ARCH 121, ARCH 122 and ARCH 223 or consent of instructor.
ARCH 241 Surveying Regional Architecture  6 cr.
The course is organized in two successive formats. The first introduces the students to topographic mapping and route surveying. The second involves the tools and methods of architectural surveying. Fieldwork is applied to surveying, documentation, and the analysis of factors contributing to the distinctive aspects of Lebanese regional architecture: vernacular, traditional, and modern. Prerequisite: ARCH 111.

ARCH 242 Building Construction I  3 cr.
A course on the response of building envelopes to surrounding environmental factors; covering in detail the components of the envelope: floors, walls, doors, windows, and roofs of all types. This course is also an introduction to construction detailing.

ARCH 243 Building Construction II  3 cr.
This is the third course in the sequence of building construction courses. It is a combined lecture and studio course that examines recent building technologies, materials, finishing work and structures. Prerequisite: ARCH 242.

ARCH 253 Analysis and Design of Structures II  4 cr.
Concrete mechanical properties: design of continuous beams in flexure and in shear, columns, different types of footings, basement walls, retaining walls, structural walls, one way solid slab, one way ribbed slab, introduction to two way slabs, staircase; design of a multi-story building with a detailed project. Prerequisite: ARCH 152.

ARCH 304 Architecture Design IV Mixed-Use Housing and City Dynamics  7 cr.
This studio centers on large mixed-use housing project typologies within dense urban fabrics. Projects address complex urban situations, negotiation between private/public issues, accessibility, codes, public agencies, and market forces. Urban in its nature and scale, this studio formulates strategies to consider architectural production within the building and the transformation of cities. Prerequisites: ARCH 203 and a combined grade average of 70 in ARCH 202 and ARCH 203.

ARCH 305 Vertical Design Studio I  7 cr.
Vertical studios are offered to 3rd and 4th year students in the spring semester. Each studio follows one of the assigned themes as a specialized orientation. While particular projects may vary from one semester to another, the themes are maintained as guidelines and inform the particular focus of given projects. Students can choose the orientation they wish to engage with, though cannot repeat the same thematic twice. Prerequisite: ARCH 304.

ARCH 325 Contemporary Architecture  3 cr.
The contemporary condition of architecture was shaped by a series of events and movements that followed the rise of Modernism. As a logical continuation of the History of Art and Architecture sequence, this class surveys the main architectural movements from 1945 on in order to better understand the state of architecture today and as a way for students to shape enlightened opinions about contemporary practices and discourses. Through lecture classes, critical readings and seminar sessions, students are encouraged to voice their thoughts and opinions on reviewed projects or discourses and are invited to explore a particular area of interest that is relevant to current and emerging practices. Prerequisite: ARCH 224.

ARCH 342 Architecture Design V Public Equipment and Structural Systems  7 cr.
Projects address complex urban situations, traffic flows, and transportation; focusing specifically on structural strategies for large scale buildings. Students taking this studio will define part of, or the entire program. Prerequisites: ARCH 305 and a combined grade average of 70 in ARCH 304 and ARCH 305.

ARCH 361 Professional Practice  3 cr.
The course is designed to expose students to issues pertaining to contemporary professional practice, from setting up and managing an office, to understanding the financial, legal, and ethical responsibilities of the architect towards the business, the client, the community and the environment.

ARCH 373 Training in CAD  0 b.
This is a non-credit training course in which students work in local architectural offices on CAD applications. Reports on work completed are evaluated for level of involvement and quality of achievement.

ARCH 406 Architecture Design V Public Equipment and Structural Systems  7 cr.
This studio centers on large public building, equipment, or infrastructure within dense urban fabrics. Projects address complex urban situations, traffic flows, and transportation; focusing specifically on structural strategies for large scale buildings. Students taking this studio will define part of, or the entire program. Prerequisites: ARCH 305 and a combined grade average of 70 in ARCH 304 and ARCH 305.

ARCH 474 Training in Execution Drawings  0 b.
This is a non-credit course that consists of professional training in architectural offices, where students develop their knowledge of execution drawings.
ARCH 508  Final Year Design Thesis I  7 cr.
In this course, students start a year-long design investigation of an architecture issue of their choice. This issue is argued and supported by readings and case-studies, and developed into a proposed architecture design intervention. By the end of the semester, students defend their design statement and their preliminary design proposal. In addition to their argument, their presentation includes a completed site analysis as well as defined user groups, architectural program(s) and systems. Prerequisites: Four vertical design studios and a combined grade average of 70 in ARCH 406 and ARCH 407.

ARCH 509  Final Year Design Thesis II  7 cr.
This is the second half of a year-long design thesis and the culmination of the design studio training. In this course, students complete the investigation of the selected architecture issue they began in ARCH 508 making it into a full-fledged design intervention that articulates in all its details their design statement. By the end of the term, all the components making up their architecture project are thoroughly developed and clearly presented: argument, site analysis, user groups, architectural programs and systems. Prerequisite: ARCH 508.

ARCH 575  Approved Experience  1 b.
This is an eight-week professional training course at a recognized architectural design office, in Lebanon or abroad. Students are expected to engage in a capacity that ensures that they apply their knowledge and acquire professional experience in the field of architecture.

Field Electives
The elective courses in the architecture program, offered within the Department of Architecture and Design are distributed in three main categories and are subject to change as new electives are introduced every year.
• Category A: Representation (01)
• Category B: History (02) and Theory (03)
• Category C: Technology (04), Engineering (05) and Professional Practice (06)

Category A: Representation
ARCH 010  Photography  3 cr.
This course aims at providing architecture students with a comprehensive understanding of the basics of black and white and color photography, its techniques, and aesthetics. Students learn how to use their cameras and light meters and are taught, through hands-on practice, the fundamentals needed in traditional black and white printing in the darkroom. The course includes slide lectures and discussions around the works of classic masters and contemporary experts of the medium, field trips, as well as presentations by well-established photographers specializing in architectural photography.

ARCH 012  The Black Box  3 cr.
The Black Box is a workshop and seminar open to architecture, graphic design and other students. Class meets once a week. Metaphorically, the black box stands for a hiding device that creates a feeling of curiosity and triggers imagination. This seminar is an exploration, interaction and experimentation with the concept of the black box through the three sub-themes of Desire, Imagination and the Unseen. Students are invited to respond to contemporary artistic works (cinema, architecture, literature) as well as to present their own through the media of photography, script-writing and projection. Prerequisite: Advanced standing.

ARCH 014  Pages From An Autobiography  3 cr.
The goal of this class is to explore, practice and theorize the form of the portfolio (more broadly understood as the work of creative individuals representing themselves) in order to gain a certain level of mastery of the process of presentation and representation of previously produced work. Through a theoretical, analytical and practical process of reading, looking, and producing visual, textual and multi-media material, students will gain an exposure to the global culture of the making of portfolios and a practical knowledge in the production of such (physical or online) representational artifacts. Ultimately, this workshop will raise and investigate the complex and never-ending issue of self-representation, the portfolio being, obviously, an autobiography of sorts.

Category B: History and Theory
ARCH 020  Beirut Modern  3 cr.
The course investigates modern architecture in Lebanon, mainly in the 1950s and 1960s, shedding light on a vibrant period that produced a distinctive local version of modernism. The course covers aspects such as architectural education, the organization of the profession, patronage, competitions, collaborations, and the various meanings given to modernity and tradition.

ARCH 021  The Imperial Image  3 cr.
Images are constants, but the ideas they legitimate take on different forms and values. This seminar explores the relationship between the visual arts and the ideologies of empire, looking at art produced in, and relating to, the sites of colonial, imperial, and mandatory control that comprised the European colonial project from the 16th to the mid-20th centuries.

ARCH 022  Building the Colonies: Colonialism, Imperialism, and Local Modernities  3 cr.
Colonialism and imperialism can be interpreted as part of larger ideological and sociopolitical systems that continue to inform changing cultural values today. This seminar uses sites of colonial urbanism to investigate ways that spatial organization produces historical knowledge. We consider alterations made to pre-existing cities as well as new city plans, both built and projected, in the Americas, in Asia, and around the Mediterranean Rim.

ARCH 023  From Urban Design to Landscape Urbanism  3 cr.
The distinction between urban, suburban and rural is increasingly blurred. New patterns of physical urbanization and growing environmental concerns are challenging the conventional approach of urban design in thinking about and shaping city space. Emerging disciplines such as landscape design and landscape urbanism are providing alternative ways of conceptualization that stress ecology over morphology, network surface over urban form, and the confluence of architecture, landscape, city and infrastructure. This course explores the changing conception of city space examining the shifts in urban design theory and practice. The course will appeal to students in architecture, landscape architecture and urbanism who are interested in crossing the boundaries between disciplines and exploring new potentialities in design thinking.
ARCH 024  Hybrid Beirut: Morphogenesis of the Contemporary City  3 cr.
Subjected to colonialism, Beirut was able to develop its own response to early modernization through the assimilation and domestication of Western urban and architectural trends. The resulting cultural hybridity and townscape diversity is understood by exploring the transitional years from a Medieval Arab-Islamic town in the 1840s to a showcase of the French Mandate in the 1920s and 30s. This course is an attempt to read the contemporary city through its recent colonial past and to trace the continuity and change in its social, economic and cultural conditions as mirrored in building typologies and spatial urban structure.

ARCH 025  House and Home: Histories of Domesticity  3 cr.
This seminar/practicum takes two contrasting but complementary approaches, historical understanding and phenomenological experience, to explore definitions of what we mean by the word home. Both planned and informal domestic architecture in the region are investigated as central case studies.

ARCH 026  The Cities of Delhi: Urban Form and the Transmission of Meaning  3 cr.
New Delhi, capital of the Republic of India, encompasses the vestiges of many older cities, built over a thousand-year period by disparate cultural groups. In this course, case histories of buildings and neighborhoods are used as a way of reading the processes of hybridization that result from the overlay of city upon city.

ARCH 027  Museum/Store  3 cr.
This course will offer a critique of the role and practices of the Museum of Modern Art (MoMA) in New York City at a time when the institution is seeking to redefine itself. MoMA, the first major institutional collector of 20th-Century art, now has what is arguably the most important concentration of modern painting and sculpture, film and media art in the world. This will be used as a focal point and a case study for exploring the evolution and history of museum architecture and museum practices as they change in the emerging 21st Century. Within a seminar format, students will explore the histories of a range of topics that relate to the role of museums today.

ARCH 028  Japanese Concepts of Space  3 cr.
For years, Japanese design has been a source of inspiration for many designers around the world. The volume and quality of architectural production in Japan has long fascinated and puzzled those who have followed the development of this architecture in the past decades. Building activity is extensive and the variety of design encompasses the imaginable. The striking phenomenon today is the speed with which the built environment, that is the city, is changing and within which architecture is caught up.

ARCH 029  A History of the Artist  3 cr.
This course offers an historical and critical reading of the category artist as it has been written and deployed in biographies, films, and art theory. Through a close analysis of four different historical moments in Western art, the course traces the development of the social persona of the artist and its refraction with artistic practice.

ARCH 030  Writing the Manifesto  3 cr.
Writing the manifesto is a workshop and seminar open to architecture, graphic design and other students. Class meets once a week. If we want the practice of design to be engaged socially and politically, it needs to part from the superficial or the formal and stem from a strong passionate attitude. This course aims at developing this attitude through reading and interacting with engaged authors and through developing a manifesto piece. In this process, every student will write his/her own manifesto and present it to others. Prerequisite: Advanced standing.

ARCH 031  Theories of Conservation and Reconstruction  3 cr.
The course explores different theories of architectural conservation and reconstruction. In addition to the conservation of ancient monuments, students will also be introduced to theories of post-war reconstruction and urban conservation. Topics will include: memory in architecture, authenticity, historical consciousness and the conservation of modern architecture. These themes will be presented through a series of case studies, many of which focus on Lebanon and the Middle East.

ARCH 032  Theorizing Ornament: Art, Architecture and Nature  3 cr.
The study of ornament has a long and important history in art and design, but with the advent of modernism, ornament was deemed ethically suspect and inimical to art’s higher purposes. Such a low estimate of ornament thereby relegated non-Western artistic traditions such as Islamic Art, which is overwhelmingly ornamental, to a merely decorative art.

ARCH 033  Art and Interpretation  3 cr.
This theory seminar is designed to introduce students to a range of methods of interpretation of works of arts grounded in the discipline of art history or drawn from related fields such as analytic aesthetics, hermeneutics and phenomenology. The theoretical models include iconography, post-structuralist semiotics, psychoanalysis, feminist, and post-colonial theory.

ARCH 034  Questions of Representation in Arab Documentary  3 cr.
Documentary has a rich tradition of dialogue between theory and practice. This involves philosophical and ethical questions about the relation between reality, representation and ways of engaging in the world. We will explore how Arab documentaries engage with the issue of representing people and the spaces they inhabit and what form this takes on. Arab filmmakers often question the notions of territory, identity, home, exile and frontiers. Their inquiry expands from a dialogue between: past/present, private/public, and home/exile. This has led them to question the medium itself, to explore the frontiers between documentary and fiction, to develop experimental and poetic forms of expression and engage in digital media.

ARCH 035  Geographies of Exclusion  3 cr.
This course investigates the idea of geographies of exclusion through a multi-disciplinary inquiry which locates space and spatial production at its center. It cross-thinks issues of exclusion across cities in the Global North and the Global South. Gender, class, religion, and race are the main fault lines that we will use to study how certain populations in our cities are left “outside” (through gated communities, “mean” streets, security barriers, segregated parks, etc.), or kept “inside” (refugees in camps, locked-in domestic workers, prisoners, etc.).

ARCH 036/URPL 637  Illegal Cities  3 cr.
The seminar is designed as an introduction for students enrolled in architecture, urban planning and policy, and urban design to the ongoing debates about the relationship between law and the building process, specifically by looking at its actual materialization in illegal/informal settlements. It is based on a combination of lecture/seminar sessions in which various theorizations of the city/landscape are explored and on field studies/class discussions in which the applications of these theories are investigated using a local case study.
ARCH 037  Principles of Conservation  3 cr.
The course explores the various approaches towards conservation in architecture. Students will be introduced to the practical questions encountered in a variety of different projects (including both old and modern buildings) and to the different methods and theories of dealing with these buildings. This will include the initial survey; analysis of materials; integration of lacunae; conservation of materials and other topics. The students will also explore the application of the theoretical principles of restoration such as minimal intervention and reversibility. These topics will be approached through specific case studies, many of which focus on Lebanon and the Middle East. The course will be taught both in the classroom and on-site. Students will be expected to research areas of particular interest based on the visited sites and to present their findings in class.

ARCH 039  The Politics of Building  3 cr.
This course examines how architecture and urban design redistribute political power in the built environment and how their narratives incorporate and represent political ideas that condition and shape individual and collective experiences in/of the city and society. The course highlights the spatiality of politics and how the urban is a political (and economic) process of spatial production. Students learn: to define politics and political power as analytical categories; to identify the political features determining the building process, as well as the spatial implications of political choices across contexts; to understand how politics determine their roles as professional architects and designers and how to position themselves accordingly.

Category C: Technology, Engineering, and Professional Practice

Technology

ARCH 040  "Making It": Models and Prototypes of Complex Structures  3 cr.
Design and technology studies in schools of architecture are based on the making of things, how they perform in the environment, the experience of the results, and its cognitive interpretation. The scientific knowledge and technical expertise available for architecture are extensive and their rate of change is substantial. The course seeks to develop the ability to learn how to learn, a vital necessity for innovation. The teaching focus is on craftsmanship, innovation, conceptual and lateral thinking, new technologies, construction, interdisciplinary work, and collaboration with industries.

ARCH 041  Lighting Design  3 cr.
The course is one of the requisite tools of design. An architect or environmental designer has the ability to render the architectural form with light and to use lighting distribution, intensity, color and modulation to conceive a desired effect. Additionally, light can set the mood for a space - a critical step in the design process.

ARCH 045  Building Systems Technology  3 cr.
This course provides an introduction to building systems technology. The course will focus mainly on the behavior of buildings as systems, and where possible will provide additional material for the design of buildings against extreme conditions such as fires, explosions, rare earthquakes and wind. All the above concepts will be introduced with minimum (if any) recourse to mathematical equations, as emphasis will be placed on understanding the behavior of different structural systems under various loading scenarios.

Professional Practice

ARCH 061  Architectural Programming  3 cr.
The course deals with Architectural Programming as a design process that does not precede design, but works with it. The intent is to delineate a design methodology based on academic research and practical knowledge to synthesize and translate a project brief – client requirements, legal regulations, spatial needs, etc – to design strategies and solutions, through the collaboration of multiple participants and decision-makers. The course is envisioned to be given in close collaboration with design studios to strengthen the bridge between theory and practice.

ARCH 062/ URPL 665  Development and Planning Policies  3 cr.
The course examines development and spatial planning projects and policies. It investigates policy governance and institutional setup, the role of professional expertise, and the spatial impacts on the built and un-built environments, as well as the social and environmental impacts. Using case-study analysis of selected cities and towns, the course investigates how policies are elaborated through the use of chosen models, approaches, strategies, and tools; privileging certain sectors; and for specific ends.

ARCH 063  Algorithm and Iteration  3 cr.
Using Grasshopper/Rhino3d as the main software platform, the course explores the concepts, tools and ways in which parametric programming can lead to greater integration of concept and execution in architectural design.

ARCH 065  Climate Responsive Design  3 cr.
This course addresses the subject of climate-responsive architecture. The course's content starts with an introduction to the broad issue of sustainability, continues with the analysis of vernacular examples in architecture and moves on to develop the subjects of climate, people and buildings. The course consists of a series of lectures and short design applications that will enhance the students' understanding of the subject matter.

ARCH 066  Conservation and Adaptation of Modern Buildings in Lebanon  3 cr.
This course provides students with effective and efficient tools to deal with conservation within the flawed framework of current Lebanese legislation. Students will be introduced to problems that are frequently encountered in the practice of architecture in Lebanon. These problems include: the seeming necessity of over-saturating the building site; adapting existing buildings to modern exigencies; and the ethical responsibility of preserving historical buildings. Focusing on a particular case study in Beirut, the course will examine different sustainable solutions in response to these themes.

ARCH 068  Law and the Built Environment  3 cr.
This is a course exploring the relations between the rules that govern the production of the built environment, building practices, and the shape of the city. Rules include the complex set of state legislated regulations (e.g. building law, zoning regulations, urban planning law) as well as socially sanctioned norms (e.g. privacy regulations). Investigated building practices are mostly those of the professional architectural practice and should inform the future role of the students as designers. The course is based on a critical approach to the understanding of law, how it is legislated, how it is actualized, how it intersects with other norms in the context where it is implemented, and how it affects building practices.
Graphic Design

Mission Statement

The Graphic Design Program answers to the developments and needs of Lebanon and the region as it strives to meet globally required proficiency. The curriculum focuses on a solid training in the theoretical, practical and technical aspects of Graphic Design. It is the goal of the program to help students perceive and adapt to the changing demands of culture and therefore to the continuous change in the design field. Students develop an intellectual background, critical thinking and contribute to the continuum of aesthetic and technological innovations by generating ideas and solutions to a wide range of design problems. The program is committed to its involvement in the Arab world: its multitude of languages and cultures. It is the Program’s mission to address these issues in a challenging creative teaching and learning environment.

Program Description

The Graphic Design Program is comprised of a total of 139 credit hours normally taken over four years. The curriculum is structured as follows: 1) Two foundation years, first and second, with core requirements in design, typography, representation techniques, digital media, history and theory courses which offer students basic skills and knowledge in design and related areas. 2) One advanced year, third year, with core requirements in advanced design, digital media, history and theory courses, reinforced by the field/free electives and general education requirements. 3) Final year, fourth year, with a one-year design project and advanced electives.

The degree requirements in Graphic Design consist of the following:

- 97 credit hours of mandatory core courses
- 12 credit hours of approved ArD/FEA field electives:
  - 3 credit hours in Category A: Representation
  - 6 credit hours in Category B: History, theory, and methodology
  - 3 credit hours in Category C: Digital media, typography, and professional practice
- 3 credit hours of free electives in consultation with the academic adviser

To meet the AUB General Education Requirements (27 credits must be taken outside the department):

- 6 credit hours of English including English 204
- 3 credit hours of Arabic, as per placement test
- 6 credit hours of approved electives in humanities
- 3 credit hours of approved electives in social sciences
- 6 credit hours of approved electives in natural sciences
- 3 credit hours of approved electives in quantitative thought

Curriculum for the Degree of Bachelor of Fine Arts in Graphic Design

First Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ARCH 100 Basic Design</td>
<td>6</td>
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<tr>
<td>GRDS 111 Drawing</td>
<td>3</td>
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<tr>
<td>ARCH 121 History of Ancient Art and Architecture: From Caves to Catacombs</td>
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<td>GRDS 112 Color</td>
<td>3</td>
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<td>ENGL 204 Advanced Academic English (or English as required)</td>
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<tr>
<td>GRDS 101 Graphic Design I</td>
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<tr>
<td>ARCH 122 History of Medieval Art and Architecture</td>
<td>3</td>
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<tr>
<td>GRDS 114 Illustration</td>
<td>3</td>
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<tr>
<td>GRDS 141 Computer Graphics I</td>
<td>3</td>
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<tr>
<td>General Education Requirement</td>
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Second Year

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<th>Summer Semester</th>
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<tr>
<td>GRDS 113 Photography</td>
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<td>2 General Education Requirements (2 x 3 cr.)</td>
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<tr>
<td>GRDS 202 Graphic Design II</td>
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<tr>
<td>ARCH 223 History of Post-Medieval Art and Architecture</td>
<td>3</td>
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<td>GRDS 251 Typography I</td>
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<tr>
<td>GRDS 242 Computer Graphics II</td>
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<td>General Education Requirement</td>
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<th>Spring Semester</th>
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<tbody>
<tr>
<td>GRDS 203 Graphic Design III</td>
<td>6</td>
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<tr>
<td>ARCH 224 History of Modern Art and Architecture: 1760 –1945</td>
<td>3</td>
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<tr>
<td>GRDS 252 Typography II</td>
<td>3</td>
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<tr>
<td>GRDS 231 Introduction to Visual Theory</td>
<td>3</td>
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### Third Year

#### Summer Semester Credits
- 2 Field/Free Electives or General Education Requirements (2 x 3 cr.) 6

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#### Fall Semester Credits
- GRDS 304 Graphic Design IV 6
- GRDS 325 History of Graphic Design 3
- GRDS 361 Professional Practice 3
- 1 Field/Free Elective or General Education Requirement 3

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#### Spring Semester Credits
- GRDS 305 Graphic Design V 6
- GRDS 343 Motion Graphics 3
- 2 Field/Free Electives or General Education Requirements (2 x 3 cr.) 6

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### Fourth Year

#### Summer Semester Credits
- GRDS 462 Approved Experience 1 b.*

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#### Fall Semester Credits
- GRDS 406 Final Project Design and Research I 6
- GRDS 444 Interactive Media Design 3
- 2 Field/Free Electives or General Education Requirements (2 x 3 cr.) 6

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#### Spring Semester Credits
- GRDS 407 Final Project Design and Research II 6
- 2 Field/Free Electives or General Education Requirements (2 x 3 cr.) 6

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### Course Descriptions

#### Mandatory Core Courses

**GRDS 101 Graphic Design I**
- 6 cr.
  - This is an introductory studio on graphic design methods and processes where fundamentals of visual communication are addressed. The studio starts with basic investigations in form making, and gradually moves on to cover more complex components of graphic design dealing with the construction of meaningful visual messages and the organization of information. **Prerequisite: ARCH 100.**

**GRDS 111 Drawing**
- 3 cr.
  - This studio course is an introduction to visual representation. Students learn drawing skills and pictorial conventions, and consider the historical specificity and contemporary relevance of such skills and conventions.

**GRDS 112 Color**
- 3 cr.
  - A study of the dynamic interaction of color and its applications for designers and artists. This course includes an introduction to the physics of color, color composition and the three dimensions of color, hue, value, and chroma, as well as the color wheel.

**GRDS 113 Photography**
- 3 cr.
  - A course aimed at providing graphic design students with a thorough understanding of the basic techniques and aesthetics of both black and white and color photography, through hands-on assignments and darkroom practice.

**GRDS 114 Illustration**
- 3 cr.
  - This course introduces students to illustration techniques and styles with the aim of strengthening their representation and visualizing skills to enrich the graphic design process and its outcomes. Assignments cover various themes while exploring a wide range of media and approaches. **Prerequisites: GRDS 111 and GRDS 112.**

**GRDS 141 Computer Graphics I**
- 3 cr.
  - This course is divided into three sections. The first introduces students to the Macintosh platform and the MacOS, covering all aspects such as file management, activating fonts, accessing network, and printing. The second section deals with the basic features of Adobe Illustrator®, the industry-standard and most professional vector-based illustration software; the last part covers the basic features of Adobe Photoshop®, where students learn basic image creation and manipulation.

**GRDS 202 Graphic Design II**
- 6 cr.
  - This studio focuses on principles of identity design through investigations in symbolic graphic representation; logo design; and the development of identity systems using various modes of image making and typography. **Prerequisites: GRDS 101 and a combined grade average of 70 in ARCH 100 and GRDS 101.**

**GRDS 203 Graphic Design III**
- 6 cr.
  - This studio addresses graphic design as a cultural practice. It focuses on processes of visual communication where issues of meaning production and exchange are emphasized and critically examined in their relation to particular social contexts and localities. Methodologies of arriving at meaningful graphic solutions— image-type relationships, visual narratives, info-graphics, and complex information organization— are explored through diverse theme-based projects and loose-sheet printed formats of public dissemination (posters, book covers, leaflets, maps). **Prerequisite: GRDS 202.**

**GRDS 242 Computer Graphics II**
- 3 cr.
  - This course is the second in the series following the first computer course (GRDS 212). It is also divided into three sections. The first deals with the advanced features of Adobe Illustrator®. Advanced Adobe Photoshop® constitutes the second section of the semester, where students learn advanced image creation and editing techniques for print and web applications. The last section covers Adobe InDesign®, the professional electronic desktop publishing software for the creation of any form of publication, from simple single page to complex multicolor documents. In addition, cross-compatibility issues between the above-mentioned software are tackled at the end of the semester. **Prerequisite: GRDS 141.**
GRDS 251  Typography I  3 cr.
The course introduces students to Arabic and Latin type and typography, providing the necessary historical, theoretical and technical knowledge, in combination with applied exercises and projects, which aim to enrich the graphic designer's typographic skills. The course is focused on the micro aesthetics of typography and its communicative potential; it begins with building an understanding and sensitivity to the formal and structural characteristics of letters, type styles and related classification, and gradually moves to basics of choosing, combining and working with type to enhance composition, meaning and readability.

GRDS 252  Typography II  3 cr.
The course is a sequel to Typography I (GRDS 251). It builds on the basic skills and knowledge already acquired to move to more advanced applications of Arabic and Latin typography for the design of different kinds of text-based information. New aspects are investigated while maintaining attention to the aesthetic and communicative potential of typography: type setting, color, texture, direction, flow, readability and context. Prerequisite: GRDS 251.

GRDS 231  Introduction to Visual Theory  3 cr.
An introduction to the various debates concerning visual representation aimed towards an investigation of the visual as a social practice and as part of an aesthetic discourse.

GRDS 304  Graphic Design IV  6 cr.
The course covers the design of printed publications in their various formats and audiences, ranging from mass media (newspapers, magazines etc.) to special interest publications (fanzines, limited edition books etc.), where processes of art direction and the design of layout systems for multi-page prints will be covered. While learning to materialize editorial concepts and content into graphic form, students also develop advanced skills in organizing complex information, and devising appropriate compositional, typographic and image solutions. Prerequisites: GRDS 203 and a combined grade average of 70 in GRDS 202 and GRDS 203.

GRDS 305  Graphic Design V  6 cr.
The course covers package design, installation art, and an interactive process between them. Research exercises will be conducted in each individual project. Projects are designed in a way to simulate experimental and commercial 'real' situation types. Students will develop an understanding and ability to manipulate two-dimensional graphics to three dimensional objects and environments; understand the needs of the market through market research; apply regulations where appropriate; carry the given projects from concept development to a final stage [real situation scenario], and experiment with acquired [design] language and vocabulary. Prerequisites: GRDS 203 and a combined grade average of 70 in GRDS 202 and GRDS 203.

GRDS 325  History of Graphic Design  3 cr.
Starting with Gutenberg's 42 line bible as the first specimen of movable type printing, the course will cover a period of time from the 15th century till today. The course is conceived of thematically with the intention to address the conceptualization of Graphic Design as a discipline directed by various interpretative inquiries into the History and Theory of graphic communication. The course is formulated in a way that enables the students to take part in the current debate around graphic design theory and practice. Prerequisite: ARCH 224.

GRDS 343  Motion Graphics  3 cr.
This course provides the student with the basics of designing for digital media and the moving image. The course covers animation in its various forms, studying the process in depth from animation principles to concepts and storytelling, to the final output edited with the soundtrack. Students will be exposed to and use various techniques of animation, from the classical hand drawn animation, flip books, and experimental Stop Motion Animation, to computer based animation, motion graphics for TV and movie titles. Prerequisite: GRDS 242.

GRDS 361  Professional Practice  3 cr.
This course prepares students to face the REAL WORLD of the graphic design profession. Lectures, readings and field research along with hands-on assignments, are given to assist students in writing their CVs and preparing their portfolios, learning about basic business practices (public relations, client handling, invoicing and billing, time management, work flow...), in addition to building knowledge about pre-press production and production techniques essential to the design practice. Prerequisite: GRDS 203.

GRDS 444  Interactive Media Design  3 cr.
This is a course where students learn to design for interactive media. The course will cover the principles, methods and tools to plan organize and implement interactive content. Students will acquire an understanding of information architecture and the proper integration for elements of text, image (still and moving), audio, and video to create and deliver an interactive experience. They will also receive a firm foundation and familiarity with basic programming language and software used by the industry. Prerequisites: GRDS 242 and GRDS 343.

GRDS 406  Final Project Design and Research I  6 cr.
In this course, students start a year-long design investigation of an issue of their choice. The process begins with the submission of a proposal at the start of the term in which the student begins to identify the project's design problematic, define its framework and set its aims. Throughout the term students, with the guidance of a panel of advisers, will conduct the necessary research, reflection, sketching, and experiments that will enable them to refine their initial proposals, respond to its questions, and argue their positions; to arrive at a well-defined design concept statement and a concrete design proposal. The successful completion of the latter, synthesized in a research document submitted at the end of the term, allows students to move to the design implementation phase in the following term. Prerequisites: GRDS 305 and GRDS 304, and a combined grade average of 70 in GRDS 304 and GRDS 305.

GRDS 407  Final Project Design and Research II  6 cr.
The course is the second half of a year-long design project and the culmination of the design studio training. Students integrate and synthesize acquired knowledge and skills, and elaborate, through concrete design experimentations and implementations, the design proposal developed in GRDS 406, with the aim of arriving at a completed graphic design output by the end of the term. Students work independently and in consultation with a chosen adviser from the faculty. Work in progress is presented and discussed with a panel of advisers over the course of the semester. The completed projects are presented for evaluation to a jury of faculty members and invited professionals. Prerequisite: GRDS 406.

GRDS 462  Approved Experience  1 b.
This is an eight-week professional training period at a recognized graphic design studio or graphic design department within a web design, television station, advertising agency, publishing house, or other approved workplace in Lebanon or abroad. The training should ensure that the student applies his/her knowledge and acquires professional experience in the field of graphic design.

For other mandatory core courses such as ARCH 100, ARCH 121, ARCH 122, ARCH 223, and ARCH 224 please refer to the architecture core course descriptions.
Field Electives

The elective courses in the Graphic Design Program are offered within the Department of Architecture and Design and some are open to students in all faculties. They are distributed into three categories:

Category A: Representation Skills (01); Category B: History (02), Theory and Methodology (03); Category C: Digital Media (04), Typography (05), and Professional Practice (06). Electives are chosen in consultation with the assigned adviser, and in accordance with the load distribution (mentioned earlier under program description).

The following list of courses is subject to change as new electives are introduced every year.

Category A: Representation Skills

**GRDS 011 Contested Land: New Landscapes of Lebanon** 3 cr.
Following WJT Mitchell’s claim that ‘landscape is not simply an object to be seen or a text to be read, but a central tool in the creation of national and social identities’, students learn how to dig under the surface of landscape and to critically use it as an effective representational tool. Students are asked to produce a series of landscapes of Lebanon and to use them to create a set of posters that will be exhibited and collected in a book at the end of the semester. Prerequisite: GRDS 203, or ARCH 203; or permission of instructor.

**GRDS 012 Silkscreen** 3 cr.
This course teaches students the fundamental principles of silkscreen printing and to be creative in their approach to printmaking. Silkscreen, one of the most versatile and widely used methods of printmaking, will be fully explored in this studio class through demonstrations and self-initiated projects. Students will be encouraged to experiment with multiple techniques and combinations of traditional and contemporary methods of serigraphy; and search for solutions that best translate the nature of their work to the medium. Prerequisites: GRDS 216, or ARCH 112, or FAAH 202 and FAAH 234.

**GRDS 014 Engraving and Etching** 3 cr.
This course is an introduction to the fundamentals of intaglio printmaking processes. It covers the non-acid methods such as engraving, dry point and mezzotint and acid methods like etching (hard and soft ground) and aquatint. This studio art course covers the needed technical information; however emphasis will not only be placed on the technical production of art works but also on the content and concepts of printmaking. Prerequisite: GRDS 214, or ARCH 112, or FAAH 202.

**GRDS 015 The Artist Book** 3 cr.
This course will examine how books have become a recognized way of making art and introduces students to techniques of making books-by-hand through incorporating traditional techniques like letterpress, etching, relief, stenciling, stamping and photo etching to make their texts and images. This course will also introduce students to different techniques of book-binding in order to produce an artist book. Prerequisite: GRDS 214 or FAAH 202.

**GRDS 016 Advanced Photography** 3 cr.
This course takes the student a significant leap further into the understanding and use of the photography medium in both analog and digital format. It addresses the aesthetics of picture making at an advanced level of technical, artistic, and creative development. Major emphasis is placed on developing a thoughtful approach toward the seeing and making of meaningful photographs that communicate with the viewer. Prerequisite: GRDS 113 or ARCH 010.

Category B: History, Theory, and Method

**GRDS 020 Signs of Conflict and Resistance** 3 cr.
The course addresses the deployment of political rhetoric in graphic design, historically and in contemporary practice. It examines those particular moments of political conflict - war, resistance, and revolt - where visual artifacts in different print formats become important vehicles through which ideological constructions are graphically materialized and diffused. The course uses a case study the graphic production by Lebanese political parties and movements during the civil war (1975-1990) while covering other significant cases that enrich and inform this main investigation.

**GRDS 030 Proximity and Imminence** 3 cr.
The course is open to all senior undergraduates across AUB departments with no prerequisites. This elective course approaches texts written at the limit of representation when the pressing onslaught of the here and now precludes any access to reflective and contemplative thought. It also proposes a close reading of texts written after the event, when a catastrophe has occurred but can only later be experienced as contemporary.

**GRDS 032 Mediated Spectacles (new theories and cases)** 3 cr.
A seminar course that engages students in the activity of analysis and critical assessment of the role of mediated images in modern everyday life. It takes as case studies the production and circulation of images in Arab popular culture and media, ranging from modern leisure and commodity poster advertisements to contemporary music videos and other image-potent cultural forms. It addresses the paradoxical relation between a cosmopolitan sense of self brought by increasingly global cultural flows, and an alterity negotiated in and through the production of cultural localities and social identities. The seminar is directed through theoretical approaches and methodological tools of investigation that address the mechanism of the 'image', in terms of its signifying practices, social imaginaries and power relations in which it is embedded.

**GRDS 034 The Valley of the Shadow of Death** 3 cr.
Through close readings of texts, monuments, artworks, and films; the seminar invites students to grapple with the lingering consequences of unfinished violence, with the aftermath, namely–and in following the etymology of that term—the second crop that follows a first one violently mowed.

**GRDS 035 Time and Time Again: The Triptych in Theory and Practice** 3 cr.
This elective course approaches the historical art form of the triptych as a relevant contemporary form open to thinking and visualizing heterogeneous temporal configurations. As is well known, a triptych is a painted three-leaved construction of two hinged panels flanking a central panel. Historically, the painted and occasionally carved triptych was often used as altarpiece in Byzantine, Catholic and Celtic churches. The Christian religious triptych, as that of The Mystic Marriage of St. Catherine painted by Hans Memlinc in 1475-9, is notable for visualizing layered multi-directional temporalities functioning within and under the over-riding principle of a divine teleological time. It is accordingly a rich tradition which stands to be reconsidered and re-opened to thinking time and temporality, and to extending this religious tradition onto other non-teleological and non-sequential configurations.

**GRDS 036 Seeing Rude and Erudite** 3 cr.
This seminar proposes an investigation of seeing, understood both as an authoritative discourse and as an embodied physical sensation. The aim and ambition of this seminar is to question the authority of the visual and to identify what is unrecognized in the act of seeing.
Category C: Digital Media, Typography, and Professional Practice

Digital Media

GRDS 040 3D Animation 3 cr.
3D animation is an advanced course designed for students who are well versed in both concepts and technical research. The course builds the fundamental understanding of 3D computer modeling, texture mapping, lighting, and camera rendering in order to develop 3D animated sequences. The course then introduces students to advanced 3D character modeling, rigging, and animation. Student projects combine 3D animation and different output formats, like interactive techniques and motion design. Prerequisite: GRDS 343 or permission of instructor.

GRDS 042 Rough Cuts: An Introduction to Video 3 cr.
Filmmaking is used here as an umbrella term, rather than referring to the actual process of shooting on film, and is used to connotate the mixed media bag of filmic narrative, including video, sound, animation and stills. All of these can come together in the making of a film. With the democratization of audio/video editing from an elite, exclusive and expensive art to a popular and commonplace tool, the art of filmmaking has become within reach of everyone with a computer. Filmmaking itself has mutated into a variety of different forms depending on the vessel, be it YouTube, cell phone video and soap operas, CCTV surveillance footage, webcams, satellite imagery, video installations, etc. The ubiquity of footage is a testament to our current audio/visual culture and the digital revolution gives everyone the access to produce work within this culture. Prerequisite: GRDS 203 or ARCH 203.

GRDS 043 Advanced Digital Animation
Building upon the foundations of the Motion Graphics course, this elective will explore the impact of time-based media on visual communication by focusing on three areas commonly dealt with in the field: The translation of information datasets into time-based media, and how the mapping of this visual information can be augmented through time and motion sequences. Creating "hero characters" within sequential narrative. Identifying the characteristics of the lead elements (humanoid or design-based) and rendering these "personalities" in the way they move.

GRDS 045 If Walls Could Talk/ Talking Walls: Urban Graffiti Animations 3 cr.
A course offered to Architecture and Graphic Design students covering the techniques, principles and processes of stop motion animation, particularly focusing on painting on walls and urban surfaces. Students are encouraged to explore the relationship of the method of expression and techniques employed with the concepts, themes and issues, using alternate interpretations beyond the literal and classical narrative constraints. Students will be examining motion, tempo, rhythm, depth, color, texture, form, matter and spatial representation and relation. By the end of the course the students will produce a complete edited stop motion animation short film that will be publicly screened in the original setting. Prerequisite: GRDS 305, or permission of instructor for students in Architecture.

GRDS 046 Um Kalthoum: A Study of Kinetic Type 3 cr.
The course seeks to expand the student's typographic vocabulary through time based composition, sound, and animation. Students will examine the role of kinetic type in message making, considering the choreographic, musical, painterly, sculptural, architectural, metaphoric, musical, and liquid roles that letterforms may assume in two and three dimensional time based situations. Prerequisite: GRDS 252 or permission of instructor for students in Architecture.

Typography

GRDS 050 Introduction to Arabic Type Design 3 cr.
This is an advanced course in typography introducing students to the creation of Arabic fonts. In addition to providing necessary knowledge on the history of Arabic calligraphy and the modern developments of Arabic type, the course consists of two main approaches to learning the skills and methods of designing Arabic typefaces. The first consists of hands-on exercises dealing with basics of Arabic type design, including hand drawn lettering and workshops in calligraphy. The second involves learning the computer-based techniques needed to digitize typefaces and generate working Arabic Open Type fonts, the latter will be facilitated through introductory lectures and applied exercises. Prerequisite: GRDS 251.

GRDS 053 Advanced Arabic Typography 3 cr.
In addition to a new and summarized historical overview, the study of Arabic calligraphy involves dealing with the problem facing this traditional art in its efforts at modernization, innovation, and adaptation to new technologies. This consists of two approaches to the subject, one that looks at the Arabic script as an art by itself: calligraphy; and the other that ponders its reformist and media function, or its applications in modern life. Prerequisite: GRDS 252.

Professional Practice

GRDS 060 Critical Mapping 3 cr.
The course aims to introduce students to the possibilities of mapping as a research method and a tool of visual representation. A critical understanding of the history of cartography and mapping practices combined with a theoretical positioning of the map as a socio-political product supports and informs the practical dimensions of the course. Prerequisite: GRDS 203 or ARCH 203.

GRDS 061 GraFix in the Environment 3 cr.
We are bombarded daily with visual clutter, noise, buildings, people, beggars, clothing, shops, garbage, cars, horns, broken sidewalks you name it! Then there are signage, posters, and billboards! All are components of our GraFix in the Environment! This course is based on research, presentations, and a series of small projects illustrating the various aspects of ‘GraFix.’ Prerequisite: GRDS 203 or permission of instructor for architecture students.

GRDS 065 Visual Inquiries: Investigations of the Everyday 3 cr.
In this course, we will be investigating diverse methodologies of visual exploration through a series of exercises, games and projects. As innovative contributions to the discipline, students will be invited to develop their own design research methods, valuable for varied authored and commissioned design projects, through both practical and theoretical examinations. Focus will be on sketching/drawing/making as integral to the design research processes.
GRDS 066  Hijaz Railway: Stations of Time  3 cr.
Through this course the student will explore the language of comic art: building a textual and visual narrative, developing the word image relationship, investigating temporal translations and expanding the concept of time. They will explore comics as a storytelling art form where emphasis is placed on narrative concepts as well as advanced technical and media skills. Students will explore ways in which images can tell a full story independent of the written word, through tone, pace, time, and implied dialogue, thereby expanding the storytelling range.
Department of Civil and Environmental Engineering

Chairperson: El Fadel, Mutasem
Professors: Ayoub, George; Basha, Habib; Chehab, Ghassan; El Fadel, Mutasem; Hamad, Bilal; Harajli, Mohamed; Kaysi, Isam; Mabsout, Mounir; Sadek, Salah; Suidan, Makram
Professor Emeritus: Iliya, Raja
Associate Professor: Chehab, Ghassan
Assistant Professors: Abou Najm, Majdi; Abou Zeid, Maya; Alameddine, Ibrahim; El-Khoury, Hiam; Hamzeh, Farook; Hantouche, Elie; Najjar, Shadi; Saad, George; Salam, Darine
Part time Senior Lecturer: Azar, Kamal
Part time Lecturers: Basha, Hisham;; El Souri, Amer; Fawwaz, Youssef; Inglessis, Constantine; Nader, Halim; Nasreddine, Khaldoun; Sadeck, Salah El-Dinn
Instructor: Hasbini, Hayssam
Laboratories: El Khatib, Helim; Semerjian, Lucy

Undergraduate Programs

The Department of Civil and Environmental Engineering (CEE) offers the degrees of Bachelor of Engineering (BE): major, Civil Engineering (CE); and Bachelor of Science (BS): major, Construction Engineering (ConsE).

The mission of the undergraduate programs of the CEE department is to provide a stimulating and supportive environment for high-standard education; to prepare graduates for a lifelong productive career in addressing problems in a rapidly changing world, while instilling in them an appreciation of leadership qualities, professionalism, and ethics; to provide professional services of the highest quality to the community; and to contribute to expanding the knowledge and technological base in civil and environmental engineering.

Bachelor of Engineering (BE), Specialization: Civil Engineering (CE)

Program Educational Objectives

The objectives of the CE program are to see our graduates move on to become:

- Engineers who hold central positions in various sub-disciplines of civil engineering in local, regional, and international practice.
- Graduates who are admitted and successfully completing advanced degrees in leading universities around the world.
- Leaders in their profession and in the service of their community.
## Curriculum

### Term I (Fall) Credits

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CIVE 200</td>
<td>Introduction to Civil Engineering</td>
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<tr>
<td>EECE 230</td>
<td>Introduction to Programming</td>
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<tr>
<td>MATH 201</td>
<td>Calculus and Analytical Geometry III</td>
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<tr>
<td>PHYS 210</td>
<td>Introductory Physics II</td>
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<td>PHYS 210L</td>
<td>Introductory Physics Laboratory II</td>
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<td>CIVE 210</td>
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<td>EECE 210</td>
<td>Electric Circuits</td>
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<td>MECH 220</td>
<td>Engineering Graphics</td>
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<tr>
<td>MATH 202</td>
<td>Differential Equations</td>
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<td>ENGL 206</td>
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<td>Ethics Elective (An Approved General Education Humanities Course)</td>
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<td>CIVE 310</td>
<td>Mechanics of Materials</td>
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<tr>
<td>CIVE 320</td>
<td>Construction Materials and Technologies</td>
</tr>
<tr>
<td>CIVE 350</td>
<td>Environmental Engineering</td>
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<tr>
<td>CIVE 370</td>
<td>Introduction to Information Technology</td>
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<td>Numerical Computing</td>
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### Term V (Spring) Credits

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<tr>
<td>CIVE 311</td>
<td>Structures I</td>
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<tr>
<td>CIVE 340</td>
<td>Fluid Mechanics and Laboratory</td>
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<tr>
<td>CHEM 202</td>
<td>Introduction to Environmental Chemistry</td>
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<td>CHEM 203</td>
<td>Introductory Chemical Techniques</td>
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### Term VI (Summer) Credits

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<td>CIVE 410</td>
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<td>CIVE 420</td>
<td>Concrete I</td>
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<td>CIVE 440</td>
<td>Hydraulics and Laboratory</td>
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<td>CIVE 460</td>
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<td>CIVE 421</td>
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<td>CIVE 431</td>
<td>Soil Mechanics and Laboratory</td>
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<td>CIVE 441</td>
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<td>CIVE 450</td>
<td>Water and Wastewater Treatment and Laboratory</td>
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### Term IX (Summer) Credit

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### Term X (Fall) Credits

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<td>CIVE 530</td>
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<td>CIVE 580</td>
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### Term XI (Spring) Credits

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**Total = 143 credit hours**

1 b. stands for billing
Technical Electives of Term X and Term XI
- CIVE 503 Special Topics in Civil and Environmental Engineering
- Undergraduate (500 series) or graduate (600 series) courses in Civil and Environmental Engineering
- Approved courses from other departments

Bachelor of Science (BS), Specialization: Construction Engineering (ConsE)

Program Educational Objectives
The objectives of the ConsE program are to see our graduates move on to become:
- Engineers who hold central positions in local, regional, and international construction engineering practice;
- Engineers who are involved in landmark projects and who contribute to the advancement of the local and regional construction industry;
- Leaders in their profession and in the service of their community.

Curriculum

<table>
<thead>
<tr>
<th>Term I (Fall)</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CIVE 200  Introduction to Civil Engineering</td>
<td>2</td>
</tr>
<tr>
<td>CIVE 210  Statics</td>
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</tr>
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<td>PHYS 210  Introductory Physics II</td>
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<td>ENGL 203  Academic English</td>
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<th>Term II (Spring)</th>
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<tr>
<td>CIVE 310  Mechanics of Materials</td>
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<td>CIVE 371  Introduction to Information Technology</td>
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<td>CIVE 361  Surveying for Construction Engineering</td>
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<td>STAT 230  Introduction to Probability and Random Variables</td>
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<td>ENGL 206  Technical English</td>
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<tr>
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<tbody>
<tr>
<td>CIVE 311  Structures I</td>
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<tr>
<td>CIVE 321  Construction Materials and Quality Control</td>
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<td>CIVE 350  Environmental Engineering</td>
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<td>CHEM 203  Introduction Chemical Techniques</td>
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<td>2nn Math/Science Elective</td>
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<table>
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<tr>
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<td>CIVE 420  Concrete I</td>
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<tr>
<td>CIVE 580  Construction Management</td>
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<tr>
<td>CIVE 582  Construction Methods and Safety</td>
<td>3</td>
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<tr>
<td>CIVE 460  Highway Engineering</td>
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<tr>
<td>Social Science Elective</td>
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<tr>
<th>Term VI (Summer)</th>
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<tr>
<td>CIVE 583  Supervised Internship</td>
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<th>Term VII (Fall)</th>
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<tr>
<td>CIVE 440  Hydraulics and Laboratory</td>
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<tr>
<td>2nn Humanities Elective</td>
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<tr>
<td>CIVE 584  Building Construction and Estimating</td>
<td>3</td>
</tr>
<tr>
<td>CIVE nnn  Free Construction Engineering Elective</td>
<td>3</td>
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<tr>
<td>ECON 212  Elementary Macroeconomic Theory</td>
<td>3</td>
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<tr>
<td>An Ethics Course Approved for GE Humanities Credit</td>
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<th>Term VIII (Spring)</th>
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<tr>
<td>2nn MATH/Science Elective</td>
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<tr>
<td>CIVE 431  Soil Mechanics and Lab</td>
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<tr>
<td>CIVE 585  Construction Planning and Scheduling</td>
<td>3</td>
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<td>CIVE nnn  Free Construction Engineering/CEE Elective</td>
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<td>2nn Humanities Elective</td>
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**Total = 110 credit hours**
Course Descriptions

CIVE 200  Introduction to Civil Engineering  2 cr.
An introductory course to the world of civil engineering including significant developments in the field, both current and future. The course gives an overview of civil engineering as a profession covering aspects of concept, design, and execution through seminars, case studies, field trips, laboratory experimentation, and hands-on group projects.

CIVE 220  Construction Drawing  2 cr.
An introductory course on 2-D drawing, orthogonal projection, auxiliary views, sectioning and sectional views, dimensioning and tolerance schemes, and standard layouts. Introduction to use of CAD in civil and construction engineering. Interpretation of typical civil engineering drawings. Using CAD to generate plans, cross section and profile drawings, and detail drawings.

CIVE 210  Statics  3 cr.
A course outlining vector mechanics of forces and moments; free-body diagrams; equilibrium of particles and rigid bodies in two and three dimensions; plane and space trusses; frames and machines; axial, shear, and moment diagrams of beams and simple frames; friction; center of gravity and centroid; area moment of inertia; computer applications. Pre- or corequisite: MATH 201.

CIVE 310  Mechanics of Materials  3 cr.
A course on stresses, strains, and stress-strain relationships; temperature; axial bars in tension and compression; torsion of circular bars; bending and shear stresses in beams; combined stresses; stress transformation and Mohr’s circle; and computer spreadsheet. Prerequisite: CIVE 210.

CIVE 311  Structures I  3 cr.
An introductory course covering equilibrium, stability, and determinacy; influence lines for beams and trusses; deflection of beams and frames by double-integration method, moment-area theorems, and conjugate beam; introduction to indeterminate structures; approximate analysis of indeterminate building frames; computer structural analysis applications; project building modeling and assessment. Prerequisite: CIVE 310.

CIVE 320  Construction Materials and Technologies  2 cr.
Introduction to the composition and properties of engineering materials such as asphalt, cement, concrete, geological materials, steel, polymers, and wood. Hands on laboratory experiments and demonstrations are part of the course, and are designed to familiarize the student with the materials, testing methods, equipment, and standards.

CIVE 321  Construction Materials and Quality Control  3 cr.
A course that covers materials used in construction; physical and mechanical properties of construction materials such as asphalt, pavement base materials, Portland cement concrete, steel, polymers, wood, aluminum, and advanced composite materials; proportioning of concrete mixtures including admixtures; and hands on laboratory experiments and demonstrations to familiarize students with testing methods, equipment, standards, and quality control procedures.

CIVE 340  Fluid Mechanics and Laboratory  3 cr.
A course that deals with fluid properties, fluid static, continuity equation, Bernoulli’s equation, energy principle, momentum principle, laboratory experiments.

CIVE 350  Environmental Engineering  3 cr.
A course that introduces the fundamentals of environmental engineering. A screening course of major topics in environmental engineering including water and wastewater, environmental hydrology, environmental hydraulics and pneumatics, air, solid waste, environmental modeling, and hazardous waste.

CIVE 351  Environmental Microbiology  3 cr.
A course that introduces the basic principles of environmental microbiology and discusses example applications from the natural and engineered worlds. The main goals of this course are to present an overview of important micro-organisms involved in environmental systems, their ecology, their interactions with various pollutants, and their beneficial or harmful effects on humans.

CIVE 360  Surveying  2 cr.
A course on the theory of measurements and errors; linear measurements; surveying instruments; leveling; angles, bearings, and azimuths; stadia measurements; traversing–field aspects; traverse computations and adjustment; topographic surveying; triangulation.

CIVE 361  Surveying for Construction Engineering  3 cr.
A course on the theory of measurements and errors; linear measurements; surveying principles and instruments; leveling; angles, bearings, and azimuths; stadia measurements; traversing–field aspects; traverse computations and adjustment; topographic surveying; triangulation; fundamentals of surveying for building and infrastructure construction; setting out horizontal and vertical curves; setting out engineering structures and construction projects.

CIVE 370  Introduction to Information Technology  3 cr.
The course introduces students to the main features of the Information Technology (IT) with emphasis on applications to civil engineering. Specifically, the course content includes presentation of several software applications and programming tools including: MS Word, Excel, PowerPoint, VBA, Visio, GIS and database technology and object-oriented programming.

CIVE 371  Introduction to Information Technology (ConsE)  4 cr.
A course introducing students to the main features of Information Technology (IT) with emphasis on applications to civil engineering. This course covers several software applications and programming tools including: FrontPage, Excel, VBA, Access, Visio, and database technology. The course also introduces students to basic programming skills using Matlab.

CIVE 410  Structures II  3 cr.
A course on the stability and determinacy of structures; energy theorems and applications to trusses, beams, and frames; analysis of statically indeterminate structures by flexibility (force) and stiffness methods; introduction to the direct stiffness method; influence lines for indeterminate structures. Prerequisite: CIVE 311.

CIVE 420  Concrete I  3 cr.
A course that covers the mechanical properties of concrete materials; ultimate strength theory of flexure and shear; flexural and shear design of beams; service load behavior; bond properties of reinforcing bars; design of solid and ribbed one-way slabs. Prerequisite: CIVE 310.

CIVE 421  Concrete II  3 cr.
This is a course that covers continuous beams, short columns, slender columns, and biaxially bent columns; wall footings, concentrically and eccentrically loaded single column footings, and combined footings; staircases; bearing walls; cantilever retaining. Prerequisite: CIVE 420.
CIVE 430  Engineering Geology  3 cr.
This is a course that discusses the composition and properties of rocks; geologic processes; geologic hazards; geologic structure and engineering consequences; terrain analysis and geologic mapping; interpretation and use of geologic maps; application of geology to engineering practice. Annually.

CIVE 431  Soil Mechanics and Laboratory  3 cr.
A course on soil classification and index properties; soil structure and moisture; compaction; seepage; effective stress concept; compressibility and consolidation; stress and settlement analysis; shear strength; and laboratory experiments. Prerequisites: CIVE 310 and CIVE 430.

CIVE 440  Hydraulics and Laboratory  3 cr.
A course that covers flow in conduits, flow in open channels, flow measurements, and laboratory experiments. Prerequisite: CIVE 340.

CIVE 441  Engineering Hydrology  3 cr.
A course outlining hydrologic principles, rainfall-runoff analysis, flood routing, frequency analysis, and ground water hydrology.

CIVE 450  Water and Wastewater Treatment and Laboratory  3 cr.
A course that examines the quality and treatment methods of water and wastewater; testing for physical, chemical, and biological parameters. Prerequisite: CIVE 350.

CIVE 460  Highway Engineering  3 cr.
A course that examines road vehicle performance; principles of geometric design and highways; horizontal and vertical alignment; earthwork; intersections and interchanges; parking facilities; basic traffic models; queuing theory and traffic analysis; travel demand forecasting. Prerequisite: CIVE 360.

CIVE 461  Transportation Engineering and Laboratory  3 cr.
Introduction to the field of transportation engineering through presenting the basics of traffic engineering, traffic flow theory, and pavement design. The laboratory component consists of carefully structured experiments that reinforce students’ understanding of the academic concepts and principles.

CIVE 580  Construction Management  3 cr.
A course that seeks to impart in students a sound understanding of the fundamental principles of construction management as applied to development of building and infrastructure projects. The course includes construction company and project organization, pre-construction activities, estimating and bidding, staffing for construction, macro-level planning and scheduling, and quality control.

CIVE 582  Construction Methods and Safety  3 cr.
A course that exposes students to the real world of construction and the complexity of managing machines, material and people with the one goal, to be on time and on budget while performing safely. The course content includes the selection of construction equipment and material based on applications, methods, and production requirements for earthmoving, heavy and building construction. Prerequisite: CIVE 321.

CIVE 583  Supervised Internship  1 cr.
Prerequisites: CIVE 580 and CIVE 582.

CIVE 584  Building Construction and Estimating  3 cr.
The course exposes students to building systems and how to integrate them by choosing the best materials and methods. The course will have particular emphasis on mechanical and electrical equipment in buildings, roofing, glazing, cladding, interior finishes, partitions, cost estimation and construction of the various systems. The presentation of professional construction documents including execution drawings, details, and specifications will also be covered. Prerequisite: CIVE 583.

CIVE 585  Construction Planning and Scheduling  3 cr.
The course exposes students to basic concepts and methodology for making rational decisions in the design and implementation of real construction projects. The course content includes the investigation of the planning activities and scheduling techniques used in construction projects. This includes basic CPM-related techniques such as precedence diagrams computations, resource allocation and leveling, cost analysis, time-cost trade-off analysis, updating schedule, etc. in addition to Program Evaluation Review Techniques (PERT), and computer applications (Primavera). Prerequisite: CIVE 584.

CIVE 530  Foundation Engineering  3 cr.
A course on the structure of construction documents and their interrelationships; bidding requirements; general and particular contract conditions; administrative and procedural requirements for construction; technical specifications; construction cost estimation processes; and unit rates determination and pricing.

Special Courses

CIVE 500  Approved Experience  0 cr.
Students are placed for eight full weeks at a recognized consulting and/or contracting firm in Lebanon or abroad, in a capacity which ensures that they apply their knowledge and acquire professional experience in the field of Civil Engineering.

CIVE 501  Final Year Project I  1 cr.
A chosen design topic and preparation of a detailed execution program for CIVE 502, through comprehensive research with the guidance and approval of the faculty.

CIVE 502  Final Year Project II  3 cr.
A supervised project in groups of normally three students aimed at providing practical design experience in a civil and environmental engineering application. Prerequisite: CIVE 501.

CIVE 503  Special Topics in Civil and Environmental Engineering  3 cr.
Construction Sequence

CIVE 680  Advanced Construction Scheduling  3 cr.
A course that provides advanced techniques in schedule development and implementation for effective project management during the programming or construction phase of a project. It examines monitoring, updating, and controlling the project schedule; analyzing time-related change orders and delays; network and non-network models; advanced resource leveling algorithms, money and network schedules, impact of scheduling on productivity, short-interval schedules, CPM in dispute resolution and litigation, advanced linear scheduling and PERT techniques, operational planning and scheduling, and use of scheduling software (primavera). Prerequisite: CIVE 585 Construction Planning and Scheduling.

CIVE 681  Infrastructure Construction and Rehabilitation  3 cr.
This is a course on urban requirements and engineering technologies and procedures for construction of infrastructure facilities including: roads and pavements, bridges, water and sanitary networks, electric power lines, and telephone/communication lines; as well as their applications to urban and rural areas. The course content includes as well the study of quality (QA/QC), environment, and safety standards and their integration and management in construction projects.

CIVE 682  Construction Business Management  3 cr.
A course that covers the principles of business management of construction companies - theory as well as international and regional practice; an overview of construction business operations including strategic planning, organizational structure, accounting, financing, risk analysis, and quality; and the principles and sources of construction funding for contracting firms and projects.

CIVE 683  IT Applications in Construction  3 cr.
A course that covers computing tools impacting the construction industry and the analysis techniques used to determine company automation requirements; mobile computing and information systems to support field engineering tasks; computerized systems applications to perform specific functions, such as estimating, scheduling, cost control; emerging sensing and instrumentation technologies to solve construction problems and case studies.

CIVE 684  Building Information Modeling  3 cr.
A course that covers Building Information Model (BIM) use and benefits in the industry by different disciplines — integrated management of building data during its life cycle, three-dimensional, real-time, dynamic building modeling techniques to increase productivity in building design and construction; examination of BIM which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components required for estimation, bidding and scheduling into the model.

CIVE 685  Design and Analysis of Construction Operations  3 cr.
A course that covers planning and simulation modeling of construction operations, design of efficient processes, productivity and resource use considerations, site layout design and analysis, preplanning for construction operations, use of quantitative methods and queuing theory, and the effects of new technologies on construction operations.

CIVE 686  Lean Construction Methods and Applications (Blended)  3 cr.
In this course, students will learn about the Toyota production system, the last planner system, value stream mapping, process improvement and other lean topics. Students will also learn fundamental project management concepts and techniques to define, plan, and execute construction projects. The focus will be on actions that can be taken to meet and sometimes exceed expectations for project time, cost, and quality. The importance of communication and risk management throughout all project stages will be emphasized. Students will also be exposed to software applications that aid project management. Students will be challenged as individuals and as members of a team. Prerequisites: CIVE 580 and working knowledge of Microsoft Excel, statistics, and probability theory.

CIVE 687  Construction Methods and Safety  3 cr.
A course that exposes students to the real world of construction and the complexity of managing machines, material and people with the one goal, to be on time and on budget while performing safely. The course content includes the selection of construction equipment and material based on applications, methods, and production requirements for earthmoving, heavy and building construction. Prerequisite: CIVE 320.

CIVE 690  Construction Technology for Tall Buildings  3 cr.
This is a course that introduces the latest construction practices and processes for tall buildings from foundation to roof. It covers advanced methods, materials, equipment, and systems used for the construction of tall buildings, as well as principles of sustainable construction. It examines site investigation, excavation and foundations, basement construction, structural systems for the superstructure, site and material handling, wall and floor construction, cladding, and roof construction. Prerequisites: CIVE 582 and CIVE 584.

CIVE 691  Construction Decisions under Uncertainty  3 cr.
This is a course that covers construction project and organization decisions for the uncertain future. The selection of construction method, equipment, contract, markup, and financing alternatives having the highest expected values; uses decision theory, competitive bid analysis, probabilistic modeling and simulation, and multiple regression analysis in managing construction.

CIVE 692  Construction Safety  3 cr.
A course that covers basic safety and loss control concepts, practices, and skills to improve construction job site safety; OSHA regulations, accidents, ergonomics, documentation, safety policies and procedures; safe work environments; crisis management; and other safety related topics.

CIVE 693  Design of Temporary Support Structures  3 cr.
A course that covers design and construction of temporary support structures used in the construction industry, including concrete formwork, scaffolding, caissons, cofferdams, and dewatering systems.

CIVE 694  Legal Aspects of Construction  3 cr.
This is a course that covers legal problems and liability issues in the area of construction contracts, torts, and insurance.

CIVE 695  Sustainable Design and Construction  3 cr.
This is a course that covers principles of sustainable design and construction, including life-cycle cost analysis, evaluation of economic and environmental impacts, state-of-the-art technology, and so on.
CIVE 696  Evaluation of Cost Alternatives  3 cr.
This is a course that covers the basic principles of economic evaluations using fundamental concepts of time value of money to compare cost alternatives related to construction, design, and real property development.

Structural Sequence

CIVE 610  Advanced Structural Analysis  3 cr.
A course that offers a review of matrix algebra; basic principles of structural analysis; stiffness, flexibility, and energy methods; direct stiffness method for plane and space trusses and frames; linear and non-linear problems; special problems; and computer programming and applications. Prerequisite: CIVE 410.

CIVE 620  Concrete Technology  3 cr.
This is a course that examines portland cements; aggregates; pozzolans; proportioning normal concrete mixtures; pumping concrete; consolidating, finishing, and curing concrete; durability; testing hardened concrete; high-strength concrete; light and heavy weight concretes; and hot and cold weather concreting.

CIVE 621  Special Topics in Concrete  3 cr.
This is a course that reviews reinforced concrete (R/C) design; torsion in R/C members; wind load on structures; earthquake load and seismic design of structures; design of shear walls; design of corbels, brackets, and deep girders; circular and rectangular water tanks; and spherical. Prerequisites: CIVE 410 and CIVE 421.

CIVE 622  Prestressed Concrete  3 cr.
A course on material characteristics; prestress losses; working strength design procedures; composite construction; ultimate flexural strength and behavior; shear design; continuous prestressed concrete members. Prerequisites: CIVE 420 and CIVE 421.

CIVE 623  Bridges  3 cr.
A course that discusses types of bridges; influence lines; loads and their distribution on bridges; serviceability of bridges; methods of design of bridge deck, superstructure, and substructure. Prerequisites: CIVE 410 and CIVE 421.

CIVE 624  Steel Design  3 cr.
A course that examines loads on structures; philosophies of design; LRFD versus ASD; behavior, analysis, and design (according to AISC) of tension members, bolted connections, welded connections, compression members, and beams. Prerequisite: CIVE 410.

CIVE 625  Strengthening and Rehabilitation of Concrete Structural Systems  3 cr.
This is a course on assessment of materials and structural deficiency using field test or analytical methods; repair and strengthening materials; strengthening and repair techniques; strengthening of structural members in flexure, shear and axial load; and upgrading of gravity load-designed buildings for earthquake load resistance. Prerequisites: CIVE 410 and CIVE 421.

CIVE 626  Earthquake Engineering  3 cr.
A course that examines the nature of earthquake ground motion; seismic hazard evaluation in engineering practice; response analysis of structures and effect of soil conditions on structural response and behavior under earthquake ground motion; design of structures under earthquake loading.

CIVE 632  Reliability Based Design of Civil Systems  3 cr.
This is a course that covers applications of reliability theory in assessing the safety and reliability of civil systems in the presence of uncertainty; decision making and risk analysis; definition of the probability of failure; modeling uncertainty in resistance and load; limit states and limit state functions; approximate and exact methods for assessing reliability; load and resistance factor design (LRFD) in structural and geotechnical engineering; basics of design code calibration; reliability assessments of existing structures, updating reliability with load tests.

Geotechnical Sequence

CIVE 630  Applied Foundation Engineering  3 cr.
A course on braced excavations, retaining structures, deep foundations, slope stability, and computer applications. Prerequisite: CIVE 530.

CIVE 631  Environmental Geotechnics  3 cr.
A course on geotechnical practice in environmental protection and restoration; methods of soil and site characterization for siting of waste repositories and site restoration; influence of physical and chemical processes in soils on the evaluation of contaminant distribution; design of waste containment systems including landfills, slurry walls, and soil stabilization; the applicability and use of geosynthetics; and technologies for site restoration and cleanup. Prerequisite: CIVE 431.

CIVE 632  Soil Behavior  3 cr.
A course on soil mineralogy, soil formation, and composition; influence of geological factors on properties; colloidal phenomena in soils; soil structure; analysis of conduction phenomena (hydraulic, diffusive, thermal, and electrical); compressibility, strength, and deformation properties. Prerequisite: CIVE 431.

CIVE 634  Soil and Site Improvement  3 cr.
A course that covers compaction, admixture stabilization, foundation soil treatment, reinforced soil and composite materials, and material sites reclamation.

CIVE 635  Shear Strength of Soils  3 cr.
A course that covers stresses within a soil mass, tests to measure stress strain properties, stress-strain relationships, shear strength, drained conditions, undrained, constitutive models, and failure criteria applications. Prerequisite: CIVE 431.

Environmental and Water Resources Sequence

CIVE 640  Hydraulic Structures  3 cr.
A course that covers closed conduit flow, water distribution systems, transient analysis, open channel flow, flood control, culvert hydraulics, design of various hydraulic structures. Prerequisite: CIVE 440.

CIVE 641  Surface Water Hydrology  3 cr.
A course on design storm, rainfall-runoff modeling, overland flow, flood routing, reservoir routing, simulation models, and stochastic hydrology. Prerequisite: CIVE 441 or equivalent.

CIVE 642  Groundwater Hydrology  3 cr.
This is a course that deals with properties of groundwater, Darcy's Law, steady groundwater flow, unsteady groundwater flow, well hydraulics, unsaturated flow, sea-water intrusion, and numerical modeling. Prerequisite: CIVE 441.
CIVE 643 Hydraulics of Open Channels 3 cr.
A course that examines gradually varied flow theory and analysis, spatially varied flow, and numerical modeling of unsteady flow in open channels. Prerequisite: CIVE 440.

CIVE 646 Coastal Engineering 3 cr.
A course on small-amplitude wave theory (linear theory); finite-amplitude wave theory (nonlinear theory); cosexual wave theory; solitary wave theory; wave refraction, diffraction, and reflection; wave forces and interaction with man-made structures; and design of maritime structures e.g. breakwaters. Prerequisite: CIVE 440.

CIVE 645 Transport Phenomena in Surface and Subsurface Waters 3 cr.
A course on advection, diffusion, and dispersion of pollutants; transport in rivers and estuaries; transport in groundwater; numerical modeling; design of wastewater discharge system.

CIVE 646 Water Resource Systems: Planning and Management 3 cr.
A course that introduces the concepts and principles of water resources planning and management. It demonstrates the logical steps in engineering planning as it applies to water resources management. The course provides coverage of mature and state of the art technologies and tools applied in the water resources industry. Emphasis will be placed on systems analysis, GIS, and economic and financial analysis, environmental impact assessment techniques.

CIVE 647 GIS for Water Resources and Environmental Engineering 3 cr.
A course that introduces the concepts and principles of Geographic Information Systems (GIS) from the perspective of water resources and environmental engineering. It provides coverage of state-of-the-art GIS methods and tools, specifically targeting water resource and environmental applications including: spatial and temporal analysis, geostatistical analysis, watershed delineation and identification of river networks, representation of groundwater and aquifer systems, time series analysis, and development of GIS integrated water and environmental models.

CIVE 648 Climate Change and Water Resources 3 cr.
The course introduces students to the global issue of climate change and its potential impact on water resources and implications for their management particularly in the semi-arid MENA region. It explores the drivers of climate change, greenhouse gases mitigation efforts, and adaptation options in the water resources sector with special emphasis on the Integrated Water Resources Management (IWRM) and adaptive management approach.

CIVE 649 Microbial Ecology and Molecular Biology for Engineers 3 cr.
A course that introduces students (undergraduate and graduate) from different engineering disciplines to the concepts and tools in microbial ecology and how to apply these concepts and tools to understand microbial communities underpinning environmental biotechnology processes. Prerequisites: CHEM 202, BIOL 210, or equivalent.

CIVE 650 Methods of Environmental Sampling and Analysis 3 cr.
A course on sampling techniques and instrumental methods in environmental sciences; determination of pollutants in water, air, and soil; analytical techniques; adaptation of procedures to specific matrices; case studies.

CIVE 651 Environmental Chemistry and Microbiology 3 cr.
A course that deals with organic, inorganic, and physical chemistry; chemical equilibrium; reaction kinetics; acidity, alkalinity; composition, morphology, and classification of microorganisms; energy, metabolism, and synthesis; growth, decay, and kinetics; and biological water quality indicators. Prerequisites: CHEM 202, BIOL 210, or equivalent.

CIVE 652 Environmental Biotechnology and Bioremediation Applications 3 cr.
This course examines current and emergent environmental biotechnologies used for environmental quality evaluation, monitoring, and remediation of contaminated environments, and provides the student with a working knowledge of the science that underpins them. The fundamentals of environmental microbiology are presented; these provide a foundation for subsequent discussions of biotreatment of problem environmental pollutants, and engineering strategies for bioremediation.

CIVE 653 Water and Sewage Works Design 3 cr.
A course that examines the design of water and wastewater schemes, including design reports and a literature search on the development of conventional treatment processes. Prerequisite: CIVE 450.

CIVE 654 Solid Waste Management I 3 cr.
A course on engineering principles, practices, and techniques for the management of solid wastes: sources, composition, properties, impacts, generation, storage, collection and transport, processing, resource recovery, and disposal. Prerequisites: recommended but not required CHEM 201 and MATH 201.

CIVE 655II Solid Waste Management II 3 cr.
A course on the design of solid waste disposal schemes, including design reports and a literature search on the development of conventional treatment and disposal processes. Prerequisite: CIVE 654 or consent of instructor.

CIVE 655 Surface Water Quality Modeling & Management 3 cr.
This course will introduce students to surface water quality pollution problems in streams, rivers, lakes, reservoirs, and estuaries. The course will focus on both the quantitative modeling aspects of surface water quality alongside the management and policy aspects relating to the problem. Both mechanistic and empirical models for assessing the status of surface water bodies and for predicting the fate of pollutant discharge into surface water bodies will be introduced throughout the course. The main aim of this course is to develop the students' skills needed to model a natural surface water system and to assess whether the system meets designated use criteria within realistic constraints.

CIVE 656I Air Pollution and Control I 3 cr.
A course on engineering principles, practices, and techniques for the management of air pollution: Types, sources, properties, impacts, standards, control technologies and equipment, atmospheric dispersion, transport sector, and indoor air quality. Prerequisites: recommended but not required CHEM 201 and MATH 201.

CIVE 656II Air Pollution and Control II 3 cr.
A course that examines process analysis, operational limitations, cost and performance, and evaluation of control process and equipment; and case studies, field visits, and inspection of industrial installations. Prerequisite: CIVE 656 or consent of instructor.

CIVE 657 Experimental Design and Statistical Analysis for Engineers 3 cr.
A course that covers the main steps required to efficiently plan, conduct, analyze, and interpret the results from an experiment. The main aim is to maximize statistical inference, minimize cost, and quantify uncertainty. The course will also cover concepts in statistical analysis and modeling that are often used to analyze experimental and observational data (e.g. ANOVA, t-tests, regression models, and non-parametric tests). In addition to introducing relevant statistical concepts, the course will go over a myriad of practical examples and engineering related case studies. The course will include a lab session, where the students will learn how to implement the introduced concepts in a statistical modeling environment.
CIVE 658  Industrial/Hazardous Waste Management  3 cr.
A course on engineering principles, practices, and techniques for the management of industrial- 
hazardous wastes: sources, generation, properties, impacts and auditing of industrial 
facilities. Basic treatment processes and disposal methods. Site remediation. Prerequisite: recommended but not required CHEM 201 and MATH 201.

CIVE 659  Environmental Impact Assessment  3 cr.
A course on procedures of assessing/preparing/reviewing/presenting environmental impacts 
of developmental projects/facilities: industrial, waste management/disposal, wastewater 
treatment, transportation, dams, reservoirs, irrigation/drainage, coastal zone developments, 
natural forest management, plantation development/reforestation, and so on. Prerequisite: recommended any course from: CIVE 650 to CIVE 659 and CIVE 640 to CIVE 647.

Materials and Pavement Sequence

CIVE 620  Concrete Technology  3 cr.
(Course description: The course is listed in the Structural Sequence.)

CIVE 660  Pavement Engineering  3 cr.
A course examining highway and airport pavement design; flexible and rigid pavement types 
and wheel loads; stresses in flexible and rigid pavements; pavement behavior under moving 
loads; soil stabilization. Prerequisite: CIVE 461.

CIVE 667  Highway Materials and Construction  3 cr.
The course covers various materials constituents in highway pavement structures with 
emphasis on asphalt concrete, aggregate-soil mixtures, geotextiles, and bituminous liquids. 
Materials properties, design, quality control and methods of construction will be described. 
Forensic studies, distress surveys, non-destructive and accelerated pavement testing are also 
discussed. Prerequisite: STAT 230.

Transportation Sequence

CIVE 661  Urban Transportation Planning I  3 cr.
An introductory course on methods and models used in transportation planning with emphasis 
on the urban context. Prerequisite: CIVE 461.

CIVE 662  Traffic Engineering  3 cr.
A course outlining traffic engineering studies; traffic control of signalized and unsignalized 
intersections; signal control hardware and maintenance; arterial performance and operations; 
and network optimization. Prerequisite: CIVE 461.

CIVE 663  Transportation Systems Analysis  3 cr.
A course on transportation and traffic problems in modern society. Among the topics covered 
are travel forecasting problems and methods; theoretical techniques for traffic flow description 
and management; highway, railway, and runway capacity and performance characteristics; 
economic considerations; and cost functions.

CIVE 664  Design and Management of Transport Operations  3 cr.
A course that covers the application of quantitative techniques from operations research 
and probabilistic analysis to transportation problems. Applications covered include: pickup 
and delivery systems, emergency urban services, facility location, and network problems. 
Prerequisite: STAT 230 or equivalent.

CIVE 665  Transportation Economics  3 cr.
A course that investigates the application of economic principles to the evaluation of projects 
and policies in the transport sector such as transport project benefits, costs, and financing, 
and pricing in the transport sector.

CIVE 666  Transport Operations  3 cr.
A course that introduces probabilistic and optimization methods for designing efficient 
operations in freight carrier, airline, transit, and traffic modes. Topics include crew and vehicle 
scheduling in freight, airline, and transit modes; vehicle routing problems in carrier systems; 
runway and air traffic operations; operations control in transit services; and fundamental 
relations and models of traffic flow. Prerequisite: CIVE 461.

Common Courses

CIVE 586/481  Construction Methods and Safety  3 cr.
The course exposes students to the real world of construction and the complexity of managing 
machines and people with the one goal, to be on time and on budget while performing safely. The 
course content includes the selection and utilization of construction equipment such as scrapers, 
dozers, cranes, etc., based on applications, methods, and production requirements for heavy 
and building construction. Specific topics cover power generation, transmission, and output 
capacity of equipment engines as well as calculation of transport cycle times, concreting methods 
including mixing, delivery, and placement, design of forms for concrete walls and supported slabs 
and safety and inspection requirements for construction sites and projects. Prerequisite: CIVE 320.

CIVE 670  Computer Methods in Civil Engineering  3 cr.
A course on the use of the computer for analysis, design, and decision making in civil engineering, 
including programming, numerical, and CAD methods and applications. Prerequisites: EECE 230 
and CIVE 370.

CIVE 671  Numerical Modeling  3 cr.
A course that deals with ordinary differential equations: initial-, boundary-, and characteristic- 
value problems; partial differential equations: steady state, time dependent, and oscillatory 
problems; techniques: Runge-Kutta, shooting, iterative, finite difference, and finite element 
methods.

CIVE 672  Introduction to Geographic Information Systems  3 cr.
An introductory course on Geographic Information Systems (GIS) and their applications in the 
planning and engineering fields, alternatives in computer-based graphics, data concepts and 
tools, network data management and planning applications, and implementation issues. This 
course satisfies the departmental requirements in all graduate engineering programs.

CIVE 673  Infrastructure Systems Management  3 cr.
A course on modeling and optimization methods and their application to inspection, performance 
prediction and maintenance decision making for the management of infrastructure systems.
The Department of Electrical and Computer Engineering offers two undergraduate programs leading to the degree of Bachelor of Engineering, and a minor in Biomedical Engineering.

Undergraduate Programs

The Department of Electrical and Computer Engineering offers the degree of Bachelor of Engineering in two majors:

- Computer and Communications Engineering (CCE)
- Electrical and Computer Engineering (ECE)

The mission of the undergraduate programs is to impart a basic understanding of electrical and computer engineering built on a foundation of mathematics, physical sciences, and technology; to expose students to practical and major design experiences; and to provide students with a global perspective and an awareness of their leadership role in regional development. This preparation is augmented by the liberal arts education offered to all undergraduates at the American University of Beirut.

The Electrical and Computer Engineering program provides the students with options to explore, and specialize in, one or more areas of electrical and computer engineering.

The Computer and Communications Engineering program prepares its graduates for careers and graduate studies in information and communication technologies.

The department also offers one minor in Biomedical Engineering.

Computer and Communications Engineering Program

Program Educational Objectives

The objectives of the CCE program are to graduate students able to
- achieve their employment or post graduate educational goals and
- advance in their careers through leadership, life-long learning, innovation, critical thinking, integrity, and civic responsibility.

Program Requirements

- **Mathematics**: MATH 201, MATH 202, MATH 211 or CMPS 211, MATH 218 or 219, STAT 230, and one of MATH 210, 224, 227, 251, or 261
- **Sciences**: PHYS 210, PHYS 210L, CHEM 201 or 202, CHEM 203 or 205, and one additional science elective
- **General Education Program**: Arabic course (according to APT), ENGL 206 and one other English course (excluding ENGL 204 and ENGL 208), two social sciences courses, three humanities courses.
- **ENMG 504**: Engineering Ethics
- **ENMG 400**: Engineering Economy
- **ECE Core Courses**: EECE 200, EECE 210, EECE 230, EECE 290, EECE 310, EECE 311, EECE 320, EECE 321, EECE 330, EECE 340, EECE 350, EECE 380
- **ECE Laboratories**: EECE 310L, EECE 321L, EECE 410L, two additional laboratories: one laboratory restricted and one laboratory elective
- **ECE Restricted Electives**: Four restricted elective courses from the list of CCE Focus Area courses with no more than three courses from any given area.
- **Undergraduate Elective Courses**: 6 credits of EECE 400 level courses
- **Technical Electives**: 18 credits of course work, at least six credits of which must be in ECE, subject to approval of adviser. No more than two technical electives may be taken from the same department, program, and/or track
- **Approved Experience**: EECE 500
- **Final Year Project**: EECE 501 and EECE 502

The program requirements can be completed according to the following proposed schedule.
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* b. stands for billing
List of CCE Focus Area/Courses
- Area 1: Computer Hardware Systems: EECE 412, 421, 422, 425
- Area 2: Communications and Networking: EECE 442, 451, 455
- Area 3: Software Systems: EECE 430, 431, 432, 433, 434

List of CCE Restricted Labs
EECE 412L, 435L, 442L, 451L

List of Pre-approved Technical Electives
- Any EECE course with a number equal to, or greater than 400
- Any ENMG course with a number equal to, or greater than 500, with the exception of ENMG 504
- ACCT 210
- BIOL 201, 202, 210, 223, 224, 225, 243, 244, 247, 260, 268, 290
- CHEM 200, 201, 202, 206, 208, 211, 212, 215, 217, 218, 227, 228, 229
- CIVE 460, 461, 647, 652, 656, 657, 661, 662, 663, 664, 666, 672
- DCSN 200, 210
- ENMG 220/225, 226, 225
- ENMG 210
- ENMG 201, 205, 211, 213, 219, 221
- MECH 310, 314, 320, 340, 550, 631, 633, 634, 641, 642
- MKTG 210, 225
- MNGT 218, 220, 229, 230
- PHYS 246
- PHYS 212, 217, 223, 225, 226, 235, 236, 249
- Any STAT course with a number equal to, or greater than 234

List of Science Electives
- BIOL 201, BIOL 202, BIOL 210, CHEM 201, CHEM 211, GEOL 201, GEOL 205, GEOL 211, PHYS 246, PHYS 212, PHYS 217, PHYS 223, PHYS 235, PHYS 236

Electrical and Computer Engineering Program

Program Educational Objectives
The objectives of the ECE program are to graduate students able to
- achieve their employment or post graduate educational goals and
- advance in their careers through leadership, life-long learning, innovation, critical thinking, integrity, and civic responsibility.

Program Requirements
- Mathematics: MATH 201, MATH 202, MATH 211 or CMPS 211, MATH 218 or 219, STAT 230, and one of MATH 210, 224, 227, 251, 261
- Sciences: PHYS 210, PHYS 210L, CHEM 201 or 202, CHEM 203 or 205, and one additional science elective
- General Education Program: Arabic course (according to API), ENGL 206 and one other English course, (excluding ENGL 204 and ENGL 208), two social sciences courses, three humanities courses.
- ENMG 504: Engineering Ethics
- ENMG 400: Engineering Economy
- ECE Core Courses: EECE 200, EECE 210, EECE 230, EECE 290, EECE 310, EECE 311, EECE 320, EECE 321, EECE 330, EECE 340, EECE 370, and EECE 380
- ECE Laboratories: EECE 310L, EECE 321L, EECE 410L and two additional laboratories: one laboratory restricted and one laboratory elective
- ECE Restricted Electives: Four restricted elective courses from the list of CCE Focus Area courses with no more than three courses from any given area
- Undergraduate Elective Courses: 6 credits of EECE 400 level courses
- Technical Electives: 18 credits of course work, at least six credits of which must be in EECE. No more than two technical electives may be taken from the same department, program, and/or track. All technical electives must be from the list of pre-approved technical electives.
- Approved Experience: EECE 500
- Final Year Project: EECE 501 and EECE 502

The program requirements can be completed according to the following proposed schedule:

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<thead>
<tr>
<th>Term I (Fall)</th>
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<tbody>
<tr>
<td>EECE 200</td>
<td>Introduction to Electrical and Computer Engineering</td>
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<td>EECE 210</td>
<td>Electric Circuits</td>
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<td>ENGL</td>
<td>English Course</td>
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<td>MATH 201</td>
<td>Calculus and Analytic Geometry III</td>
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<td>PHYS 210</td>
<td>Introductory Physics II</td>
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<td>MATH/CMPS 211</td>
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<td>CHEM 201/202 Chemistry Course</td>
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<td>EECE 320 Digital Systems Design</td>
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<td>EECE 330 Data Structures and Algorithms</td>
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<td>EECE 340 Signals and Systems</td>
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List of ECE Focus Area/Courses
- Area 1: Computer Hardware Systems: EECE 412, 421, 422, 425
- Area 3: Control and Intelligence Systems: EECE 460, 461, 463

List of ECE Restricted Labs
- EECE 412L, 460L, 462L, 470L, 471L, 473L

List of Pre-approved Technical Electives
- Any EECE course with a number equal to or greater than 400
- Any ENMG course with a number equal to, or greater than 500, with the exception of ENMG 504
- ACCT 210
- BIOL 201, 202, 210, 223, 224, 225, 243, 244, 247, 260, 268, 290
- CHEM 200, 201, 202, 206, 208, 211, 212, 215, 217, 218, 227, 228, 229
- CIVE 460, 461, 647, 652, 656, 657, 661, 662, 663, 664, 666, 672

b. stands for billing
Minor in Biomedical Engineering

The minor in Biomedical Engineering is open to all AUB students. Students who have completed at least 60 credits at the sophomore level and higher, and who have a cumulative average of 70 or more, may apply by completing a minor application form available in the ECE department. The minor will be indicated on the transcript of the student who completes all the requirements described below, and who obtains an average in the minor courses of 70 or more.

The minor requirements are divided into a set of core courses, and a set of elective courses.

For engineering students, the requirements are as follows:
- EECE 401 [1 cr.]
- BIOL 201 [4 cr.]
- BIOL 202 or PHYL 246 [4 cr.]
- One core course [3 cr.] chosen from EECE 601, EECE 603, or MECH 633 depending on the chosen track of Biomedical Equipment, Neuroengineering or Biomechanical, respectively.
- One elective course from list A below [3 cr.]
- One elective course from list A, B, or C below [3 cr.]
- Minimum number of credits: 18

For biology students, the requirements are as follows:
- EECE 401 [1 cr.]
- BIOL 201 [4 cr.]
- BIOL 202 or PHYL 246 [4 cr.]
- EECE 210 [3 cr.] (or equivalent, such as PHYS 228 and PHYS 228L) and EECE 601 [3 cr.] for the Biomedical Equipment and Neuroengineering track or CIVE 210 [3 cr.] (or equivalent) and MECH 634 [3 cr.], for the Biomechanics track
- One elective course from list A or B below [3 cr.]
- Minimum number of credits: 18

For other students, the requirements are as follows:
- EECE 401 [1 cr.]
- BIOL 201 [4 cr.]
- BIOL 202 or PHYL 246 [4 cr.]
- ECE 210 [3 cr.] (or equivalent, such as PHYS 228 and PHYS 228L) and EECE 601 [3 cr.] for the Biomedical Equipment and Neuroengineering tracks, or
- CIVE 210 [3 cr.] (or equivalent) and MECH 634 [3 cr.], for the Biomechanics track
- One elective course from list A, B, or C below [3 cr.]
- Minimum number of credits: 18

Elective Courses

- List A: EECE 601, EECE 602, EECE 603 (unless the student takes EECE 694, in which case either EECE 694 or EECE 603 counts toward the minor), EECE 604, EECE 605, MECH 633, MECH 634
- List B: MECH 606, MECH 607, MECH 624, MECH 631, MECH 641/EECE 661, EECE 693, MECH 705, EECE 694 (unless the student takes EECE 603, in which case either EECE 694 or EECE 603 counts toward the minor)
- List C: BIOL 202, BIOL 223, BIOL 225, BIOL 244, BIOL 263, BIOL 268, PHYL 202, PHYL 246

Track in Control and Robotics

The ECE Track in Control and Robotics provides a coherent academic framework between the ECE and ME departments in the area of control, instrumentation, and robotics. This Track supports interested undergraduate ECE and ME students in pursuing additional control system modeling and design as given in either department based on their individual preferences. This track is open to all undergraduate ECE and ME students, and will be indicated on the transcript of participating students upon its completion.

ECE students interested in taking the Control and Robotics track must satisfy the following course requirements:
- EECE 460 (3 cr.)
- EECE 461 (3 cr.)
- EECE 460L (1 cr.)
- One elective from list A (Control)
- One elective from list B (Robotics)
- One elective from either list A, B or C
- Total number of credits: 16

Elective Course

Course Descriptions

EECE 200  Introduction to Electrical and Computer Engineering  3 cr.
This course includes the following topics: an overview of electrical and computer engineering; engineering as a profession; introduction to the different areas of ECE such as biomedical systems, circuits, communications, computer design, control, distributed systems, electromagnetics, energy, machines, and signal processing; basic computer tools such as SPICE, MATLAB, and LabVIEW; basic laboratory instruments; laboratory experiments and a design project.

EECE 210  Electric Circuits  3 cr.
This course includes the following topics: circuit variables and elements, Kirchhoff's laws, basic analysis of resistive circuits, Thévenin's and Norton's equivalent circuits, circuit simplification, sinusoidal steady-state analysis, linear and ideal transformers, power relations, Fourier series and responses to periodic inputs, and circuit simulation using SPICE.

EECE 230  Introduction to Programming  3 cr.
A course on the basic principles of programming and their application to the solution of engineering problems using a high level programming language. This course introduces structured and object-oriented programming, and covers the basic data types, control structures, functions, arrays, pointers, and classes. Weekly laboratory assignments are an integral part of this course.

EECE 290  Analog Signal Processing  3 cr.
A course on circuit solution and analysis in the s and frequency domains. It includes operational amplifiers, step and steady-state response of RLC, and RLC circuits, Laplace transform and its use in circuit analysis; frequency-selective circuits; active filter circuits; Fourier transform, and two-port circuits; and circuit simulation using SPICE. Prerequisite: EECE 210.

EECE 310  Electronics  3 cr.
A course on semiconductors; PN junctions; diodes and diode circuits; MOS transistor and applications such as amplifier and switch; bipolar junction transistor and applications such as amplifier and switch; and circuit simulation using SPICE. Prerequisites: EECE 290, and pre-or corequisite: EECE 200.

EECE 310L  Electric Circuits Laboratory  1 cr.
A laboratory course that covers passive electronic components; laboratory instruments; voltage-divider circuits; sources and Thevenin’s Theorem; RC lead-lag networks; series resonance; the transformer; op-amp circuits; single-phase rectifier circuits; LEDs; Zener diode regulator; diode clamping and clipping; BJT and MOSFET characteristics. Pre- or corequisite: EECE 310.

EECE 311  Electronic Circuits  3 cr.
A course on BJT amplifiers; MOSFET amplifiers; differential amplifiers; frequency response of amplifiers; feedback; operational amplifiers; oscillators; digital CMOS circuits; SPICE simulations. Prerequisite: EECE 310.

EECE 312  Electronic Circuits (for Mechanical Engineering students)  3 cr.
This course introduces the fundamentals of electronics and electronic circuits to non-majors. Its objectives are to provide a concise treatment of the basic concepts of electronic components and to introduce the student to the basic analog and digital electronic circuits. The course covers the fundamentals of semiconductor diodes, transistors, operational amplifiers and their applications, digital circuits and systems, and basic instrumentation. Prerequisites: EECE 210 and MATH 202.

EECE 312L  Circuits and Electronics Lab  1 cr.
A laboratory course for non-majors that covers passive electronic components, laboratory instruments, voltage-divider circuits, sources and Thevenin’s Theorem, BJT rectifier circuits, BJT and FET applications, op-amp circuits, filters, digital circuits, and instrumentation. Pre- or corequisite: EECE 312.

EECE 320  Digital Systems Design  3 cr.
This course introduces digital systems design concepts. Topics include basic combinational building blocks and design methods to construct synchronous digital systems; alternative representations for digital systems; standard logic (SSI, MSI) vs. programmable logic (PLD, FPGA); finite state machine design; digital computer building blocks as case studies; introduction to computer-aided design software in VHDL. The course also includes a substantial design project. Prerequisites: EECE 210 and EECE 230.

EECE 321  Computer Organization  3 cr.
This course covers the organization of modern computer systems. In addition to learning how to program computers at the assembly level, students learn how to design the main components of a von Neumann computer system, including its instruction set architecture, datapath, control unit, memory system, input/output interfaces, and system busses. To consolidate the material presented in class, students work on assembly-language programming and datapath design assignments, and a major computer interfacing project. Prerequisite: EECE 320.

EECE 321L  Computer Organization Laboratory  1 cr.
A laboratory course with experiments in computer organization and interfacing techniques; digital hardware design using CAD tools and FPGAs; program-controlled and interrupt-driven I/O; memory organization; simple peripheral devices and controllers; bus interfaces; microcontroller-based designs. Pre- or corequisite: EECE 321.

EECE 330  Data Structures and Algorithms  3 cr.
This course covers fundamental algorithms and data structures that are used in software applications today. Particular emphasis is given to algorithms for sorting, searching, and indexing. Data structures such as linked lists, binary trees, heaps, B-Trees, and graphs will also be covered along with their associated algorithms. The course also covers basic algorithmic analysis techniques and seeks to promote student programming skills. Prerequisite: EECE 230.

EECE 340  Signals and Systems  3 cr.
This course covers basic concepts and methods related to continuous and discrete-time signals and systems. The course includes: signals and systems and their properties, linear time-invariant systems, stability analysis, sampling of continuous-time signals, z-transform, discrete Fourier transform, time and frequency domain representations of discrete-time signals and systems, and introductory concepts in communications. Prerequisite: EECE 290.

EECE 350  Computer Networks  3 cr.
A course that outlines data communications; wide area networks; circuit and packet switching; routing; congestion control; local area networks; communications architecture and protocols; internetworking. Prerequisites: EECE 330 and STAT 230.
EECE 370/470  Electric Machines and Power Fundamentals  3 cr.
This course covers three-phase circuits and power calculation, magnetic circuits, transformers: single-phase ideal and real transformers, construction, operation, autotransformers, and 3-phase transformers; fundamentals of AC and DC machines: construction and basic concepts, DC machine: types, characteristics, and performance of series motor; synchronous generators: construction, equivalent circuits, testing and performance characteristics; induction motors construction, principle of operations, tests, power efficiency and torque. Prerequisite: EECE 210.

EECE 380  Engineering Electromagnetics  3 cr.
This course covers the fundamentals of applied electromagnetics by emphasizing physical understanding and practical applications in electrical and computer engineering systems. It deals with the study of static electric fields in vacuum and dielectrics, conductors, capacitance, electrostatic energy and forces, Poisson’s equation, static magnetic fields, Biot-Savart law, Ampere’s law, vector magnetic potential, inductance, Maxwell’s equations for time varying fields, Faraday’s law, plane wave propagation, time-harmonic fields, propagation in lossless media, and wave reflection and transmission at normal incidence. The bridge between electric circuits and electromagnetics is done through the study of transmission lines and their lumped-element model, transmission line input impedance, and power flow on lossless transmission line. Prerequisites: EECE 210 and MATH 202.

EECE 401  Biomedical Engineering Seminar  1 cr.
Biweekly seminars given by members of the Faculty of Engineering and Architecture or by guest speakers. The seminars cover a range of biomedical engineering topics of theoretical and professional interest. Students are required to submit an assignment based on each seminar, which will be graded. The seminar is required of all students taking the Biomedical Engineering Minor. Prerequisite: EECE 601 or EECE 603, or MECH 633.

EECE 410L  System Integrated Laboratory  1 cr.
A laboratory course that introduces students to a variety of electronic systems that will help them better realize a functional device. The laboratory covers a wide range of areas ranging from basic electronics, motor control, communication, micro-controllers, human machine interface, signal generation and measurement, and instrumentation. In addition to the mentioned topics, students are introduced to C language programming for embedded systems and techniques of circuit design and fabrication. Prerequisites: EECE 310L, EECE 321L and EECE 311.

EECE 412  Digital Integrated Circuits  3 cr.
This course includes the following topics: an introduction to digital electronic circuits; models, current equations and parasitic of CMOS transistors for digital design; study of CMOS inverter and logic gates, including analysis, design, simulation, layout and verification; advanced circuit styles; sequential circuits; and the advanced topics: semiconductor memories, power grid, clocking strategies, datapath building blocks, deep-submicron design issues, and interconnect. Prerequisites: EECE 310 and EECE 320.

EECE 412L  VLSI Computer Aided Design Lab  1 cr.
This is VLSI design course that introduces students to the basics of integrated circuit (IC) designs using computer aided design (CAD) tools. The lab familiarizes students with the IC design flow using the industry-standard Cadence Design Systems tools. Custom design of basic ICs is covered at the physical layout, circuit, logic, and system levels. Lab assignments include design and simulation projects using CAD tools for physical layout design, schematic capture, place-and-route of standard cells, logic verification, circuit extraction, and simulation.

EECE 421  Computer Architecture  3 cr.
A laboratory course that covers electronic circuits used in control, communications, power, and computer interfacing. Experiments include amplifier characterization, PCB manufacturing, sensors and signal processing circuits, communication link, voltage-to-frequency conversion, and a human-computer interface. Students work in teams to complete a design project to build a product by integrating several electronic components. Prerequisites: EECE 311 and EECE 340.

EECE 422  Parallel Computer Architecture and Programming  3 cr.
A course on high-performance computer architectures with emphasis on shared memory and distributed parallel architectures and programming models. Topics include: simultaneous multithreading processors, multicores processors, SIMD processors, UMA, NUMA and COMA shared-memory multiprocessors, distributed multiprocessors, snoopy and directory-based cache coherence protocols, memory consistency models, high performance synchronization methods, speculative lock elision, shared memory programming model, message passing programming model and transactional memory programming model. To consolidate the material presented in class, students work on designing parallel programs using the OpenMP threading environment and MPI message passing programming standard. Prerequisite: EECE 321.

EECE 425  Embedded Microprocessor System Design  3 cr.
A course on embedded hardware and software design. Topics include: the embedded system design process: requirements, specification, architecture, hardware/software co-design, system integration, testing. Basic computing platform: hardware and software components, bus organization and protocol, DMA, Interrupts, I/O, memory devices and system. Program design and analysis: program models, compilation process, performance analysis and optimization, program level energy analysis and optimization, program validation and testing. Real-time operating systems: multiple tasks and processes, context switching, task scheduling, interprocess communication mechanisms. System reliability and fault tolerance. To consolidate the material presented in class, students work on an embedded design project using Xilinx FPGA board and development tools. Prerequisite: EECE 320.

EECE 430  Software Engineering  3 cr.
A course that teaches students the formal processes employed for carrying out software projects, including the design, development, testing, and deploying of practical software systems. Students are exposed to the realities involved in developing software for clients and the requirements this imposes on quality, timing, and coordination. Students will develop hands-on experience with practical tools used in real-life applications. The course requires the completion of a group-based real-life software project. Prerequisite: EECE 330.

EECE 431  Design and Analysis of Algorithms  3 cr.
This course covers techniques for the design and analysis of efficient algorithms. Topics include: sorting algorithms including merge-sort, quick-sort, and counting-sort; median and order statistics algorithms; sorting lower bound; divide-and-conquer design strategy; polynomial and matrix multiplication algorithms; balanced search trees; hash tables; augmenting data structures; number-theoretic algorithms; dynamic programming; greedy algorithms; graph algorithms including graph traversal algorithms and applications, minimum spanning tree, shortest path algorithms; introduction to NP-completeness and intractability; selected topics. Prerequisite: EECE 330.
EECE 432 Operating Systems 3 cr.
This course covers the principles of operating systems and systems programming. The topics discussed in class are processes, threads, concurrency and synchronization, scheduling, deadlocks, memory management, file systems, I/O devices, parallel and distributed systems, and security. The course will be accompanied with hands on assignments involving contemporary Linux kernels. Prerequisites: EECE 321 and EECE 330. Students cannot receive credit for both EECE 432 and CMPS 272.

EECE 433 Database Systems 3 cr.
This course covers the nature and purposes of database systems and an introduction to data modeling: entity relationship model, relational model with relational algebra, relational calculus and SQL, integrity constraints, file organization and index files, and normalization. Prerequisite: EECE 330. Students cannot receive credit for both EECE 433 and CMPS 277.

EECE 434 Programming Language Design and Implementation 3 cr.
This course will provide an introduction to the design and implementation of various programming paradigms, namely object-oriented (Java, C++, and C#), functional (Haskell), and logic (Prolog). Compiler construction will be covered, in addition to topics such as, virtual machines, intermediate languages, and concurrency. Prerequisite: EECE 330. Students cannot receive credit for both EECE 434 and CMPS 258, or for both EECE 434 and CMPS 274.

EECE 435L Software Tools Laboratory 1 cr.
This course introduces software tools that enable engineers to become more effective and productive at writing quality code. The students will be grouped into teams of two (or three) that will each undertake a software project guided by a set of several designed laboratory experiments. The students will expose students to source control, documentation, debugging, build automation, testing, profiling, configuration and deployment. The Java language will be overviewed. The students have the choice of using Java or C++ to conduct their work. Prerequisite: EECE 330.

EECE 440 Computer Networks 3 cr.
This course covers mobile networking topics with focus on wireless networking technologies and mobile computing applications. It addresses the following topics: fundamentals of mobile network design, mobile communications technologies and standards, mobile networking protocols, mobile device platforms, and mobile applications. Prerequisite: EECE 350 or EECE 450.

EECE 450L Internetworking Laboratory 1 cr.
This laboratory course covers the technologies and protocols of the internet. The experiments cover the internet protocol (IP), address resolution protocol (ARP), internet control message protocol (ICMP), user datagram protocol (UDP), and transmission control protocol (TCP); the domain name system (DNS), routing protocols (RIP, OSPF, BGP), network address translation (NAT), dynamic host configuration (DHCP), network management protocols (SNMP), and IP multicast. Prerequisite: EECE 450.

EECE 455 Cryptography and Networks Security 3 cr.
This course provides an overview of encryption and network security. The topics include: classical encryption techniques, block ciphers and the data encryption standard, finite fields, advanced encryption standard, confidentiality using symmetric encryption, public-key cryptography, key management, hash and MAC algorithms, digital signatures, authentication applications, Web security, email security, and IP security. Prerequisite: EECE 350 or EECE 450.

EECE 456 Control Systems 3 cr.
This course seeks to impart in students a sound understanding of fundamental principles in control engineering, based on analog technologies. The course includes: mathematical modeling of linear continuous time invariant single input, single output dynamical systems; transfer functions and state space models, performance specifications, analysis and design of closed loop analog control systems. Prerequisite: EECE 340.

EECE 456L Control Systems Laboratory 1 cr.
This course involves students in the practical implementation of the concepts acquired in EECE 456 by analyzing different types of dynamical systems, designing and understanding controllers suitable to specific models, simulating system responses, and experimentally verifying the effectiveness of various control schemes. Prerequisite: EECE 456.

EECE 461 Instrumentation 3 cr.
A design course for complete instrumentation systems, including measurements, sensors, data acquisition, and component integration. Application areas and course projects include industrial control, laboratory measurements, automation systems, and the like. This course is completed with a set of laboratory experiments. Prerequisite: EECE 460.

EECE 462L Industrial Control Laboratory 1 cr.
A laboratory that addresses topics related to industrial automation and process control. Experiments include Programmable Logic Controllers (PLC), Supervisory Control and Data Acquisition (SCADA), Human Machine Interface (HMI), Industrial Networks, Machine Vision and Motion Control Applications. Prerequisite: EECE 460 or MECH 431.

EECE 463/ MECH 555 Artificial Intelligence for Control Systems 3 cr.
This course aims at giving students a solid foundation in AI by covering basic techniques such as A* searching, reasoning under uncertainty, probabilistic reasoning over time, multi objects tracking, path planning, scheduling, communicating, perceiving and learning as applied to control systems, robotics and manufacturing. The project group and individual lab assignments will provide students with hands on implementation experience of an intelligent control agent capable of basic learning. Prerequisites: EECE 460 or MECH 435.
EECE 470L Electric Machines Laboratory 1 cr.
Transformers: open circuit, short circuit, and load test; unbalanced loading and parallel operation of transformers; speed control and load characteristics of shunt, series and compound DC machines; induction machines; blocked rotor, no-load, and loading tests; operation of single-phase induction motors; operation of a synchronous machine connected to a large external source. Prerequisite: EECE 370.

EECE 471 Fundamentals of Power Systems Analysis 3 cr.
This course covers the basic concepts of three-phase systems, generation modeling review, and generation capability curve; transformers, autotransformers, three-winding transformers, and regulating transformers. Calculation of transmission line parameters, evaluation of steady state operation of transmission lines, reactive power compensation, line capability, power flow analysis using Gauss-Seidel and Newton-Raphson methods, economic load dispatch with generation limits and line losses, symmetrical fault analysis, symmetrical components and unsymmetrical fault analysis. Prerequisite: EECE 370.

EECE 471L Power Systems Laboratory 1 cr.
This lab course includes nine experiments to study various aspects of power systems: measurement of the characteristics data of a transmission line and an assessment of its voltage drop and losses; synchronization and steady state operation of a generator connected to an infinite bus system; load characteristics of a synchronous motor and effect of field excitation on reactive power load; effect of voltage levels on power transmission and effects of various load types on power plants; load flow data preparation and system study; system analysis of symmetrical and unsymmetrical faults; Transient stability data preparation and system study. Prerequisite: EECE 471.

EECE 473 Power Electronics 3 cr.
This lab course includes an overview of power electronics devices used and their desired characteristics; diode circuits and rectifiers, effect of source inductance, three-phase rectifiers; dc-dc switched mode converters, buck, boost, and buck-boost circuits, bridge converter; pulse-width modulated inverters, voltage control, harmonics, three-phase inverters; introduction to gate and base drive circuits, snubber circuits. Prerequisites: EECE 210 and EECE 310, and MATH 218 or MATH 219.

EECE 473L Power Electronics and Drives Laboratory 1 cr.
This lab course includes experiments to study the following: induction motor torque-speed curve and starting characteristic, induction motor speed control through a 4-quadrant drive, single phase capacitor-start induction motor, ac to dc converter, dc to dc converters; buck, boost, and buck-boost regulators, dc to ac inversion, ac to ac converter. Prerequisite: EECE 473.

EECE 474 Electric Drives 3 cr.
A course that covers steady-state analysis of dc and poly-phase induction motors, starting, and control; AC drives: solid-state control, dc link in adjustable speed drives, voltage and frequency controls, braking and plugging; DC drives: rectifier and chopper drives, dynamic and regenerative braking, plugging; stepper motors: types, operational characteristics, control algorithms, power drive configurations; and special-purpose motors. Prerequisite: EECE 370.

EECE 475 Industrial Electrification 3 cr.
A course that outlines medium and low voltage installations; lighting, practical applications of electric machines; motor control centers; emergency power supplies; and auxiliary systems. Prerequisite: EECE 370.

EECE 476 Power System Protection and Switchgear 3 cr.
A course that covers current and voltage transformer theories, construction, and applications, electro-mechanical relay, solid state relay, and numeric relay; analogue to digital converter (ADC), digital to analogue converter (DAC), memories, protection systems for electric machines, transformers, bus bars, overhead and underground transmission lines; over-voltage protection system; and a brief introduction to data transmission. Prerequisite: EECE 370.

EECE 499 Undergraduate Research 3 cr.
This course requires participation, under supervision of a faculty member, in a research project. Before registering, the student must create a proposal regarding the nature of the research, the specific goals of the research, and the desired final report outcome; this proposal must be submitted to and approved by the supervising faculty member and the department before registering. Prerequisites: Completion of 65 required credits in the major, and a cumulative average of 80.0 or above.

EECE 500 Approved Experience 1 b.
This is an eight-week professional training course in electrical and computer engineering.

EECE 501 Final Year Project 3 cr.
A supervised project in groups of normally 3 students aimed at providing practical experience in some aspects of computer, communications and electrical engineering. Students are expected to define the project, state its objectives, complete a literature survey, set project specifications and select a design method. They are also expected to do some preliminary modeling and analysis and to acquire the necessary material needed for the completion of the project in the spring term. A professional report and an oral presentation are also required from the students. Prerequisite: EECE 410L.

EECE 502 Final Year Project 3 cr.
This is a continuation of EECE 501. Students are asked to deliver a product that has passed through the design, analysis, testing and evaluation stages. The course also requires the production of a professional report that includes a description of the design process, implementation and testing, verification and validation and a critical appraisal of the project. An oral presentation and a poster are also within the project deliverables. Prerequisite: EECE 501.

EECE 503 Special Topics in ECE 3 cr.

EECE 560/MECH 530 Mechatronics 3 cr.
A course that discusses mechatronics; data; numbering systems, architecture of the 8-bit Motorola MC68HC11 microcontroller, assembly language programming, A/D and D/A conversion; parallel I/O programmable timer operation, interfacing sensors and actuators, applications; a team project on design and implementation of a mechatronic system. Prerequisites: EECE 312 and MECH 430 or EECE 461.

EECE 601 Biomedical Engineering I 3 cr.
This course includes an introduction to: general instrumentation configuration, performance of instrumentation systems; types and characteristics of transducers; sources and characteristics of bioelectric signals; types and characteristics of electrodes; temperature regulation and measurement; cardiovascular system, measurements, and diagnostic equipment; blood instruments; patient care and monitoring; and electrical safety of medical equipment. Prerequisites: EECE 210 and BIOL 210, or EECE 210 and BIOL 202 for students doing a minor in biomedical engineering, or consent of instructor.
EECE 602  Biomedical Engineering II  3 cr.
This course covers respiratory system and measurements; nervous system and measurements; sensory and behavior measurements; biotelemetry; instrumentation for the clinical laboratory; x-rays and radioisotope instrumentation; magnetic resonance; and special surgical techniques. Prerequisite: EECE 601 or consent of instructor.

EECE 603  Biomedical Signal and Image Processing  3 cr.
A course that introduces the fundamentals of digital signal processing as implemented in biomedical applications. It provides a concise treatment of the tools utilized to describe deterministic and random signals as the basis of analyzing biological signals: data acquisition; imaging; denoising and filtering; feature extraction; modeling. The course is tightly coupled with a practical component as it looks at and assigns several laboratory projects. Examples include the auditory system, speech generation, electrocardiogram, neuronal circuits, and medical imaging. Students should have reasonable software skills in Matlab. Prerequisites: STAT 230 and EECE 340

EECE 604  Communications Engineering for Genetics and Bioinformatics  3 cr.
This course presents current research efforts in the emerging interdisciplinary field of communications engineering for genetics and bioinformatics. It shows how concepts and techniques from the field of communications engineering can be applied to central problems from the fields of genetics and bioinformatics. As a basic analogy, voice information is digitized, transmitted, and processed in communications, and DNA information is replicated, transmitted, and processed in genetics. The main topics covered include DNA compression, mutual information for functional genomics, channel coding for gene expression, genomic signal processing, and biological computation. Prerequisite: Senior standing.

EECE 605  Neuromuscular Engineering  3 cr.

EECE 611  Introduction to Analog VLSI Systems  3 cr.
This course covers an introduction to digital electronic circuits; models, current equations and parasitic of CMOS transistors for digital design; study of CMOS inverter and logic gates, including analysis, design, simulation, layout and verification; advanced circuit styles; sequential circuits; advanced topics: semiconductor memories, power grid, clocking strategies, datapath building blocks, deep-submicron design issues, and interconnect. Prerequisites: EECE 310 and EECE 320.

EECE 612  Digital Integrated Circuits  3 cr.
A course on digital electronic circuits; models, current equations, and parasitics of CMOS transistors for digital design; study of CMOS inverter and logic gates, including analysis, design, simulation, layout, and verification; advanced circuit styles; sequential circuits; advanced topics: semiconductor memories, power grid, clocking strategies, datapath building blocks, deep-submicron design issues, and interconnect. Prerequisites: EECE 311 and EECE 320.

EECE 613  Radio Frequency (RF) Circuits Design  3 cr.
The course focuses on the analysis and design of Radio Frequency circuits and components. The course covers RF design techniques using transmission lines, strip lines, microstrip and coplanar lines. It covers the design of passive and active RF devices, including impedance transformers, amplifiers, oscillators and mixers. It provides understanding of S-parameters and signal-flow graph analysis techniques. The course enables the student to get hands-on experience in RF circuit design through the use of computer-aided design tools to simulate and analyze radio frequency circuits, build them as part of a course project, and perform measurements in the lab using network and spectrum analyzers. Prerequisites: EECE 311, EECE 340, and EECE 360.

EECE 614  Computer-Aided Analysis and Design of VLSI Circuits and Systems  3 cr.
A course on circuit and logic simulation; timing analysis and verification; testing and fault simulation; logic and high-level synthesis; physical design automation. Prerequisite: EECE 311.

EECE 615  Computer Methods for Circuit and System Analysis  3 cr.
This course covers numerical methods and techniques for computer simulation of linear and nonlinear circuits and systems. This includes formulation methods, solution of linear equations and systems (DC analysis or static analysis), time-domain solution (transient analysis), solution of large systems, and sensitivity analysis. Application areas include simulation of electronic integrated circuits, power systems, electro-mechanical systems, mechatronics, and systems that can be modeled by sets of algebraic-differential equations. Prerequisites: EECE 210, MATH 202, and MATH 218 or MATH 219.

EECE 616  Advanced Digital Integrated Circuits  3 cr.
A graduate level course on advanced digital integrated circuits. The following topics are covered: impact of physical technology on architecture; technology issues: CMOS scaling and issues in deep submicron regimes, process variations; device and interconnect modeling; optimization for speed; high-speed logic families; low-power design: leakage reduction techniques, voltage scaling; power distribution; clocking strategies; timing concepts; memory design: clocked storage elements, SRAM, DRAM, flash memory; and high-speed arithmetic circuits. Prerequisite: EECE 412 or EECE 612.

EECE 617  Reliability and Statistical Design  3 cr.
This course explores major aspects of statistical design methodologies with particular emphasis on electrical and computer engineering problems. It covers various topics in the domain of reliability and yield estimation, and encompasses both geometrical-based approximation methods as well as sampling-based methods. The course focuses on variance reduction methods for purposes of extreme statistics and rare fail event estimation. Case studies will be provided to analyze the manufacturability and robustness challenges of advanced circuits and the implications on low power design. Students will learn about the impact of new physical effects on the traditional circuit design solutions and methods, and the rising need for statistical design methodologies. Other applications in electrical and computer engineering will also be covered. Prerequisite: Senior Standing.
EECE 621 Advanced Computer Architecture 3 cr.
This course focuses on modern advancements in parallel computer architecture, with emphasis on advanced instruction level parallelism (ILP) and multiprocessor architectures. Topics include: advanced branch prediction, data speculation, computation reuse, memory dependence prediction, trace caches, dynamic optimizations, checkpoint architectures, latency-tolerant processors, simultaneous multithreading, speculative multithreading, virtual machines, message passing multiprocessors, UMA, NUMA and COMA shared-memory multiprocessors, single-chip multiprocessors, wormhole routing techniques, cache coherence, memory consistency models, high performance synchronization methods, speculative lock elision and transactional memory. A key component of the course is a research project in which students use architecture performance simulator to investigate novel architecture techniques. Prerequisite: EECE 421

EECE 622 VLSI for Communications and Signal Processing 3 cr.
This course introduces concepts in the design and implementation of digital signal processing systems using integrated circuits. The main emphasis is on the architectural exploration, design and optimization of signal processing systems for communications. Algorithm, architecture, and circuit design techniques are introduced that enable joint optimization across the algorithmic, architectural, and circuit domains. A key component of the course is a project in which students investigate problems in the design and implementation of low-power and high-performance communication systems. Prerequisite: Senior or graduate standing

EECE 623 Reconfigurable Computing 3 cr.
A course dealing with the design issues pertaining to the implementation of application specific architectures using the reconfigurable computing paradigm allowing the same circuit to be reused in order to run different applications. Emphasis is on the systematic design of reconfigurable computing platforms that exploit a high degree of parallelism. Prerequisite: EECE 321.

EECE 624 Digital Systems Testing 3 cr.
This course covers an overview of digital systems testing and testable design; test economics, fault modeling, logic and fault simulation, testability measures, test generation for combinational circuits, memory test, delay test, IDDQ test, scan design, and boundary scan. Prerequisite: EECE 320.

EECE 625 Embedded Systems Design 3 cr.
A course on embedded hardware and software design; the system design process: requirements analysis, specification, hardware/software co-design, testing; embedded computing platforms: general- and special-purpose processors, hardware accelerators, systems-on-a-chip, intellectual property (IP) core-based design, embedded networks; software design tools and technologies: CAD tools, compilers, and assemblers; hardware design tools and technologies: hardware-description languages, high-level synthesis tools, ASIC and FPGA design flows; real-time operating systems: multiple tasks and processes, context switching, task scheduling, interprocess communication mechanisms; low-power computing; circuit, architecture, and application techniques; system reliability and fault tolerance. Prerequisites: EECE 321 and EECE 321L.

EECE 630 Distributed and Object Database Systems 3 cr.
A course that covers design techniques used for distributing databases among multiple sites. The fundamental topics include fragmentation, replication, and allocation. The course also discusses the strategies used in executing distributed queries subject to given criteria and the commit protocols for managing transactions in a distributed environment. Other topics covered include parallel database implementations and the design of object database management systems. The course enables students to get hands-on experience in designing distributed database systems using a design project that requires the implementation of low-level functionality associated with the functions of distributed database system. Prerequisite: EECE 433.

EECE 631 Advanced Topics in Algorithms 3 cr.
This is a second course on the general principles of algorithm design and analysis. The course is a continuation of EECE 431. Topics include: computability theory; complexity theory: time complexity, P versus NP, circuit complexity, and space complexity; randomized algorithms; linear programming; approximation algorithms; and selected topics. Prerequisite: EECE 431.

EECE 632 Cryptography and Computer Security 3 cr.
This course includes an overview of encryption and computer security; classical encryption techniques, block ciphers and the data encryption standard, finite fields, advanced encryption standard, confidentiality using symmetric encryption, public key cryptography, key management, hash and MAC algorithms, digital signatures, authentication applications, email security, and Web security. Prerequisite: Senior standing.

EECE 633 Data Mining 3 cr.
This course is an introduction to data mining. Data mining refers to knowledge discovery from huge amounts of data to find non-trivial conclusions. Topics will range from statistics to machine learning to database, with a focus on analysis of large data sets. The course will target at least one new data mining problem involving real data, for which the students will have to find a solution. Prerequisite: EECE 433.

EECE 634 Introduction to Computational Arabic 3 cr.
This course will focus on knowledge necessary to develop software applications and systems that deals with Arabic data and tends to Arabic users. The course will discuss computational challenges specific to the Arabic language including representation, display, rendering, processing, directionality, structure, interface, and recognition. The course will also discuss multilingual texts where Arabic takes part. We will visit several text processing techniques and algorithms such as encoding, matching, tokenization, search, indexing, and pattern matching and introduce the necessary changes to accommodate the Arabic language. The last part of the course will discuss the state of the art in automating Arabic language processing, understanding, and recognition. Prerequisite: EECE 330.

EECE 636 Logic Verification and Synthesis 3 cr.
This course discusses the basic concepts needed to guarantee the correctness of logic systems whether software programs or hardware designs. The course covers the basic representations of propositional logic, first order logic, and variations of them: how expressive (amenable to express the intent of designers) and how realizable (amenable to automated implementation techniques into circuits) the different logics are. In the course students learn practical tools that take logic descriptions of systems, prove their correctness, either fully or partially, and if possible synthesize or suggest correct circuit implementations. Prerequisite: EECE 431.
EECE 637  Advanced Programming Practice  3 cr.
This course is an advanced course on programming practices with a focus on verification. The course introduces programming tools and techniques that make individual engineers more effective and productive and help them develop quality code. Teams will work in Agile and eXtreme programming environments with a focus on design by contract. They will use formal specifications, design patterns and aspect oriented programming. Projects will use tools for code control, building, configuration, language recognition, dynamic documentation, fast prototyping, refinement, coverage, automated and manual debugging, and dynamic and static verification. Prerequisite: EECE 330.

EECE 638  Software Testing  3 cr.
The course focuses on concepts, techniques and tools for testing software. It provides practical knowledge of a variety of ways to test software and an understanding of some of the tradeoffs between testing techniques. The topics include: software testing at the unit, module, and system levels; functional and structural testing; regression testing; mutation testing; test suite minimization and prioritization; automatic test case generation. Prerequisite: Senior standing.

EECE 639  Advanced Techniques and Applications in Data Mining  3 cr.
A course that covers advanced topics in data mining and recent progress in this field. Discussions will include methods that fit best for complex applications in data mining. Mining complex data will include general text mining, Arabic text mining, social network analysis, spatial data mining, mining of the World Wide Web, stream data, time-series data, and sequence data. We will also discuss recent application sectors and trends in data mining such as for the telecommunication, biological, and financial sectors. Prerequisites: EECE 330; and one of the following EECE 633, EECE 667, or EECE 693.

EECE 640  Wireless Communications  3 cr.
A course that covers the fundamentals of wireless communications with emphasis on wireless channel modeling; digital modulation in wireless channels; diversity techniques; channel coding and interleaving in fading channels; adaptive equalization; multiple access techniques; the cellular concept; overview of current wireless communications systems. Prerequisite: EECE 442.

EECE 640L  Wireless Communications Laboratory  1 cr.
A laboratory course that covers the following topics: basics of radio network planning and optimization, radio network planning for the GSM cellular system, radio network planning for the UMTS cellular system, GSM-UMTS co-existence and co-citing, radio network planning for the WIMAX broadband system, indoor GSM drive testing measurements and analysis, outdoor GSM drive testing measurements and analysis, UMTS drive testing measurements and analysis, and measurement-based wireless channel modeling. Prerequisite: EECE 640.

EECE 641  Information Theory  3 cr.
In this course students study "data transmission" through introducing the field of information theory. The theory is introduced in a gradual fashion and students study its applications to communications theory, computer science, statistics and probability theory. Covering all the essential topics in information theory, students are introduced to the basic quantities of entropy, relative entropy, and mutual information to show how they arise as natural answers to questions of data compression, channel capacity, rate distortion and large deviation theory. Prerequisite: STAT 230 or EECE 442.

EECE 642  Introduction to Coding Theory  3 cr.
This course introduces the theory of error-correcting codes with a focus on the asymptotic, algorithmic, and algebraic aspects. Topics include: background material from combinatorics and algebra; Shannon's coding theorem; linear codes; coding bounds; classical algebraic codes: Hamming and Hadamard codes, Reed-Solomon codes and Justesen codes, and decoding algorithms; codes from graphs: low density parity check codes, expander codes, explicit constructions, and decoding algorithms; and an introduction to Turbo codes. Prerequisite: Senior standing.

EECE 643  RF System Engineering for Wireless Communications  3 cr.
This course introduces students to system blocks, system parameters, and architectures of RF systems for wireless communications. It focuses on the design of a radio system for transmission and reception of voice and data information: receivers and transmitters system topologies, key system blocks in a wireless system, determination of system block parameters from radio requirements and system analysis, tradeoffs between various blocks in a radio system, and frequency planning. It discusses how modulation and demodulation schemes and multiple-access techniques used in present wireless applications influence RF systems requirements. The last part of the course focuses the link budget analysis of RF radio links. Prerequisites: EECE 311, EECE 380, and EECE 442.

EECE 644  Stochastic Processes, Detection, and Estimation  3 cr.
This is a graduate-level introduction to the fundamentals of detection and estimation theory involving signal and system models in which there is some inherent randomness. The concepts that we develop are extraordinarily rich, interesting, and powerful, and form the basis for an enormous range of algorithms used in diverse applications. The material in this course constitutes a common foundation for work in the statistical signal processing, communication, and control areas. Prerequisites: STAT 230 and EECE 340.

EECE 645  Wireless Cellular Technologies  3 cr.
A course on the evolution of cellular technologies with focus on 2G GSM technology, 3G UMTS/HSPA technology, 4G LTE technology, and beyond. Topics include: cellular network fundamentals; standardization and services; transmitter and receiver link level designs; access and core network architectures; physical channels and signaling procedures; link adaptation and radio resource management; scheduling and multiuser diversity; capacity/coverage tradeoffs and radio network planning; capacity/coverage enhancement techniques; MIMO techniques; emerging topics. Prerequisite: EECE 640.

EECE 646  Advanced Digital and Data Communications  3 cr.
A course that addresses digital communication principles and techniques aimed at achieving improved reliability. The course examines information measures such as entropy and mutual information for discrete and waveform channels, source coding, channel capacity and coding theorem, linear block and cyclic codes, hard and soft decision decoding, spread spectrum modulation. Prerequisite: Senior standing.

EECE 647  Queuing Theory  3 cr.
A course that covers Poisson counting and renewal processes; Markov chains and decision theory, branching processes, birth death processes, and semi-Markov processes; simple Markovian queues, networks of queues, general single and multiple-server queues, bounds and approximations. Prerequisite: Senior standing.
EECE 650  **Client-Server Computing**  3 cr.
A course that covers internet and intranet technologies, the client-server model of interaction, design and implementation of clients and servers, interactive and concurrent servers, distributed computing, application gateways, and includes a design project. **Prerequisite:** EECE 350 or EECE 450.

EECE 651  **Internet Engineering**  3 cr.
A course that examines major protocols used in internet engineering: IP, ICMP, TCP, UDP; new technologies introduced on the internet, such as IP Multicast, Mobile IP, IPv6, VPNs, and quality of service; routing on the Internet; network security and firewall design; and an overview of the application protocols such as SMTP, HTTP, RTP, and SNMP. **Prerequisite:** EECE 350 or EECE 450.

EECE 651L  **Internetworking Laboratory**  1 cr.
This laboratory course covers the technologies and protocols of the internet. The experiments cover the internet protocol (IP), address resolution protocol (ARP), internet control message protocol (ICMP), user datagram protocol (UDP) and transmission control protocol (TCP), the domain name system (DNS), routing protocols (RIP, OSPF, BGP), network address translation (NAT), dynamic host configuration (DHCP), network management protocols (SNMP), and IP multicast. **Prerequisite:** EECE 350 or EECE 450.

EECE 652  **Web Server Design and Programming**  3 cr.
This course concentrates on major technologies used in building Web servers. Alternate versions are to be given each year: the Windows-based IIS Server and the Linux-based Apache server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. For IIS, ASP.NET along with C# are used for programming Web servers. For Apache, PHP is the language of choice. The course starts with a fast track on client programming, the HTTP server. **Prerequisite:** EECE 350 or EECE 450.

EECE 653  **Multimedia and Networking**  3 cr.
This course covers topics in multimedia such as system requirements, performance requirements, representation and compression. Multimedia networking is emphasized by discussing multicasting, streaming, multimedia networking protocols and quality of service-based traffic management protocols. Other topics covered include synchronization, VoIP, and Internet 2. Multimedia networking applications are designed and implemented as student projects. **Prerequisite:** Senior standing.

EECE 654  **Pervasive Computing Systems and Applications**  3 cr.
This course covers the technologies involved in integrating front-end mobile devices into local and global networks. An emphasis is placed on the underlying technologies and standards applied when building pervasive solutions. The course has a strong programming component in that it dedicates a significant portion of the time covering the development of mobile applications for three platforms: Windows CE for Pocket PCs, Palm OS for Palm PDAs, and Java 2 Micro Edition (J2ME) for wireless phones that run the Symbian OS. To emphasize this last component, code demonstrations will be held in class, and students will be required to complete three projects targeting the three platforms, designed to cover the different aspects of mobile applications (user interface, local database implementations, and networking). **Prerequisite:** EECE 430.

EECE 655  **Internet Security**  3 cr.
The course covers topics in internet security. The course discusses security threats, vulnerabilities of protocols and the different types of attacks. Preventive and defensive mechanisms are covered; such as: e-mail security, web security, IP security, network management security, wireless security, intrusion detection techniques, firewalls, VPNs and tracing the source of attacks. Student projects will be composed of implementation, simulation and research components. **Prerequisite:** EECE 350 or EECE 450.

EECE 655L  **Network and Computer Security Laboratory**  1 cr.
A laboratory that addresses advanced network and computer security topics. Experiments include the execution of attacks, the setup of intrusion detection and prevention, securing computers and wired and wireless networks, and digital forensics. **Prerequisite:** EECE 350 or EECE 450.

EECE 656  **Mobile Ad hoc and Sensor Networks**  3 cr.
This course covers all aspects of ad hoc and sensor networking, from design through performance issues to application requirements. The course starts with the design issues and challenges that are associated with implementations of ad hoc and sensor network applications. This includes dealing with mobility, disconnections, and awareness of battery power consumption. The course then provides a detailed treatment of proactive, reactive, and hybrid routing protocols, in addition to the various clustering approaches. Next, it covers the IEEE 802.11 Wireless LAN and Bluetooth standards and discusses their characteristics and operations. The course also discusses research topics that involve collaboration among mobile devices, service discovery, and data caching. Through a project, the course gives students hands-on experience in designing a mobile ad hoc network using available Pocket PCs and simulation tools. **Prerequisite:** EECE 350 or EECE 450.

EECE 657  **Wireless Security**  3 cr.
A course that covers wireless network security; security challenges in wireless networks; security problems facing existing and upcoming wireless networks; security in naming, addressing, neighbor discovery, and routing; and trust and privacy. **Prerequisites:** EECE 350 or EECE 450 and EECE 455 or EECE 632.

EECE 660/ MECH 654  **System Analysis and Design**  3 cr.
A course that outlines state-space models of discrete and continuous, linear and nonlinear systems; controllability; observability; minimality; Eigenvector and transforms analysis of linear time invariant multi-input multi-output systems; pole shifting; computer control; design of controllers and observers. **Prerequisite:** Senior standing.

EECE 661/ MECH 641  **Robotics**  3 cr.
A course that examines robotic manipulators classification and work envelope; robot kinematics, dynamics and forces; joints trajectory planning for end effector desired tracking and constrained motion; control of robots using linear, non-linear, and adaptive controllers. **Prerequisite:** EECE 460 or MECH 435.

EECE 662/ MECH 655  **Optimal Control**  3 cr.
A course on optimization theory and performance measures, calculus of variations, the maximum principle, dynamic programming, numerical techniques, LQR control systems. **Prerequisite:** Senior standing.
EECE 663/ MECH 656
System Identification 3 cr.
This course introduces the fundamentals of system identification as the basic mathematical tools to fit models into empirical input-output data. While rooted in control theory, applications extend to general time-series modeling and forecasting, such as stock prices, biological data and others. Topics covered include nonparametric identification methods: time and frequency response analysis; parametric identification methods: prediction error methods, least squares, linear unbiased estimation and maximum likelihood; convergence, consistency and asymptotic distribution of estimates; properties and practical modeling issues: bias distribution, experiment design and model validation. Prerequisite: Senior standing.

EECE 664
Fuzzy Sets, Logic and Applications 3 cr.
A course that outlines fuzzy sets and related concepts; logical connectives; mapping of fuzzy sets; extension principle; fuzzy relations and fuzzy set ordering; fuzzy logic inference; applications: fuzzy control, signal processing, pattern recognition, decision-making, and expert systems. Prerequisite: Senior standing.

EECE 665
Adaptive Control 3 cr.
A course that includes the control of partially known systems; analysis and design of adaptive control systems; self-tuning regulators; model reference adaptive control of uncertain dynamic systems; typical applications. Prerequisite: EECE 460.

EECE 667
Pattern Recognition 3 cr.
The course provides an overview of the theory, principles and algorithms used in machine learning to construct high performance information processing systems that learn from experience. The course discusses main and modern concepts for model selection and parameter estimation in recognition, decision making and statistical learning problems. Special emphasis will be given to regression, classification, regularization, feature selection and density estimation in supervised modes of learning. Students will be assigned typical machine learning problems to investigate as projects. Prerequisite: Senior standing.

EECE 668
Game Theory and Decision making 3 cr.
Game theory provides a set of tools, approaches, and perspectives on decision making to mimic the human elements of decision making that is best described by strategy, coercion and cooperation. This course offers an introduction to fundamentals of game theory and decision making with a special emphasis on the foundations of the mathematical background. Topics covered include: static, evolutionary, supermodular, repeated, cooperative, network, potential and congestion games as well as bargaining and uncertainty in games. Students will be assigned real-world examples of game theory and strategic decision making to investigate as projects. Prerequisite: Senior standing.

EECE 669/ MECH 648
Nonlinear Systems: Analysis, Stability and Control 3 cr.
A course that presents a comprehensive exposition of the theory of nonlinear dynamical systems and its control with particular emphasis on techniques applicable to mechanical systems. The course will be punctuated by a rich set of mechanical system examples, ranging from violin string vibration to jet engines, from heart beats to vehicle control, and from population growth to nonlinear flight control. Prerequisite: MECH 435 or EECE 460.

EECE 670
Power System Planning 3 cr.
The course investigates electric energy and peak demand forecasts using weather sensitive, time curve, autoregressive and causal models; generation reliability evaluation, loss of energy expectation, energy limited units, probabilistic production costing, generating capacity expansion analysis, and maintenance scheduling; operational planning, unit commitment, hydrothermal coordination; power system security classification, contingency analysis, external equivalents, optimal power flow; planning in a competitive electric power environment. Prerequisite: EECE 471.

EECE 671
Environmental Aspects of Energy Systems 3 cr.
A course that examines world energy resources and classifications; sources and effects of air pollution; air quality modeling, Gaussian dispersion models for pollution estimation; motor vehicle emissions and noise pollution; environmental impacts of electricity generation, pollution control systems, electromagnetic radiation, production and impacts in high-voltage applications; environmental impact assessment; basic concepts. Prerequisite: Senior standing.

EECE 672
Energy Planning and Policy 3 cr.
This is a course that focuses on features of modern energy planning and policy. Topics covered include the interaction among the technological, economic, environmental, and sociopolitical aspects of energy supply and use; electricity, oil, and gas industries, and their market structures; elements of energy planning on the sector and national levels; energy decision-making under conditions of uncertainty, risk management in energy planning; liberalization of energy markets; case studies. Prerequisite: Senior standing.

EECE 673
Power Electronics Systems and Applications 3 cr.
A course that reviews converter topologies for AC/DC, DC/AC, and DC/DC; power supply applications; converter applications to motor drives; utility interface of distributed energy systems; static VAR systems; flexible AC transmission; high voltage DC; power quality control; active and passive harmonics compensation. Prerequisite: EECE 473 or EECE 471.

EECE 675
Renewable Energy Systems 3 cr.
A course that covers the principles of renewable energy, solar radiation, solar water heating, building and other thermal applications, photovoltaic generation, wind power, fuel cells and the hydrogen cycle, biomass, and institutional and economic factors. Prerequisite: Senior standing.

EECE 676
Computer Analysis of Power Systems 3 cr.
A course on large scale power systems, power system matrices, and programming considerations; advanced power flow studies, voltage, and reactive flow control; fault analysis, transient analysis, and power system stability. Prerequisite: EECE 471.

EECE 677
Electric Power System Stability and Control 3 cr.
A course on synchronous machine modeling and simulation, response to small disturbances, and voltage instability. Topics include Park’s transformation, flux linkage, voltage, and state-space equations, subtransient and transient parameters, simplified models of the synchronous machine, treatment of saturation, system reference frame, small-signal stability, power system stabilizers, and bifurcation analysis. Prerequisite: EECE 678.

EECE 678
Advanced Power System Analysis 3 cr.
A course on optimal dispatch of generation, symmetrical components and unbalanced faults, transient stability, control of generation, state estimation in power systems and power system simulation. Prerequisite: EECE 471, or consent of instructor.
EECE 679  Energy Efficiency in the Power Sector  3 cr.
Topics covered in the course include: utility companies and energy supply, energy sustainability, cogeneration systems; combined heat and power (CHP) and combined cycle gas turbines (CCGT), reciprocating engines, distributed generation, demand side management, energy audit: types and data analysis, monitoring and targeting of energy, energy-efficient rotating machines, design and performance optimization; and case studies. Prerequisite: EECE 370 or EECE 470.

EECE 680  Antenna Theory and Design  3 cr.
This course provides the students with an understanding of the basic principles of antenna analysis and design; an overview of the fundamental characteristics and parameters of antennas; an overview of analytical and numerical methods used to analyze and design antennas with application to some basic antenna structures such as linear antennas, loop antennas, and antenna arrays. Prerequisite: EECE 380.

EECE 681  Advanced Antenna Design  3 cr.
This course provides the students with an understanding of advanced antenna structures and presents an overview of analytical and numerical methods used to analyze and design these antenna structures. The course includes broadband antennas, frequency-independent antennas, aperture antennas, horn antennas, microstrip antennas, and reflector antennas. Students will work on a research paper on a selected antenna design topic. Prerequisite: EECE 680.

EECE 682  Time-Harmonic Electromagnetic Fields  3 cr.
A course on time-varying and time-harmonic EM fields; electrical properties of matter; wave propagation and polarization; construction of solutions; reflection and transmission; electromagnetic theorems and principles in particular equivalence; rectangular waveguides and cavities; dielectric waveguide, circular waveguides, spherical waveguide; radiation from structures; scattering by wedges, cylinders and spheres; radiation from apertures, and perturbational and variational techniques. Prerequisite: EECE 380.

EECE 683  Numerical Methods in Electromagnetics  3 cr.
This course examines the principles and applications of numerical techniques for solving practical electromagnetics problems. It covers the moment methods, finite difference methods, finite element methods, and hybrid methods. The course also investigates the application of the finite-volume control method in electromagnetics. Prerequisite: EECE 682.

EECE 691  Digital Signal Processing  3 cr.
Course topics include a review of signals, systems, and transforms; design of digital filters: FIR and IIR; sampling and reconstruction of signals; multi-rate signal processing with applications; effects of finite word length; discrete random signals and spectral estimation; and an introduction to 2D signal and image processing. Prerequisite: Senior standing.

EECE 691L  Digital Signal Processing Lab  1 cr.
This graduate lab is comprised of a set of lab experiments in MATLAB, C and Assembly covering a series of real-time signal processing topics. The developed laboratory material is intended to complement the digital signal processing course (EECE 691). Upon completion of the lab, the student will have acquired the required knowledge and skills to develop real-time DSP systems. Prerequisites: EECE 691 (may be waived upon approval of course instructor), and senior standing.

EECE 692/ MECH 642  Computer Vision  3 cr.
An introductory course on the problems and solutions of modern computer vision. Topics covered include image acquisition, sampling and quantization; image segmentation; geometric framework for vision: single view and two-views; camera calibration; stereopsis; motion and optical flow; recognition; pose estimation in perspective images. Prerequisites: MATH 202 and EECE 230.

EECE 693  Neural Networks  3 cr.
The course provides a comprehensive foundation to artificial neural networks and machine learning with applications to pattern recognition and data mining, learning processes: supervised and unsupervised, deterministic and statistical; clustering; single layer and multilayer perceptrons; least-mean-square, back propagation, and Al-Alaoui algorithms; radial-basis function networks; committee machines; principal component analysis; self-organizing maps; and current topics of interest. Prerequisite: Senior standing.

EECE 694  Digital Image Processing  3 cr.
A course on two-dimensional signals and systems; image formation and perception; representation, coding, filtering restoration, and enhancements; feature extraction and scene analysis; introduction to computer vision. Prerequisite: Senior standing.

EECE 694L  Image Processing Lab  1 cr.
The EECE 694L graduate lab comprises a set of MATLAB/C++ based lab experiments in different image processing topics covering image pre and post processing techniques, image compression, morphological transformations, image restoration and enhancement techniques, computer vision basics, and geographical image processing. In addition, students will be exposed to software optimizations for real time image processing using SIMD instructions. Prerequisite: EECE 694, or EECE 603.

EECE 695  Adaptive Filtering  3 cr.
A course that examines the fundamentals of optimal filtering and estimation, Wiener filters, linear prediction, deepest-descent and stochastic gradient algorithms; frequency-domain adaptive filters; method of least squares, recursive least squares, fast fixed order and order-recursive (lattice) filters; misadjustment, convergence and tracking analyses, stability issues, finite precision effects; connections with Kalman filtering; and nonlinear adaptive filters. Prerequisite: Senior standing.

EECE 696  Applied Parallel Programming  3 cr.
This course is an introduction to parallel programming, and GPU computing. Topics include: GPU as a part of the PC architecture; CUDA, CUDA threads, and CUDA memory; floating point performance; Open CL; MPI; and reductions and their implementation. The course also includes application case studies, current topics, and a course project. Senior or Graduate Standing, Prerequisite: EECE 321.

EECE 697/ MECH 646  Wheeled Mobile Robotics  3 cr.
A course that provides an in-depth coverage of wheeled mobile robots. The material covers: nonholonomy and integrability of kinematic constraints. Modeling: kinematics, dynamics and state-space representation. Nonlinear control strategies (open-loop and closed –loop). Five case studies are covered all-over the course: car-like, cart-like, omni-directional wheeled, mobile wheeled pendulums and bike-like robots. Prerequisite: Senior standing.
EECE 698/MECH 650  
**Autonomous Mobile Robotics**  
3 cr.

This course is designed to provide engineering graduate and 4th year students with the opportunity to learn about autonomous mobile robotics. Topics include sensor modeling, vehicle state estimation, map-based localization, linear and nonlinear control, and simultaneous localization and mapping. **Prerequisites:** EECE 230, EECE 312, and MECH 435 or EECE 230 and EECE 460.

EECE 699/MECH 647  
**Hydraulic Servo Systems**  
3 cr.

A graduate lecture course, which teaches the fundamentals of modeling and control of hydraulic servo-systems. It provides theoretical background and practical techniques for the modeling, identification and control of hydraulic servo-systems. Classical and advanced control algorithms are discussed. The use of Matlab/Simulink and DYMOLA will be an integral part in this course. **Prerequisites:** MECH 314 and MECH 435 or MECH 314 and EECE 460.
Department of Mechanical Engineering

Chairperson: Abou Ghali, Kamel
Professors: Abou Ghali, Kamel; *Azoury, Pierre; Darwish, Marwan; Ghaddar, Nesreen K. (Qatar Chair in Energy Studies); Hamade, Ramsey; Moukalled, Fadl; Shihadeh, Alan
Professor Emeritus: Sakkal, Fateh
Associate Professors: Ahmad, Mohammad; Kuran, Albert; Lakiss Issam
Assistant Professors: Al-Hindi, Mahmoud; Asmar, Daniel; Azizi, Fouad; Liermann, Matthias; Oweis, Ghanem; Saad, Walid; Safieddine, Salem; Shammas, Elie; Shehadeh, Mutasem; Zeaiter, Joseph
Lecturers: Abou Chakra, Hadi; Hassoun, Talal; Kasamani, Jihad; Najm, Wajih; Naserreddine, Mohammad; Rouhana, Natalie
Instructors: Al Saidi, Abdul-Kader; El Chmeitelly, Rana; Jalgha, Bassam; Karaoğlanian, Nareg; Kassis, Lina; Keblawi, Amer; Kfoury, Elie; Seif, Cherbe

The Department of Mechanical Engineering offers three undergraduate degree programs and a minor: Bachelor of Engineering, major Mechanical Engineering (BE ME); Bachelor of Engineering, major Chemical Engineering (BE ChE); Bachelor of Science, major Chemical Engineering (BS ChE); and a minor in Chemical Engineering.

Bachelor of Engineering (BE): Major Mechanical Engineering

The Mechanical Engineering Program extends over a four-year period offered exclusively on a daytime on-campus basis. The program is offered in eleven terms, eight terms are 16-week fall/spring semesters given over four years, and three terms are eight-week summer terms taken during the first three years of the program. In the summer term of the third year (Term IX), students are required to participate in a practical training program with a local, regional, or international organization. The entire program is equivalent to five academic years, but is completed in four calendar years with three summer terms.

The undergraduate program also provides the students with options to pursue minors in the following:
- Applied Energy offered by FEA
- Biomedical Engineering offered by ECE
- Chemical Engineering offered by ME
- Engineering Management offered by the EM Program

Other minors can be sought in the Faculty of Arts and Sciences and the Suliman S. Olayan School of Business.

* Part time
### Program Mission
The mechanical engineering faculty has agreed that the undergraduate program mission is as follows:

The undergraduate program in Mechanical Engineering seeks to empower students to pursue successful careers and to create a learning environment in which they can develop their creative and critical thinking, their ability to grow into lifelong learners in the light of ever-increasing challenges of modern technology, and their commitment to the ethical and professional responsibilities required in their calling at the global level while focusing on the needs of Lebanon and the region.

### Program Educational Objectives
The program is based on the following education objectives that were approved by the mechanical engineering faculty members on May 27, 2010.

Our graduates will be able to advance successfully in their careers as reflected in continued employment, job satisfaction, leadership responsibilities, and professional recognition.

Our graduates will be able to succeed in graduate studies as reflected in admission to highly ranked programs, timely completion of degree requirements, and recognition by competitive fellowships and other awards.

### Program Requirements
The undergraduate curriculum for the degree of Bachelor of Engineering (BE), Major: Mechanical Engineering is a five-year program. It consists of 173 semester credit hours of course work of which 30 credits are completed in the freshman year while the student is enrolled in the Faculty of Arts and Sciences and 143 credits are completed in four years while the student is enrolled at the Faculty of Engineering and Architecture. Students admitted at the sophomore level will be required to complete 143 credits in four years to earn the degree as outlined here:

- **General Engineering:** CIVE 210, EECE 210, EECE 230, EECE 312, EECE 312L, ENMG 400
- **Mathematics:** MATH 201, MATH 202, MATH 212, MATH 218, MATH 251, STAT 230
- **Sciences:** PHYS 211, PHYS 211L, CHEM 202, CHEM 203, and one biology elective (BIOL 210 or any other 200 level biology course)
- **General Education:** Arabic course (based on APT), ENGL 206, one English elective, two social sciences courses, three humanities courses, and a course on ethics approved for the GE program
- **ME Core Courses:** MECH 200, MECH 220, MECH 230, MECH 310, MECH 314, MECH 320, MECH 332, MECH 340, MECH 341, MECH 410, MECH 412, MECH 414, MECH 420, MECH 421, MECH 430, MECH 435, MECH 435L, MECH 510, and MECH 520
- **Technical Electives:** Five courses with at least three from the selected ME track. One elective can be from outside the major
- **Approved Experience:** MECH 500
- **Final Year Project:** MECH 501 and MECH 502

### Curriculum

<table>
<thead>
<tr>
<th>Term I (Fall)</th>
<th>Plan A</th>
<th>Plan B</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 201</td>
<td>Calculus and Analytic Geometry III</td>
<td>MATH 201</td>
<td>Calculus and Analytic Geometry III</td>
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<tr>
<td>EECE 230</td>
<td>Introduction to Programming</td>
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<tr>
<td>CIVE 210</td>
<td>Statics</td>
<td>CIVE 210</td>
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<tr>
<td>MECH 220</td>
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<tr>
<td>PHYS 211</td>
<td>Electricity and Magnetism</td>
<td>PHYS 211</td>
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<td>PHYS 211L</td>
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<tbody>
<tr>
<td>EECE 210</td>
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<tr>
<td>MECH 200</td>
<td>Introduction to Mechanical Engineering</td>
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<tr>
<td>MATH 202</td>
<td>Differential Equations</td>
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<td>MECH 230</td>
<td>Dynamics</td>
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<td>English Elective</td>
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<tbody>
<tr>
<td>STAT 230</td>
<td>Introduction to Probability and Random Variables</td>
</tr>
<tr>
<td>CHEM 202</td>
<td>Introduction to Environmental Chemistry</td>
</tr>
<tr>
<td>CHEM 203</td>
<td>Introduction Chemical Techniques</td>
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<tbody>
<tr>
<td>EECE 312</td>
<td>Electronics(for ME students)</td>
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<tr>
<td>EECE 312L</td>
<td>Circuits and Electronics Lab</td>
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<td>MECH 310</td>
<td>Thermodynamics I</td>
</tr>
<tr>
<td>MECH 340</td>
<td>Engineering Materials</td>
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<tr>
<td>MATH 212</td>
<td>Introductory Partial Differential Equations</td>
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<tbody>
<tr>
<td>MATH 218</td>
<td>Elementary Linear Algebra with Applications</td>
</tr>
<tr>
<td>MECH 314/314L</td>
<td>Introduction to Fluid Mechanics</td>
</tr>
<tr>
<td>MECH 320</td>
<td>Mechanics of Materials</td>
</tr>
<tr>
<td>MECH 332</td>
<td>Mechanics of Machines</td>
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<tr>
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Mechanical Engineering Optional Tracks

The core courses in the mechanical engineering program are offered in the following track areas:
- Thermal and Fluid Engineering
- Mechatronics
- Design, Materials, and Manufacturing
- Control and Robotics

The student may opt for any track (Thermal and Fluid – Mechatronics – Design, Materials, and Manufacturing) by taking at least three technical electives in the selected track. Normally one technical elective is allowed from outside the mechanical engineering major.

The ME Track in Control and Robotics provides a coherent academic framework between the ECE and ME departments in the area of control, instrumentation, and robotics. This track is open to all undergraduate ME and ECE students. ME students interested in taking the Control and Robotics Track must satisfy the following course requirements: MECH 432 (2 cr.), MECH 430 (3 cr.), MECH 435 (2 cr.), MECH 435L (1cr.), one elective from list A (Control), one elective from list B (Robotics), and one elective from either list A, B, or C.

### Track I: Thermal and Fluid Engineering

**Term VI (Summer)**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MECH 432 Dynamic Systems Analysis</td>
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<tr>
<td>BIOL 210 Biology Elective</td>
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<td>Arabic Elective</td>
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**Term VII (Fall)**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MATH 251 Numerical Computing</td>
<td>3</td>
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<tr>
<td>MECH 435 Control Systems</td>
<td>3</td>
</tr>
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<td>MECH 435L Control Systems Lab</td>
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<tr>
<td>MECH 520 Mechanical Design II</td>
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**Term VIII (Spring)**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>ENGW 400 Engineering Economy</td>
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<tr>
<td>MECH 412 Heat Transfer</td>
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<tr>
<td>MECH 414 Thermodynamics II</td>
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<tr>
<td>MECH 520 Mechanical Design II</td>
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<td>Social Sciences Elective</td>
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**Term IX (Summer)**

<table>
<thead>
<tr>
<th>Course</th>
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<td>MECH 500 Approval Experience</td>
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**Term X (Fall)**

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<th>Course</th>
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<tbody>
<tr>
<td>MECH 501 Final Year Project I</td>
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<tr>
<td>MECH 510 Design of Thermal Systems</td>
<td>3</td>
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<tr>
<td>Ethics Course (Humanities)</td>
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<tr>
<td>Technical Elective I</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective II</td>
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**Term XI (Spring)**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MECH 502 Final Year Project II</td>
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<tr>
<td>Technical Elective III</td>
<td>3</td>
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<tr>
<td>Technical Elective IV</td>
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<tr>
<td>Technical Elective V</td>
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<td>Humanities Elective</td>
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### Track II: Design, Materials, and Manufacturing

**Term VI (Summer)**

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CIVE 210 Statics</td>
<td>3</td>
</tr>
<tr>
<td>MECH 200 Introduction to Mechanical Engineering</td>
<td>3</td>
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<tr>
<td>MECH 220 Engineering Graphics</td>
<td>1</td>
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<tr>
<td>MECH 320 Mechanics of Materials</td>
<td>3</td>
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</table>
Bachelor of Engineering (BE):
Major: Chemical Engineering

This is a new undergraduate program leading to the degree of Bachelor of Engineering (BE), Major: Chemical Engineering.

Program Mission

The mission of chemical engineering in FEA is to provide a stimulating and supportive environment for quality education; to prepare graduates for career opportunities in a rapidly changing world by fostering the development of professionalism, leadership qualities and ethical behavior, and to contribute to expanding the knowledge in chemical engineering and its related fields.

Program Educational Objectives

- Our graduates will be able to advance successfully in their careers as reflected in continued employment, job satisfaction, leadership responsibilities, and professional recognition; and will maintain ties with the University.
- Our graduates will be able to build upon their undergraduate-level scientific knowledge and engineering skills through graduate study in the sciences and engineering.
- Our graduates will be professionals who recognize the broader aspects of engineering practice including economic, environmental, social, political, safety, and sustainability constraints.
Bachelor of Engineering Program Requirements

The undergraduate curriculum for the degree of Bachelor of Engineering (BE), Major: Chemical Engineering is a five-year program. It consists of 173 semester credit hours of course work of which 30 credits are completed in the freshman year while the student is enrolled in the Faculty of Arts and Sciences and 140 credits are completed in four years while the student is enrolled at the Faculty of Engineering and Architecture. Students who are admitted at the sophomore level will be required to complete 143 credits in four years to earn the degree as outlined here:

General Engineering Fundamentals (19 credits)
- CIVE 210 Statics 3 cr.
- EECE 210 Electric Circuits 3 cr.
- EECE 230 Computers and Programming 3 cr.
- MECH 220 Engineering Graphics 1 cr.
- MECH 310 Thermodynamics I 3 cr.
- MECH 340 Engineering Materials 3 cr.
- ENMG 500 Engineering Management I 3 cr.

Mathematics (15 credits)
- MATH 201 Calculus and Analytic Geometry III 3 cr.
- MATH 202 Differential Equations 3 cr.
- MATH 218 Elementary Linear Algebra with Applications 3 cr.
- MATH 251 Numerical Computing 3 cr.

Sciences (15 credits)
- CHEM 204 Physical Chemistry for Chemical Engineers 2 cr.
- CHEM 207 Survey of Organic Chemistry and Petrochemicals 4 cr.
- CHEM 219 Analytical and Instrumental Chemistry for Chemical Engineers 3 cr.
- BIOL 210 Human Biology 3 cr.
- Science Elective 3 cr.

General Education (27 credits) beyond Freshman at 200 Level

Given the current AUB General Education Requirements, as stipulated in the undergraduate catalogue, students are required to complete twelve credits in the humanities, (one must be an ethics course) six credits in the social sciences, six credits in English, and three credits in Arabic.

Core Chemical Engineering Courses (55 credits)
- CHEN 200 Introduction to Chemical Engineering 3 cr.
- CHEN 310 Transport Phenomena Lab 2 cr.
- CHEN 311 Introduction to Fluids Engineering 3 cr.
- CHEN 312 Separation Processes 3 cr.
- CHEN 314 Chemical Engineering Thermodynamics 3 cr.
- CHEN 351 Process Instrumentation and Measurements 3 cr.
- CHEN 410 Unit Operation Lab 2 cr.
- CHEN 411 Heat and Mass Transfer Operations 3 cr.
- CHEN 417 Reaction Engineering and Reactor Design 3 cr.
- CHEN 451 Process Control 2 cr.
- CHEN 451L Process Control Lab 1cr.

Chemical Engineering Electives (12 credits)
- CHEN 413/CIVE 450 Water and Wastewater Treatment 3 cr.
- CHEN 490 Fundamentals of Petroleum Engineering 3 cr.
- CHEN 590 Petroleum Refining 3 cr.
- CHEN 541 Biochemical and Bioprocess Engineering 3 cr.
- CHEN 612 Desalination 3 cr.
- CHEN 613 Membrane Separation Processes 3 cr.
- CHEN 614 Environmental Engineering Separation Processes 3 cr.
- CHEN 617 Chemical Reactor Analysis and Design 3 cr.
- CHEN 618 Colloid and Interface Science 3 cr.
- CHEN 651 Advanced Process Control 3 cr.
- CHEN 672 Polymer Science 3 cr.

BE in Chemical Engineering: Curriculum Plan

Freshman year (for students admitted at freshman level)

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 101 Calculus I</td>
<td>3</td>
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<tr>
<td>CHEM 101 General Chemistry I</td>
<td>4</td>
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<td>Social Science Elective</td>
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<tr>
<td>Arabic Elective</td>
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<tr>
<td>ENGL 200 English elective (200 level)</td>
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<table>
<thead>
<tr>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 102 Calculus II</td>
<td>3</td>
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<tr>
<td>PHYS 101E Introductory Physics I</td>
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<tr>
<td>PHYS 101L Introductory Physics I Lab</td>
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<tr>
<td>CHEM 102 General Chemistry II</td>
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<tr>
<td>Humanities Elective</td>
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### First Year (40 credits)

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<tbody>
<tr>
<td>MATH 201</td>
<td>Calculus and Analytic Geometry III</td>
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<tr>
<td>CIVE 210</td>
<td>Statics</td>
</tr>
<tr>
<td>EECE 230</td>
<td>Introduction to Programming</td>
</tr>
<tr>
<td>MECH 220</td>
<td>Engineering Graphics</td>
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<tr>
<td>ENGL 206</td>
<td>English Technical Writing</td>
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<tbody>
<tr>
<td>CHEN 200</td>
<td>Introduction to Chemical Engineering</td>
</tr>
<tr>
<td>MATH 202</td>
<td>Differential Equations</td>
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<tr>
<td>EECE 210</td>
<td>Electric Circuits</td>
</tr>
<tr>
<td>MECH 310</td>
<td>Thermodynamics I</td>
</tr>
<tr>
<td>ENGL Elective</td>
<td>Elective</td>
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<tbody>
<tr>
<td>STAT 230</td>
<td>Introduction to Probability and Random Variables</td>
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<tr>
<td>CHEM 204</td>
<td>Physical Chemistry for Chemical Engineers</td>
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<tr>
<td>CHEM 207</td>
<td>Survey of Organic Chemistry and Petrochemicals</td>
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### Second Year (35 credits)

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<tr>
<td>Arabic Elective</td>
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<tr>
<td>Ethics Course (Humanities)</td>
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<tr>
<td>MATH 218</td>
<td>Elementary Linear Algebra with Applications</td>
</tr>
<tr>
<td>CHEN 351</td>
<td>Process Instrumentation and Measurements</td>
</tr>
<tr>
<td>CHEN 311</td>
<td>Introduction to Fluids Engineering</td>
</tr>
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<td>CHEN 314</td>
<td>Chemical Engineering Thermodynamics</td>
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<tr>
<th>Term V (Spring)</th>
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<tbody>
<tr>
<td>CHEM 219</td>
<td>Analytical and Instrumental Chemistry for Chemical Engineers</td>
</tr>
<tr>
<td>CHEN 310</td>
<td>Transport Phenomena Lab</td>
</tr>
<tr>
<td>CHEN 312</td>
<td>Separation Processes</td>
</tr>
<tr>
<td>MECH 340</td>
<td>Engineering Materials</td>
</tr>
<tr>
<td>MATH 251</td>
<td>Numerical Computing</td>
</tr>
<tr>
<td>Social Science Elective</td>
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### Third Year (35 credits)

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<tbody>
<tr>
<td>CHEN 411</td>
<td>Heat and Mass Transfer Operations</td>
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<tr>
<td>CHEN 417</td>
<td>Reaction Engineering and Reactor Design</td>
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<tr>
<td>CHEN 470</td>
<td>Chemical Process Design</td>
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<tr>
<td>CHEN 480</td>
<td>Safety and Loss Prevention</td>
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<td>Humanities Elective</td>
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<thead>
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<th>Term VII (Fall)</th>
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<tbody>
<tr>
<td>ECON 212</td>
<td>Elementary Macroeconomics Theory</td>
</tr>
<tr>
<td>CHEN 411</td>
<td>Heat and Mass Transfer Operations</td>
</tr>
<tr>
<td>CHEN 417</td>
<td>Reaction Engineering and Reactor Design</td>
</tr>
<tr>
<td>CHEN 470</td>
<td>Chemical Process Design</td>
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<tr>
<td>CHEN 480</td>
<td>Safety and Loss Prevention</td>
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<tr>
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<th>Term VIII (Spring)</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEN 451</td>
<td>Process Control</td>
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<td>CHEN 451L</td>
<td>Process Control Lab</td>
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<td>CHEN 410</td>
<td>Unit Operation Lab</td>
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### Fourth Year (33 credits)

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<th>Term IX (Summer)</th>
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<td>CHEN 500</td>
<td>Approved Experience</td>
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### Fourth Year (33 credits)

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<tbody>
<tr>
<td>CHEN 531</td>
<td>Principles of Corrosion</td>
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<td>CHEN 511</td>
<td>Transport Phenomena</td>
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<tr>
<td>CHEN 501</td>
<td>Final Year Project I</td>
</tr>
<tr>
<td>BIOL 210</td>
<td>Human Biology</td>
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<td>ENMG 500</td>
<td>Engineering Management I</td>
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<td>CHEN 571</td>
<td>Chemical Product Design</td>
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<th>Term XI (Spring)</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEN 515</td>
<td>Mechanical Unit Operations</td>
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<tr>
<td>CHEN 570</td>
<td>Process Synthesis and Optimization</td>
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<tr>
<td>CHEN 502</td>
<td>Final Year Project II</td>
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<tr>
<td>Science Elective</td>
<td>Must be an approved GE Science Course</td>
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</table>
Bachelor of Science (BS): Major: Chemical Engineering

This is a new undergraduate program leading to the degree of Bachelor of Science (BS), Major: Chemical Engineering.

Program Mission
The mission of chemical engineering in FEA is to provide a stimulating and supportive environment for quality education; to prepare graduates for career opportunities in a rapidly changing world by fostering the development of professionalism, leadership qualities and ethical behavior, and to contribute to expanding the knowledge in chemical engineering and its related fields.

Program Educational Objectives
- Our graduates will be able to advance successfully in their careers as reflected in continued employment, job satisfaction, leadership responsibilities, and professional recognition; and will maintain ties with the University.
- Our graduates will be able to build upon their undergraduate-level scientific knowledge and engineering skills through graduate study in the sciences and engineering.
- Our graduates will be professionals who recognize the broader aspects of engineering practice including economic, environmental, social, political, safety, and sustainability constraints.

Bachelor of Science Program Requirements
The undergraduate curriculum for the degree of Bachelor of Science (BS), Major: Chemical Engineering is a four-year program. It consists of 140 semester credit hours of course work of which 30 credits are completed in the freshman year while the student is enrolled in the Faculty of Arts and Sciences and 110 credits are completed in three years while the student is enrolled at the Faculty of Engineering and Architecture. Students who are admitted at the sophomore level will be required to complete 110 credits in three years to earn the degree as outlined here:

General Engineering Fundamentals (16 credits)
- CIVE 210 Statics 3 cr.
- EECE 210 Electric Circuits 3 cr.
- EECE 230 Introduction to Programming 3 cr.
- MECH 220 Engineering Graphics 1 cr.
- MECH 310 Thermodynamics I 3 cr.
- MECH 340 Engineering Materials 3 cr.

Mathematics (15 credits)
- MATH 201 Calculus and Analytic Geometry III 3 cr.
- MATH 202 Differential Equations 3 cr.
- STAT 230 Introduction to Probability and Random Variables 3 cr.
- MATH 218 Elementary Linear Algebra with Applications 3 cr.
- MATH 251 Numerical Computing 3 cr.

Sciences (9 credits)
- CHEM 204 Physical Chemistry for Chemical Engineers 2 cr.
- CHEM 207 Survey of Organic Chemistry and Petrochemicals 4 cr.
- CHEM 219 Analytical and Instrumental Chemistry for Chemical Engineers 3 cr.

General Education (27 credits) beyond Freshman at 200 Level
Given the current AUB General Education Requirements, as stipulated in the Undergraduate catalogue, students are required to complete twelve credits in the humanities (one must be an ethics course), six credits in the social sciences, and six credits in English and three credits in Arabic.

Core Chemical Engineering Courses (37 credits)
- CHEN 200 Introduction to Chemical Engineering 3 cr.
- CHEN 310 Transport Phenomena Lab 2 cr.
- CHEN 311 Introduction to Fluids Engineering 3 cr.
- CHEN 312 Separation Processes 3 cr.
- CHEN 314 Chemical Engineering Thermodynamics 3 cr.
- CHEN 351 Process Instrumentation and Measurements 3 cr.
- CHEN 400 Approved Experience 0 cr.
- CHEN 401 Final Year Project 3 cr.
- CHEN 410 Unit Operation Lab 2 cr.
- CHEN 411 Heat and Mass Transfer Operations 3 cr.
- CHEN 417 Reaction Engineering and Reactor Design 3 cr.
- CHEN 451 Process Control 2 cr.
- CHEN 451L Process Control Lab 1 cr.
- CHEN 470 Chemical Process Design 3 cr.
- CHEN 480 Safety and Loss Prevention 3 cr.

Chemical Engineering Electives (6 credits)
- CHEN 413 Water and Wastewater Treatment 3 cr.
- CHEN 490 Fundamentals of Petroleum Engineering 3 cr.
- CHEN 511 Transport Phenomena 3 cr.
- CHEN 515 Mechanical Unit Operations 3 cr.
- CHEN 531 Principles of Corrosion 3 cr.
- CHEN 541 Biochemical and Bioprocess Engineering 3 cr.
- CHEN 570 Process Synthesis and Optimization 3 cr.
- CHEN 590 Petroleum Refining 3 cr.
- CHEN 612 Desalination 3 cr.
- CHEN 613 Membrane Separation Processes 3 cr.
- CHEN 614 Environmental Engineering Separation Processes 3 cr.
- CHEN 617 Chemical Reactor Analysis and Design 3 cr.
- CHEN 618 Colloid and Interface Science 3 cr.
- CHEN 651 Advanced Process Control 3 cr.
- CHEN 672 Polymer Science 3 cr.
- CHEN 673 Engineering of Drug Delivery Systems 3 cr.
# BS in Chemical Engineering: Curriculum Plan

**Freshman year (for students admitted at the freshman level)**

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
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<tbody>
<tr>
<td>Fall</td>
<td>MATH 101 Calculus I 3</td>
<td>MATH 102 Calculus II 3</td>
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<tr>
<td></td>
<td>CHEM 101 General Chemistry I 4</td>
<td>PHYS 101E Introductory Physics I 3</td>
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<tr>
<td></td>
<td>CHEM 102 General Chemistry II 4</td>
<td>CHEM 200 Introduction to Chemical Engineering 3</td>
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<tr>
<td></td>
<td>ENGL 200 English Elective (200 level) 3</td>
<td>ENGL 206 English Technical Writing 3</td>
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**First Year (40 credits)**

<table>
<thead>
<tr>
<th>Term I (Fall)</th>
<th>Credits</th>
<th>Term II (Spring)</th>
<th>Credits</th>
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<tr>
<td>MATH 201 Calculus and Analytic Geometry III 3</td>
<td>CHEN 200 Introduction to Chemical Engineering 3</td>
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<tr>
<td>CIVE 210 Statics 3</td>
<td>MATH 202 Differential Equations 3</td>
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<td>ECE 210 Introduction to Programming 3</td>
<td>EECE 210 Electric Circuits 3</td>
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<td>MECH 220 Engineering Graphics 1</td>
<td>MECH 310 Thermodynamics I 3</td>
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<td>ENGL 206 English Technical Writing 3</td>
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**Total 16**

<table>
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<tr>
<th>Term III (Summer)</th>
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<tbody>
<tr>
<td>STAT 230 Introduction to Probability and Random Variables 3</td>
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<td>CHEM 204 Physical Chemistry for Chemical Engineers 2</td>
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<tr>
<td>CHEM 207 Survey of Organic Chemistry and Petrochemicals 4</td>
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**Total 9**

**Second Year (35 credits)**

<table>
<thead>
<tr>
<th>Term IV (Fall)</th>
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<tbody>
<tr>
<td>Arabic Elective 3</td>
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<tr>
<td>Ethics Course (Humanities) 3</td>
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<tr>
<td>MATH 218 Elementary Linear Algebra with Applications 3</td>
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<tr>
<td>CHEN 351 Process Instrumentation and Measurements 3</td>
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<tr>
<td>CHEN 311 Introduction to Fluids Engineering 3</td>
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<tr>
<td>CHEN 314 Chemical Engineering Thermodynamics 3</td>
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**Total 18**

<table>
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<tr>
<th>Term V (Spring)</th>
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<tbody>
<tr>
<td>CHEM 219 Analytical and Instrumental Chemistry for Chemical Engineers 3</td>
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<td>CHEN 310 Transport Phenomena Lab 2</td>
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<td>CHEN 312 Separation Processes 3</td>
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<td>MECH 340 Engineering Materials 3</td>
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<td>MATH 251 Numerical Computing 3</td>
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<td>Social Science Elective 3</td>
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**Total 17**

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<th>Term VI (Summer)</th>
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<td>CHEN 400 Approved Experience 0</td>
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**Third Year (35 credits)**

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<th>Term VII (Fall)</th>
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<tr>
<td>ECON 212 Elementary Macroeconomics Theory 3</td>
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<td>CHEN 411 Heat and Mass Transfer Operations 3</td>
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<tr>
<td>CHEN 417 Reaction Engineering and Reactor Design 3</td>
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<tr>
<td>CHEN 470 Chemical Process Design 3</td>
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<td>CHEN 480 Safety and Loss Prevention 3</td>
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**Total 18**

<table>
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<tr>
<th>Term VIII (Spring)</th>
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<tr>
<td>CHEN 451 Process Control 2</td>
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<tr>
<td>CHEN 451L Process Control Lab 1</td>
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<tr>
<td>CHEN 410 Unit Operation Lab 2</td>
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<td>Technical Elective 3</td>
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<td>Technical Elective 3</td>
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<tr>
<td>Humanities Elective 3</td>
<td></td>
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<tr>
<td>CHEN 401 Final Year Project 3</td>
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</tbody>
</table>

**Total 17**
Minor in Chemical Engineering
The minor in chemical engineering is open to engineering students in majors other than chemical engineering.

Minor Program Requirements (21 credits)
The student taking the minor is required to complete 21 credits from the list given below. The student has to complete 15 credits of core courses and 6 credits of elective courses.

Required Core Courses (15 credits)
- MECH 310 Thermodynamics I 3 cr.
- CHEN 311 Introduction to Fluids Engineering 3 cr.
- CHEN 312 Separation Processes 3 cr.
- CHEN 411 Heat and Mass Transfer Operations 3 cr.
- CHEN 417 Reaction Engineering and Reactor Design 3 cr.

Elective Courses (6 credits)
- CHEN 314 Chemical Engineering Thermodynamics 3 cr.
- CHEN 451 Process Control 2 cr.
- CHEN 451L Process Control Lab 1 cr.
- CHEN 470 Chemical Process Design 3 cr.
- CHEN 480 Safety and Loss Prevention 3 cr.
- CHEN 490 Fundamentals of Petroleum Engineering 3 cr.
- CHEN 515 Mechanical Unit Operations 3 cr.
- CHEN 531 Principles of Corrosion 3 cr.
- CHEN 571 Chemical Product Design 3 cr.
- CHEN 612 Desalination 3 cr.
- CHEN 617 Polymer Science 3 cr.
- CHEN 672/ Introduction to Fluids Engineering 3 cr.

Course Descriptions

Mechanical Engineering Courses

MECH 200  Introduction to Mechanical Engineering  3 cr.
The course seeks to introduce students to the mechanical engineering discipline, build the student's interpersonal and communication skills, and give them insight about engineering concepts and creative design principles and an overview of mechanical engineering as a profession, and ethics in engineering. Teamwork experience is stressed. Prerequisite: MECH 220.

MECH 220  Engineering Graphics 1 cr.
The course aims at preparing the future engineer to be able to understand and create technical drawings. The course seeks to develop effective utilization of computer-aided drafting (CAD) skills in order to create engineering drawings: orthogonal projection, exploded and auxiliary views, sectioning and sectional views, dimensioning and tolerance schemes, standard drawing formats, and detailing. Introduction to the use of CAD packages (AutoCAD).

MECH 230  Dynamics 3 cr.
This is a basic course in engineering mechanics covering dynamics of particles and planar rigid bodies. This course introduces Newton's law of motion, the principle of work and energy, and the principle of impulse and momentum. Diagrammatic representations of the basic laws are applied on motion of particles, systems of particles, and rigid bodies. Prerequisites: CIVE 210 and MATH 201.

MECH 310  Thermodynamics I 3 cr.
This course seeks to provide a methodology by which students view objects in the physical universe as “systems” and apply to them the basic laws of conservation of mass, energy, and the entropy balance. The course covers the thermodynamic state and properties of a pure substance, energy and mass conservation, entropy and the second law. Applications involve closed setups and flow devices. Simple vapor and gas cycles applications

MECH 314/  Introduction to Fluids Engineering  3 cr.
An introductory course on fluid behavior emphasizing conservation of mass, momentum, energy and dimensional analysis; study of fluid motion in terms of the velocity field, fluid acceleration, the pressure field, and the viscous effects; applications of Bernoulli’s equation, Navier-Stokes, and modeling; flow in ducts, potential flows, and boundary layer flows. Prerequisite: MECH 310.

MECH 320  Mechanics of Materials 3 cr.
A course that addresses the mechanical behavior of materials under different loadings such as; axial, bending, transverse shear, torsion, and combined loadings. Stress and strain transformation is discussed. Deformation of beams and buckling in columns are covered. Prerequisite: CIVE 210.

MECH 332  Mechanics of Machines 3 cr.
A course that deals with the mechanization of motion, kinematics analysis of linkage mechanisms, synthesis of cam-follower mechanisms, gear terminology and types of gears, analysis and synthesis of gear trains, force analysis, and introduction to linkage synthesis. Prerequisite: MECH 230.

MECH 340  Engineering Materials 3 cr.
The course introduces fundamental concepts in materials science as applied to engineering materials: crystalline structures; imperfections, dislocations, and strengthening mechanisms; diffusion; phase diagrams and transformations; ferrous and non-ferrous metal alloys, ceramics, and polymers; structure-property relationships; material selection case studies.

MECH 341  Materials Lab 1 cr.
The course seeks to accompany and compliment MECH 340:Engineering Materials. The laboratory sessions are designed to impart a qualitative and quantitative understanding of the mechanical properties of engineering materials. The laboratory sessions will also examine topics related to the microstructure of materials. Corequisite: MECH 340.

MECH 410L  Thermal/Fluid Systems Laboratory 1 cr.
A series of experiments on basic thermodynamic cycles, psychrometry, combustion, and elementary fluid mechanics, with special emphasis on the use of the computer as a laboratory tool for data acquisition, reduction, analysis, and report preparation. Prerequisite: MECH 310.
MECH 412  Heat Transfer  3 cr.
The course seeks to impart an understanding of the fundamental concepts and laws of conduction, convection and radiation heat transfer and their application to the solution of engineering thermal problems. The course covers steady and transient heat conduction; extended surfaces; numerical simulations of conduction in one and two-dimensional problems; external and internal forced convection of laminar and turbulent flows; natural convection; heat exchanger principles; and thermal radiation, view factors and radiation exchange between diffuse and gray surfaces. The use of MatLab is integrated into the homework assignments. Prerequisite: MECH 314.

MECH 414  Thermodynamics II  3 cr.
A course investigating the availability and work potential of systems; irreversibility; second law efficiency; availability; gas mixtures; air-conditioning; chemical reactions; high speed flow, nozzles and diffusers; environmental, economic, and social implications. Prerequisite: MECH 310.

MECH 420  Mechanical Design I  3 cr.
This is an introductory course in machine design in which one learns how to determine the structural integrity of common machine components and to apply this knowledge within the context of machine design problems. Mechanical elements such as shafts, bearings, springs, welding joints and fasteners are studied with emphasis on their behavior under both static and fatigue loading. Prerequisites: MECH 320 and MECH 340.

MECH 421  Manufacturing Processes I  2.1; 3 cr.
A course covering traditional material removal processes (machining and abrasion), CNC machining, as well as non-traditional material removal processes (EDM, ECM, thermal cutting, etc.); the science behind these technologies; assembly processes such as welding, brazing, soldering, and fastening are also covered. The course emphasizes process capabilities and limitations, relative cost, and guidelines for process selection; and design for manufacturing guidelines. This course contains hands-on exercises in a machine shop environment. Prerequisites: MECH 320 and MECH 340.

MECH 430  Process Instrumentation and Measurements  2.1; 3 cr.
A course on general concepts of measurement systems; classification of sensors and sensor types; interfacing concepts; data acquisition, manipulation, transmission, and recording; introduction to LABVIEW; applications; team project on design, and implementation of a measuring device. Prerequisites: PHYS 211 and ECEE 312.

MECH 432  Dynamic System Analysis  2 cr.
A course introducing dynamic modeling and analysis of mechanical electrical, thermal, and fluid systems. The course integrates software to test and analyze the modeled systems. Prerequisites: EECE 210, and CIVE 210.

MECH 435  Control Systems  2 cr.
A lecture course which teaches the fundamentals about analysis of dynamic systems and design appropriate feedback control. The course includes a project and is taught in conjunction with a lab course MECH 435L. Prerequisites: EECE 210, MECH 430 and MECH 432.

MECH 435L  Control Systems Laboratory  1 cr.
This course involves a series of hands-on experiments on modeling and design of control systems using Matlab, Simulink, and LabVIEW. The course also includes a team project. Corequisite: MECH 435.

MECH 499  Undergraduate Research  3cr.
This course provides undergraduate students with advanced standing the opportunity to participate in faculty-supervised research. Before registering, students must submit a proposal for approval by the supervising faculty member and the department; the proposal must describe the nature of the research, specific goals, and deliverables at the end of the semester. The course may be counted once, as a technical elective. Prerequisites: Completion of 65 required credits in the major, and a cumulative average of 80 or above.

MECH 500  Approved Experience  1 b.
This is an eight-week professional training course in mechanical engineering.

MECH 501  Final Year Project I  1 cr.
The aim of this course is to provide students with practical experience in some design aspects of mechanical engineering. Students, working in groups, write a literature survey of an assigned project, critically analyze its components, and develop a bill of material necessary for the completion of the project. Prerequisites: MECH 500 and MECH 420.

MECH 502  Final Year Project II  4 cr.
A course in which the student integrates his/her acquired knowledge to deliver the product researched and planned in MECH 501. Prerequisite: MECH 501.

MECH 503  Special Topics in Mechanical Engineering  3 cr.

MECH 510  Design of Thermal Systems  2.1; 3 cr.
The course seeks to develop in students the ability to integrate rate mechanisms (i.e., heat transfer and fluid dynamics) into thermodynamic system modeling and analyses and provide design opportunities through open-ended problems with explicit considerations of engineering economics, optimization, environmental impact, ethical concerns, manufacturability and sustainability. Teamwork experience and communication skills are highly stressed. The students will gain some hands-on experience with the tools of investigation used for thermal and fluid systems and learn how to approach and solve problems typically encountered in engineering experimental work. Pre- or corequisites: MECH 410 and MECH 412.

MECH 511  Intermediate Fluid Mechanics  3 cr.
A course that deals with potential flow and boundary layer analysis; lift and drag; flow separation; the use of computational techniques to solve boundary layer problems; viscous internal channel flow and lubrication theory; one-dimensional compressible flow in nozzles and ducts; normal shock waves and channel flow with friction or heat transfer; fluid machinery including pumps and hydraulic turbines. Prerequisites: MECH 314 and MECH 412.

MECH 512  Internal Combustion Engines  2.1; 3 cr.
A course that examines the fundamentals of internal combustion engine design and operation, with emphasis on fluid/thermal processes. Topics include analysis of the respiration, combustion, and pollutant formation processes; heat transfer and friction phenomena; engine types and performance parameters; thermo-chemistry of fuel-air mixtures; the use of engine cycle models for performance predictions; and social implications of motorization. Pre- or corequisites: CHEM 202, MECH 414, and MECH 430.

MECH 513  Air Conditioning  3 cr.
A course on human thermal comfort and indoor air quality; solar radiation; heating and cooling load calculations in buildings; air conditioning systems; air and water distribution systems; computer-based calculations. Prerequisite: MECH 412.
MECH 514  Gas Turbines  3 cr.
A course that introduces the thermodynamic and aerodynamic theory forming the basis of gas turbine design: shaft power cycles; gas turbine cycles for aircraft propulsion; turbofan and turbojet engines; design and analysis of centrifugal and axial flow compressors and turbines. Prerequisites: MECH 314 and MECH 414.

MECH 515  Steam Turbines  3 cr.
A course that deals with impulse and reaction steam turbines, steam turbine cycles, flow of steam in nozzles, design aspects of turbines stage losses and efficiency, velocity diagrams; impulse and reaction blading velocities; nucleation, condensation, and two-phase phenomena in flowing steam; boiler room and its various equipment; the complete steam power plant; governors, electric generator, and power transmission lines. Pr- or corequisites: MECH 314 and MECH 414.

MECH 516  Aerodynamics  3 cr.
A course on theoretical and empirical methods for calculating the loads on airfoils and finite wings by application of classical potential theory, thin airfoil approximations, lifting line theory, and panel methods; wings and airplanes; application of linearized supersonic flow to supersonic airfoils; performance and constraint analysis; longitudinal stability and control. Pr- or corequisites: MECH 314 and MECH 414.

MECH 517  Hydraulic Turbines for Power Generation  3 cr.
This course presents the principles and development of hydraulic turbines with emphasis on the techniques for formulating and solving problems. The importance of the incoming flow direction will be stressed. The Pelton, or tangential flow, turbine will be studied in detail. The course will provide a brief introduction to cavitation. Prerequisites: MECH 310 and MECH 410.

MECH 518  Environmental Challenges in Managing Ozone Depleting Substances  3 cr.
Introduction to environmental challenges related to engineering. Review of selected multilateral agreements and, in particular, review of the Montreal Protocol with emphasis on compliance strategies and discussion of the current status of ozone depleting substances (ODS); also reviews available technologies that work best now, and future and alternative technologies. Applications are related to firefighting, aerosols, solvents, foams and pesticides; management of ODS programs, good practices and safety issues. Prerequisite: MECH 310 or equivalent.

MECH 519  Compressible Flows  3 cr.
The objective of the course is to impart an understanding of the fundamental principles of steady and unsteady one-dimensional perfect-gas flow. Students learn about the behavior of homogenous and homentropic flow, develop an understanding of normal shock waves and homogenous flow in nozzles; learn how to analyze frictional homogenous flow in a constant-area duct and frictionless diabatic flow in a constant-area duct; and learn how to draw skeleton wave diagrams of wave processes. Prerequisites: MECH 310 and MECH 314.

MECH 520  Mechanical Design II  3 cr.
This is an advanced course in mechanical design. Students taking this course are expected to have a firm grasp in the fundamentals of failure theories. This course proposes the methods for designing and selecting components such as gears, belts, clutches, brakes, flywheels, and journal bearings. A design project using a finite element package is emphasized. Prerequisites: MECH 332 and MECH 420.

MECH 521  Manufacturing Processes II  2.1; 3 cr.
A course on heat treatments, deformation, phase-change, and particulate consolidation processing of metals; fabrication processing of non-metallic engineering materials such as ceramics, polymers, and composites; emphasis on process capabilities and limitations, relative cost, and guidelines for process selection; the behavior of materials under processing conditions; design for manufacturing guidelines. This course emphasizes hands-on training exercises. Prerequisite: MECH 340.

MECH 522  Mechanical CAD/CAE/CAM  3 cr.
The course gives students exposure to the realm of computer-aided design (CAD), computer-aided engineering (CAE), and computer-aided manufacturing (CAM). The course teaches the students to harness the power of these powerful tools in the solution of various problems of mechanical engineering. The course utilizes several commercially available software packages but the emphasis is placed on Pro/Engineer. Prerequisites: MECH 320, MECH 420 and MECH 432.

MECH 530/ EECE 560  Mechatronics System Design  2.1; 3 cr.
A course that discusses mechatronics; data; numbering systems, architecture of the 8-bit Motorola MC68HC11 microcontroller, assembly language programming, A/D and D/A conversion; parallel I/O programmable timer operation, interfacing sensors and actuators, applications; a team project on design and implementation of a mechatronic system. Prerequisites: EECE 312, MECH 430 or EECE 461.

MECH 531  Mechanical Vibrations  3 cr.
A course on free and forced response of non-damped and damped system; damping vibration absorption; response of discrete multi-degree of freedom systems; modal analysis; vibration measurement, case studies, vibration analysis with Matlab and Simulink. Prerequisite: MECH 230.

MECH 532  Dynamics and Applications  3 cr.
This course examines the dynamics of particles and rigid bodies moving in three dimensions. Topics include Lagrange's equations of motion for particles, rotations of rigid bodies, Euler angles and parameters, kinematics of rigid bodies, and the Newton-Euler equations of motion for rigid bodies. The course material will be illustrated with real examples such as gyroscopes, spinning tops, vehicles, and satellites. Applications of the material range from vehicle navigation to celestial mechanics, numerical simulations, and animations. Prerequisite: MECH 230.

MECH 533  Electric Machines and Drives  3 cr.
This course covers the fundamentals of electromagnetic circuits, three-phase circuits, transformers: single-phase ideal and real transformers, construction and operation; fundamentals of AC machines, operation of synchronous generators; induction motors: construction and principle of operation, power, torque, and efficiency expressions; AC drives: starting and speed control strategies, plugging and regenerative breaking; DC motors types and control strategies, stepper motors: types, operational characteristics, drivers configurations. Prerequisites: EECE 210 and MECH 310.

MECH 535  Fluid Power Systems  3 cr.
This is a senior level undergraduate lecture course which covers the fundamentals of fluid power transmission and drive technology. Students learn about the main hydraulic and pneumatic components and their static and dynamic performance characteristics. Students learn how to read circuit diagrams and understand the principles of circuit operation. Through the use of simulation software students will learn to design and analyze complex fluid power systems. Prerequisites: MECH 314 and MECH 435.
MECH 540  Selection and Properties of Materials  3 cr.
A course that reviews the mechanical behavior of materials. Topics covered include structure-property relationships in materials; continuum mechanics and tensor notation; theories of elastic, plastic, viscoelastic behavior of materials; elements of creep, fatigue, and fracture mechanics. Prerequisite: MECH 340.

MECH 550  Computer Applications in Mechanical Engineering  3 cr.
A course dealing with the application of numerical techniques for the solution of a variety of mechanical engineering problems involving systems of linear or non-linear algebraic equations, systems of ordinary differential equations of the initial and boundary value types, systems of ordinary differential equations, and partial differential equations of the parabolic, elliptic, and hyperbolic types. Engineering applications are introduced through a number of case study problems. Prerequisites: MATH 202 and MATH 251.

MECH 555/EECE463  Artificial Intelligence for Control Systems  3cr.
This is an introductory course in the evolving field of artificial intelligence (AI) for control systems. It aims at giving students a solid foundation in AI by covering basic techniques such as A* searching, reasoning under uncertainty, probabilistic reasoning over time, multi objects tracking, path planning, scheduling, communicating, perceiving and learning as applied to control systems, robotics and manufacturing. The group project and individual lab assignments will provide students with hands on implementation experience of an intelligent control agent capable of basic learning. Prerequisite: EECE 460 or MECH435.

MECH 600  Applied Reservoir Engineering I  3 cr.
This course introduces the concepts and principles needed to understand and analyze hydrocarbon reservoir fluid systems, and defines (with the help of geological and petrophysical principles) the size and contents of petroleum accumulations. Students will learn to organize programs for systematically collecting, recording, and analyzing data describing fundamental characteristics of individual well and reservoir performance (i.e. pressure, production, PVT data). The course covers topics on: fundamental concepts of fluid distribution, porosity distribution, trapping conditions; nature and type of primary drive mechanisms; production rates, ultimate recoveries, and reserves of reservoirs; supplementary recovery schemes to augment and improve primary recovery; economics analysis of developing and producing reservoirs and conducting supplementary recovery operations. Prerequisites: MECH 314 or CIVE 340, and CHEN 490.

MECH 602  Energy Conservation and Utilization  3 cr.
A course that deals with methods for reduction of losses and gains from a building envelope, energy conservation in cooling, heating, air-handling, and plumbing systems, energy management program. Prerequisites: MECH 310 and MECH 412.

MECH 603  Solar Energy  3 cr.
A course discussing the fundamentals of solar radiation, collectors and concentrators, energy storage, estimation and conversion formulas for solar radiation. Prerequisite: MECH 412.

MECH 604  Refrigeration  3 cr.
A course on fundamental concepts and principles, cold storage; functions and specifications of refrigeration equipment, applications. Prerequisite: MECH 412.

MECH 605  Refrigeration Fundamentals and Applications  3 cr.
This course on theory and applications of micro flows; the continuum hypothesis and the various flow regimes; shear and pressure driven micro flows; electrokinetically driven liquid micro flows; compressibility effects of the micro flow of gases; particulate flows in bio-applications; modeling techniques; hybrid continuum-molecular methods; reduced order modeling of micro flows in multi-physics micro flow applications; case studies in BioMEMS. Prerequisites: MECH 310, MECH 314, and MECH 412, or equivalent.

MECH 606  Aerosol Dynamics  3 cr.
This course covers the physical and chemical principles that underlie the behavior of aerosols—collections of solid or liquid particles, such as clouds, smoke, and dust, suspended in gases—and the instruments used to measure them. Topics include: aerosol particle characterization; transport properties and phenomena in quiescent, laminar, and turbulent flows; gas- and particle-particle interactions; and applications to human respiratory tract deposition and atmospheric pollution. Prerequisites: MECH 314, MECH 412, and MECH 414, or approval of instructor.

MECH 607  Micro Flows Fundamentals and Applications  3 cr.
A course on theory and applications of micro flows; the continuum hypothesis and the various flow regimes; shear and pressure driven micro flows; electrokinetically driven liquid micro flows; compressibility effects of the micro flow of gases; particulate flows in bio-applications; modeling techniques; hybrid continuum-molecular methods; reduced order modeling of micro flows in multi-physics micro flow applications; case studies in BioMEMS. Prerequisites: MECH 310, MECH 314, and MECH 412, or equivalent.

MECH 608  Artificial Intelligence for Control Systems  3 cr.
This is an introductory course in the evolving field of artificial intelligence (AI) for control systems. It aims at giving students a solid foundation in AI by covering basic techniques such as A* searching, reasoning under uncertainty, probabilistic reasoning over time, multi objects tracking, path planning, scheduling, communicating, perceiving and learning as applied to control systems, robotics and manufacturing. The group project and individual lab assignments will provide students with hands on implementation experience of an intelligent control agent capable of basic learning. Prerequisite: EECE 460 or MECH435.

MECH 609  Applied Reservoir Engineering II  3 cr.
This course introduces the advanced concepts and principles needed to analyze hydrocarbon reservoir fluid systems, and defines the size and contents of petroleum accumulation. Students will learn to organize programs for systematically collecting, recording, and analyzing data describing the advanced characteristics of individual well and reservoir performance. This course of advanced reservoir engineering topics covers a variety of topics such as: fluid flow in a porous medium; fluid distribution, fluid displacement; fractional flow equation; Buckley-Leverete equation; pressure draw-down and pressure buildup analysis; in addition to the nature and type of primary, secondary and tertiary recovery, water influx and prediction of water-flood behavior, reservoir model simulation and history matching. Prerequisite: MECH 600.

MECH 610  Energy Conservation and Utilization  3 cr.
A course that deals with methods for reduction of losses and gains from a building envelope, energy conservation in cooling, heating, air-handling, and plumbing systems, energy management program. Prerequisites: MECH 310 and MECH 412.

MECH 611  Solar Energy  3 cr.
A course discussing the fundamentals of solar radiation, collectors and concentrators, energy storage, estimation and conversion formulas for solar radiation. Prerequisite: MECH 412.

MECH 612  Refrigeration  3 cr.
A course on fundamental concepts and principles, cold storage; functions and specifications of refrigeration equipment, applications. Prerequisite: MECH 412.
MECH 619  Quality Control in Manufacturing Systems  3 cr.
The course covers the foundations of modern methods of quality control and improvement that may be applied to manufacturing industries. It aims to introduce students to the tools and techniques of quality control used in industrial applications, and develop their ability to apply the tools and techniques to develop solutions for industrial problems. Emphasis is given to the application of quality management techniques to solve industrial case problems. The course emphasizes the philosophy and fundamentals of quality control, the statistics foundations of quality control, statistical process control, acceptance sampling, and product and process design. Prerequisites: STAT 230 and MECH 421.

MECH 622  Modeling of Machining Processes and Machines  3 cr.
This course covers the principles and technology of metal machining; mechanics of orthogonal and 3D metal cutting; static deformations, forced and self-excited vibrations and chatter; and design principles of metal cutting CNC machines. Prerequisite: MECH 421.

MECH 624  Mechanics of Composite Materials  3 cr.
A course on anisotropic elasticity and laminate theory, analysis of various members of composite materials, energy methods, failure theories, and micromechanics. Materials and fabrication processes are introduced. Prerequisites: MECH 320 or CIVE 310, and MECH 340, or equivalent.

MECH 625  Fatigue of Materials  3 cr.
A course that deals with high cycle fatigue; low cycle fatigue; S-N curves; notched members; fatigue crack growth; cycling loading; Manson-Coffin curves; damage estimation; creep and damping. Prerequisite: MECH 320 or CIVE 310.

MECH 626  Metals and their Properties  3 cr.
A course that investigates ferrous and non-ferrous alloys; industrial equilibrium diagrams; heat treatment of metals; surface properties of metals; plastic deformation of metals; elements of fracture mechanics; process-structure-properties relations. Prerequisite: MECH 340.

MECH 627  Polymers and their Properties  3 cr.
A course on chemistry and nomenclature, polymerization and synthesis, characterization techniques, physical properties of polymers, viscoelasticity and mechanical properties and applications. Prerequisite: MECH 340.

MECH 628  Design of Mechanisms  3 cr.
A course involving graphical and analytical synthesis of single- and multi-loop linkage mechanisms for motion, path, and function generation through 2-3-4- and 5-precision positions; optimum synthesis of linkage mechanisms; synthesis of cam-follower mechanisms; synthesis of gear trains. Prerequisite: MECH 332.

MECH 630  Finite Element Methods in Mechanical Engineering  3 cr.
A course on the classification of machine components; displacement-based formulation; line elements and their applications in design of mechanical systems; isoparametric formulation; plane stress, plane strain, axi-symmetric, and solid elements and their applications; modeling considerations and error analysis; introduction to ALGOR general formulation and Galerkin approach; and analysis of field problems. Prerequisites: MECH 420 and MATH 251.

MECH 631  Micro Electro Mechanical Systems (MEMS)  3 cr.
A course that deals with materials for micro-sensors and micro-actuators, materials for micro-structures, microfabrication techniques and processes for micromachining, computer-aided design and development of MEMS, commercial MEMS structures and systems, packaging for MEMS, future trends, and includes a team project. Prerequisite: MECH 430.

MECH 633  Biomechanics  3 cr.
A course on study of the biomechanical principles underlying the kinetics and kinematics of normal and abnormal human motion. Emphasis is placed on the interaction between biomechanical and physiologic factors (bone, joint, connective tissue, and muscle physiology and structure) in skeleto-motor function and the application of such in testing and practice in rehabilitation. The course is designed for senior level undergraduate/graduate engineering students with no previous anatomy/physiology. Prerequisite: MECH 320 or CIVE 310, or consent of instructor.

MECH 634  Biomaterial and Medical Devices  3 cr.
A course that examines the structure-property relationships for biomaterials and the medical applications of biomaterials and devices. The first part of the course focuses on the main classes of biomaterials, metal, ceramic, polymeric, and composite implant materials, as well as their interactions with the human body (biocompatibility). The second part examines the various applications of biomaterials and devices in different tissue and organ systems such as orthopedic, cardiovascular, dermatology, and dental applications. Experts from the medical community will be invited to discuss the various applications. Prerequisite: MECH 340, or approval of instructor.

MECH 637  Micromechanics and Crystal Plasticity  3 cr.
This course covers the theoretical knowledge of the deformation process in simple and polycrystalline solids with an emphasis on the role of dislocations and other types of defects on the overall mechanical properties of materials. Topics will include an introduction to crystallography, defects in crystals, fundamentals of dislocations, strengthening mechanisms, microstructures, and yielding. Prerequisites: MECH 340 and MECH 320.

MECH 641/EECE 661  Robotics  3 cr.
A course discussing concepts and subsystems; robot architecture; mechanics of robots; kinematics and kinetics; sensors and intelligence; actuators; trajectory planning of end effector motion; motion and force control of manipulators; robot languages. Prerequisite: MECH 435 or EECE 460.

MECH 642/EECE 692  Computer Vision  3 cr.
An introductory course on the problems and solutions of modern computer vision. Topics covered include image acquisition, sampling and quantization; image segmentation; geometric framework for vision: single view and two-views; camera calibration; stereopsis; motion and optical flow; recognition; pose estimation in perspective images. Prerequisites: MATH 202 and EECE 230.

MECH 643  Mechatronics and Intelligent Machine Engineering II  3 cr.
A course on sensors, sensor noise and sensor fusion; actuators; system models and automated computer simulation; information, perception, and cognition; planning and control; architectures, design, and development; a team project is included. Prerequisites: MECH 340 and MECH 530.

MECH 644  Modal Analysis  3 cr.
A course reviewing MDOF system vibrations, frequency response functions, damping, mobility measurement, curve fitting and modal parameter extraction, derivation of mathematical models, laboratory experiments, and projects are included. Prerequisite: MECH 531.
MECH 645  
Noise and Vibration Control  
A course on fundamental concepts in noise and vibration, passive and active damping strategies, damping materials, control methods; and applications. Prerequisites: MECH 230, MATH 212, and MECH 531.

MECH 646/EECE 697  
Wheeled Mobile Robotics  
A course that provides an in-depth coverage of wheeled mobile robots. The material covers: nonholonomy and integrability of kinematic constraints; modeling; kinematics, dynamics and state-space representation; and nonlinear control strategies (open-loop and closed-loop). Five case studies are covered all-over the course: car-like, cart-like, omni-directional wheeled, mobile wheeled pendulums and bike-like robots. Prerequisite: Senior or graduate standing.

MECH 647/EECE 699  
Hydraulic Servo Systems  
A graduate lecture course which covers the fundamentals of modeling and control of hydraulic servo-systems. It provides theoretical background and practical techniques for the modeling, identification and control of hydraulic servo-systems. Classical and advanced control algorithms are discussed. The use of Matlab/Simulink and DYMOLA will be an integral part in this course. Prerequisites: MECH 314 and MECH 435 or MECH 314 and EECE 460.

MECH 648/EECE 669  
Nonlinear Systems: Analysis, Stability, and Control  
This course presents a comprehensive exposition of the theory of nonlinear dynamical systems and its control with particular emphasis on techniques applicable to mechanical systems. The course will be punctuated by a rich set of mechanical system examples, ranging from violin string vibration to jet engines, from heart beats to vehicle control, and from population growth to nonlinear flight control. Prerequisite: MECH 435 or EECE 460.

MECH 650/EECE 698  
Autonomous Mobile Robotics  
This course is designed to provide engineering graduate and 4th year students with the opportunity to learn about autonomous mobile robotics. Topics include sensor modeling, vehicle state estimation, map-based localization, linear and nonlinear control, and simultaneous localization and mapping. Prerequisites: EECE 230, EECE 312, and MECH 435 or EECE 290 and EECE 460.

MECH 654/EECE 660  
System Analysis and Design  
A course that outlines state-space models of discrete and continuous, linear and nonlinear systems; controllability; observability; minimality; Eigenvector and transforms analysis of linear time invariant multi-input multi-output systems; pole shifting; computer control; design of controllers and observers. Prerequisite: Senior or graduate standing, or consent of instructor.

MECH 655/EECE 662  
Optimal Control  
A course on optimization theory and performance measures, calculus of variations, the maximum principle, dynamic programming, numerical techniques, LQR control systems. Prerequisite: Senior or graduate standing, or consent of instructor.

MECH 656/EECE 663  
System Identification  
This course introduces the fundamentals of system identification as the basic mathematical tools to fit models into empirical input-output data. While rooted in control theory, applications extend to general time-series modeling and forecasting, such as stock prices, biological data and others. Topics covered include parametric identification methods: time and frequency response analysis; parametric identification methods: prediction error methods, least squares, linear unbiased estimation and maximum likelihood; convergence, consistency and asymptotic distribution of estimates; properties and practical modeling issues: bias distribution, experiment design and model validation. Prerequisite: Senior or graduate standing, or consent of instructor.

MECH 660  
Advanced Fluid Mechanics  
A course that examines fundamental concepts and principles in addition to basic relations for continuous fluids; Vorticity dynamics, Kelvin Helmholtz theorems; Navier-Stokes equations; and turbulence and oscillating flows. Prerequisite: MECH 314.

MECH 663  
Computational Fluid Dynamics  
A course that deals with discretization process in fluid dynamics, numerical approaches and applications, iterative and direct matrix methods and numerical implementation of turbulence models. Prerequisites: MECH 314 and MECH 412.

MECH 665  
Unsteady Gas Flow  
A course examining equations of unsteady continuous adiabatic multidimensional flows, unsteady continuous one-dimensional flow of a perfect gas with and without discontinuities, applications and pressure exchangers. Prerequisite: MECH 414.

MECH 670  
Laboratory for Renewable Energy in Buildings  
A laboratory course that will investigate means of reducing building energy consumption first through green building design, giving consideration to building orientation, thermal massing, wind- and buoyancy-driven flows, “urban heat island” effects, and second, by retrofitting existing buildings with energy saving materials and devices such as window films, solar water heaters, and green roofs. This course is offered because in Lebanon and the region, electricity consumption for building services accounts for a major portion of national energy use and greenhouse gas emissions. Students will measure and compare effects of various designs and retrofit interventions on the thermal performance, lighting and glare, and natural ventilation of model-scale buildings, and characterize performance of devices used in green building design. Lab assignments may vary by semester but will normally include mathematical modeling and experimental measurement components organized around aspects of building physics. Prerequisite: MECH 430.

MECH 671  
Renewable Energy Potential, Technology, and Utilization in Buildings  
A course that covers the principles and utilization of solar (thermal and photovoltaic), wind, and geothermal energy, as well as energy from biomass. Issues relevant to energy efficiency and energy storage are discussed (heat and power storage and bio-tanks). The course distinguishes between energy sources for large-scale, industrial/ commercial settings and those intended for smaller structures. The potential of using renewable energy technologies as a complement to and, to the extent possible, replacement for conventional technologies, and the possibility of combining renewable and non-renewable energy technologies in hybrid systems are analyzed. Design aspects for active, passive, wind, bio-energy, and photovoltaic energy conversion systems for buildings; and strategies for enhancing the future use of renewable energy resources are presented. The course will include several demonstrations of concept experiments. Prerequisite: MECH 310. Students cannot receive credit for both MECH 671 and EECE 675.
MECH 672  Modeling Energy Systems  3 cr.
A course that covers indoor space thermal models. The course also deals with the analysis and modeling of building energy systems involving applications of thermodynamics, economics, heat transfer, fluid flow and optimization. The use of modern computational tools to model thermal performance characteristics of components of HVAC systems including chillers, recovery systems, flow control devices, heat exchanges, solar panels, dehumidification systems, boilers, condensers, cooling towers, fans, duct systems, piping systems, and pumps. The course will use modern simulation tools extensively. Prerequisite: MECH 310.

MECH 673  Energy Efficient Buildings with Good Indoor Air Quality  3 cr.
The course covers energy consumption standards and codes in buildings; energy conservation measures in built in environment to enhance the building’s energy efficiency while maintaining space thermal comfort and indoor air quality requirement; fundamental ventilation, indoor-air-quality, infiltration natural and mechanical ventilation, importance and impact of indoor air quality on human health and energy performance of the building air conditioning system; and ASHRAE requirement for ventilation. Particular focus will be given to green energy alternative measures. An overview of the different heating, ventilation and air conditioning system designs is covered. Performance and energy consumption of the conventional air conditioning system (constant and variable air volume) as well as the hybrid integrated air conditioning systems will be discussed and compared. The course will include several demonstrations of concept experiments. Prerequisite: MECH 310.

MECH 674  Energy Economics and Policy  3 cr.
A course that aims at developing an understanding of practical analytical skills of energy economics and planning approaches taking into account the cost of impact on the environment. This course will cover fundamental concepts of economic issues and theories related to energy, such as economics of natural and energy resources, aggregate supply and demand analysis, and the interrelationship between energy, economics and the environment as well as some important issues in energy policy. The course will also demonstrate the use of economic tools for decision making in energy and environment planning and policy. It will explore the terminology, conventions, procedures and planning policy applications. It will also cover a number of contemporary energy and environmental policy issues, including energy security, global warming, regulations of energy industries, energy research and development, and energy technology commercialization. Prerequisite: ENGM 400. Students cannot receive credit for both MECH 674 and ECON 333.

MECH 675  Building Energy Management Systems  3 cr.
A course that provides an opportunity for students to explore topics in energy management systems and management strategies for new and existing buildings; energy use in buildings; energy systems analysis and methods for evaluating the energy system efficiency; energy audit programs and practices for buildings and facilities; initiating energy management programs; guidelines for methods of reducing energy usage in each area in buildings; conservation of the energy in the planning, design, installation, utilization, maintenance; control and automation of the mechanical systems in existing and new buildings; air conditioning and ventilation systems in buildings; assessment and optimization of energy control strategies; prediction methods of economic and environmental impact of implemented control strategies and indoor settings. Prerequisites: MECH 310 and MECH 412.

MECH 676  Passive Building Design  3 cr.
A course that centers on issues surrounding the integration of sustainable and passive design principles into conceptual and practical building design. Topics will include: solar geometry, climate/regional limitations, natural lighting, passive design and sustainability initiatives, insulating and energy storing material, and bioclimatic design and concepts. Case studies will be used extensively as a vehicle to discuss the success/failure of ideas and their physical applications. The course will focus on the use of energy auditing/modeling methods as means to both design and evaluate the relative “greenness” of buildings, as well as to understand the global implications of sustainable buildings. The course will include several demonstrations of concept experiments. Prerequisite: MECH 671.

MECH 677  Heat Pumps  3 cr.
A course that focuses on heat pumps in low energy and passive buildings as well as ground source heat pump fundamentals, loop systems, open systems, soil/rock classification and conductivity, grouting procedures, and performance of ground source heat pumps in housing units; water loop heat pumps, inside the building, bore holes, design and optimization of heat pump plants, including heat sources for such plants, and cost effective design options will also be considered. The course includes study visits and seminars given by industry experts. Prerequisite: MECH 310.

MECH 678  Solar Electricity  3 cr.
A course that focuses on the solar cell: photo generation of current, characteristic current-voltage (I-V) curve, equivalent circuit, effect of illumination intensity and temperature: the Photovoltaic (PV) generator: characteristic I-V curve of a PV generator, the PV module, connections of modules, support, safeguards, shadowing; the PV system: batteries, power conditioning. PV Systems: grid-connected and stand-alone systems, economics and sizing, reliability, applications; and manufacturing: preparation of crystalline silicon wafers, formation of contacts, coatings, construction of modules. The course will include several demonstrations of concept experiments. Prerequisite: EECE 210.

MECH 679  Energy Audit Lab  2 cr.
A course designed to give the students “hands-on” experience with carrying out energy audit measurements and studies on buildings to identify possible savings through selected energy conservation measures. Students will carry out measurements to investigate ventilation, air conditioning equipment, lighting and other office and lab equipment. Students will then be introduced to Visual DOE or E-Quest to perform energy simulation of buildings. Such tools will then be used to carry out a full building simulation taking into consideration occupancy data, equipment, lights, and building envelope. A base case of energy usage will thus be established and energy conservation is then applied to deduce possible savings and their economic value. Pre- or corequisite: MECH 672.

Chemical Engineering Courses

CHEN 200  Introduction to Chemical Engineering  3 cr.
This course is an introduction to the most important processes employed by the chemical industries, such as plastics, pharmaceutical, chemical, petrochemical and biochemical. Major emphasis is on formulating and solving material and energy balances for simple and complex systems. Equilibrium concepts for chemical process systems are developed and applied. Computer software is utilized extensively. The course activities include guest speakers and plant trips.
CHEN 310  Transport Phenomena Lab  2 cr.
This lab includes experimentation in thermodynamics and heat, mass, and momentum transport on a bench scale; and measurement error estimation and analysis. Prerequisites: MECH 310 and CHEN 311.

CHEN 311  Introduction to Fluids Engineering  3 cr.
An introductory course on fluid behavior emphasizing conservation of mass, momentum, energy and dimensional analysis; study of fluid motion in terms of the velocity field, fluid acceleration, the pressure field, and the viscous effects; applications of Bernoulli's equation, Navier-Stokes, and modeling; flow in ducts, potential flows, and boundary layer flows. Prerequisite: MECH 310.

CHEN 312  Separation Processes  3 cr.
This course includes the design of industrial separation equipment using both analytical and graphical methods; equilibrium based design techniques for single and multiple stages in distillation, absorption/striping, and liquid-liquid extraction are employed; and an introduction to gas-solid and solid-liquid systems is presented as well. Mass transfer considerations are included in efficiency calculations and design procedures for packed absorption towers, membrane separations, and adsorption. Ion exchange and chromatography are discussed. Degrees of freedom analyses are threaded throughout the course as well as the appropriate use of software. Prerequisites: MECH 310, MATH 202, and CHEN 200.

CHEN 314  Chemical Engineering Thermodynamics  3 cr.
This course covers the applications of thermodynamics to pure and mixed fluids; and to phase equilibrium and chemical reaction equilibria. Prerequisites: MECH 310, MATH 202, and CHEN 200.

CHEN 351  Process Instrumentation and Measurements  2.1; 3 cr.
This course covers the general concepts of measurement systems; classification of sensors and sensor types; interfacing concepts; data acquisition, manipulation, transmission, and recording; introduction to LABVIEW and applications. A team design project related to instrumentation will be included. Prerequisites: EEECE 210 and MATH 202.

CHEN 400  Approved Experience  0 cr.
This is an eight-week professional training course in chemical engineering for students enrolled in the BS program.

CHEN 401  Final Year Project (for students in the BS program)  3 cr.
The Final Year Project provides collaborative design experiences with a problem of industrial or societal significance. Projects can originate with an industrial sponsor, from an engineering project on campus, or from other industrial or academic sources. In all cases, a project is a capstone experience that draws extensively from the students' engineering and scientific background and requires independent judgments and actions. The projects generally involve a number of unit operations, a detailed economic analysis, simulation, use of industrial economic and process software packages, and experimentation and/or prototype construction.

CHEN 410  Unit Operations Lab  2 cr.
This laboratory introduces students to basic concepts, experimental techniques and calculation procedures in unit operations. Experiments include fluid dynamics, heat exchange (pilot-scale units designed to study air-solid, steam-water, water-water heat transfer), cooling towers, gas absorption, solvent extraction, ultrafiltration of hemoglobin solutions in water, chemical reactions (to study stoichiometry and kinetics of batch reactions in the liquid phase), drying of solid materials, and distillation. Some reaction kinetics experiments and flow pattern in industrial process equipment are also included. Prerequisites: CHEN 310, CHEN 312, and CHEN 411.

CHEN 411  Heat and Mass Transfer Operations  3 cr.
The course covers heat conduction, convection, and radiation; general differential equations for energy transfer; conductive and convective heat transfer; radiation heat transfer; process heat exchangers molecular, convective and interface mass transfer; the differential equation for mass transfer; steady state molecular diffusion and film theory; convective mass transfer correlations; and mass transfer equipment. Prerequisites: MECH 310 and CHEN 311.

CHEN 417  Reactor Engineering and Reactor Design  3 cr.
This course introduces the subject of chemical reaction engineering and reactor design. Classical reaction kinetics concerning rates, mechanisms, temperature effects, and multiple reactions are studied. The concepts of batch, continuous stirred-tank, and plug flow reactors are introduced for the ideal case. Non-isothermal reactors and non-ideal flow are considered in the design of chemical reactor systems. Heterogeneous reactors and catalysis are also discussed. Prerequisites: CHEN 314, MATH 251, and CHEM 204.

CHEN 451  Process Control  2 cr.
This course covers the development of deterministic and non-deterministic models for physical systems, engineering applications, and simulation tools for case studies and projects. Prerequisites: CHEN 312, CHEN 351, and CHEN 470.

CHEN 451L  Process Control Lab  1 cr.
Laboratory experiments demonstrating the principles covered in the process dynamic and control course CHEN 451. These include temperature, temperature flow, and concentration measuring devices, and process control simulation for typical chemical plants. Corequisite CHEN 451.

CHEN 470  Chemical Process Design  3 cr.
This course is an integration of material from other chemical engineering courses with applications to the design of plants and processes representative of the chemical and related process industries; basic concepts and methodology for making rational decisions; and the implementation of real engineering projects and comparing alternatives. Prerequisites: MATH 251, CHEN 312, and CHEN 314.

CHEN 480  Safety and Loss Prevention  3 cr.
Topics covered in this class include: history of health and safety; causes and effects of loss; policy development; loss control and health basics; emergency preparedness and standards; hazard identification; safe process design; inspection and investigation processes; measurement, evaluation and audits of OHS&S program elements; legislation, HAZOP and HAZAN. Prerequisite: CHEN 200.

CHEN 500  Approved Experience  0 cr.
This is an eight-week professional training course in chemical engineering for students enrolled in the BE program.

CHEN 501  Final Year Project I  3 cr.
The Final Year Project provides collaborative design experiences with a problem of industrial or societal significance. Projects can originate with an industrial sponsor or from other industrial or academic sources.

CHEN 502  Final Year Project II  3 cr.
This course will be a continuation of CHEN 501 where the student will employ his/her acquired knowledge to investigate the design of overall processes, detailed design of individual unit operations, economic analysis and to use industrial economic and process software packages, experimentation and/or prototype construction integrating safety and environmental issues to produce the final optimized design and/or product. Prerequisite: CHEN 501.
CHEN 511  Transport Phenomena  3 cr.
This course covers the applications of the principles of momentum, heat and mass transfer to steady state and transient problems; molecular concepts; transport in turbulent flow; boundary layer theory; and numerical applications. Prerequisite: CHEN 411.

CHEN 515  Mechanical Unit Operations  3 cr.
This course introduces students to the principles and practices involved in contacting, conveying, separating, and storing single and multiphase systems. It includes the flow of incompressible fluids in conduits and past immerssed bodies; as well as the transportation, metering, and mixing of fluids. Unit operations involved in the contacting and physical separation of phases, such as fluidization, sedimentation and centrifugation, evaporation and membrane separation, are also studied. Prerequisites: MECH 310, CHEN 311, and CHEN 312.

CHEN 531  Principles of Corrosion  3 cr.
This course includes the application of electrochemical principles, corrosion reactions, passivation, cathodic and anodic protection, stress corrosion, and high-temperature oxidation. Prerequisites: MECH 340 and CHEN 314.

CHEN 570  Process Synthesis and Optimization  3 cr.
An introduction to the design and synthesis for the large scale production and processing of materials such as water, chemicals, petroleum products, food, drugs and wastes. The course introduces principles of optimization: continuous, linear and nonlinear, and mixed-integer linear and nonlinear problems. Applications to heat exchanger network synthesis, energy systems design, distillation and separation systems selection and optimization and design under uncertainty. Prerequisites: CHEN 411 and CHEN 470.

CHEN 571  Chemical Product Design  3 cr.
This course covers the application of the design process to products based on chemical technology. It covers the entire design process from initial identification of product needs, to the generation and selection of product ideas, and culminates in the manufacture of a new product. Prerequisites: CHEN 411 and CHEN 470.

Chemical Engineering Technical Electives

CHEN 490  Fundamentals of Petroleum Engineering  3 cr.
This course introduces the integrated view of Petroleum Engineering, and presents the nature of petroleum: chemical composition, properties of liquid petroleum and natural gas; defines the concept of exploration methods (geological and geophysical); drilling and well completion operations; reservoir fluids, rock properties, coring and core analysis; well logging, and formation damage.

CHEN 541  Biochemical and Bioprocess Engineering  3 cr.
This course will be taught in two stages. In the first stage, elementary biochemistry of living organisms, with emphasis on the biochemical pathways that bring about growth and cellular energy production, is presented, along with enzyme kinetics and microbial growth models. In the second stage, bioreactors used to bring about the biomass growth either for metabolite production or for degradation are studied. Mass balances and design equations incorporating cellular kinetics and concepts are presented for batch and continuous stirred tank reactors. Vapor phase, fixed-bed reactor designs such as biofilters are presented as applications in air pollution control. Pre- or corequisites: CHEN 312, CHEN 417 and CHEM 204.

CHEN 517  Reaction Engineering and Reactor Design II  3 cr.
This course covers reaction kinetics; heterogeneous catalytic reactions; transport processes with fluid-solid heterogeneous reactions; noncatalytic gas-solid reactions; catalyst deactivation; gas-liquid reactions. Prerequisite: CHEN 417.

CHEN 590  Petroleum Refining  3 cr.
General review of refining processes of crude oil; Shortcut methods for practical design calculations; Design of atmospheric, vacuum, and pressure columns for petroleum fractionation, including auxiliary furnaces and condensers; Recent developments in heavy oil processing. Prerequisites: CHEN 312 and CHEN 490.

CHEN 612  Desalination  3 cr.
A course that will provide an in depth coverage of the commonly used thermal and membrane based desalination technologies. Fundamental thermodynamic and transport processes which govern desalination will be developed. Environmental, sustainability and economic factors which may influence the performance, affordability and more wide-spread use of desalination systems for fresh water production and reuse will be highlighted. Renewable energy technologies coupled with desalination processes will be reviewed. A team based student project will be assigned to design a reverse osmosis membrane desalination plant (brackish water, seawater, or treated sewage effluent) using conventional or alternative energy sources. Prerequisites: MECH 310 and CHEN 411, or MECH 412.

CHEN 613  Membrane Separation Processes  3 cr.
The course will provide a general introduction to membrane science and technology: transport mechanisms, membrane preparation and boundary layer effects. The course will also cover the various types of membranes used in industry: microfiltration, ultrafiltration, reverse osmosis, electro-dialysis and pervaporation. Prerequisites: CHEN 312 and CHEN 411.

CHEN 614  Environmental Engineering Separation Processes  3 cr.
This course includes a discussion of the unit operations associated with environmental engineering separation processes of solid-liquid, liquid-liquid and gas-liquid systems; general use, principles of operation and design procedures for specific type of equipment. Prerequisite: approval of instructor.

CHEN 615  Advanced Mass Transfer  3 cr.
This course will cover a review of molecular and turbulent diffusion and mass transfer coefficients, mass transfer equipment design including absorption and cooling towers, adsorption and ion exchange. Prerequisite: CHEN 411.

CHEN 617  Chemical Reactor Analysis and Design  3 cr.
This course covers design for optimum selectivity; stability and transient behavior of the mixed flow reactor; non-ideal flow and balance models; fixed and fluidized bed reactors; and multiphase flow reactors. Prerequisite: CHEN 417.

CHEN 618  Colloid and Interface Science  3 cr.
This is a first course in colloid and interface science. The repulsive and attractive forces at interfaces are described along with the dynamics of the interfaces. Topics include the stability of macroemulsions, the formulation and properties of microemulsions, and surface metal-support interactions of catalysts. Prerequisite: CHEN 314.

CHEN 651  Advanced Process Control  3 cr.
This course covers the mathematical modeling and computer simulation of process dynamics and control. Prerequisites: CHEN 451 and CHEN 451L.
CHEN 670  Advanced Process Flow-Sheeting  3 cr.
This course highlights the engineering tools used during the life-cycle of chemical plants from the Front-End and Engineering Design (FEED) stage to operation. Flow-sheeting tools will be used for analysis, dynamic modeling for startup-shutdown and control dynamics, and plant-wide optimization for plant performance improvement. Prerequisites: CHEN 570, CHEN 515, and MECH 340.

CHEN 672  Polymer Science  3 cr.
This course is a broad technical overview of the nature of synthetic macromolecules, including the formation of polymers and their structure, structure-property relationships, polymer characterization and processing, and applications of polymers. The course tends to focus on thermoplastic polymers and elastomers. Prerequisite: MECH 340.

CHEN 673  Engineering of Drug Delivery Systems  3 cr.
This course focuses on recent advances in the development of novel drug delivery systems. The fundamentals of drug delivery are discussed. Various strategies to tune and control the release of active agents for optimized therapeutic outcomes are explored. The course covers polymers and techniques used to produce drug nanoparticles, with specific examples of nanoparticle-based drug delivery systems. Prerequisites: MECH 310, CHEN 411, and CHEM 204.

CHEN 674  Process Operations and Diagnosis  3 cr.
This course covers troubleshooting, fault detection, and diagnostics in key chemical processes. Statistical tools such as Principle Component Analysis, Fisher Discriminant Analysis, Partial Least Squares and Canonical Variate Analysis methods are studied. Analytical and knowledge based approaches are also covered. Processes and case studies include: gas-oil separation (GOSP), natural gas processing (AGR, NGL, SRU, fractionation, amine scrubbing), crude oil refining (CDU, VDU, delayed cocking, fluid catalytic cracking), and power plants. Prerequisites: CHEN 451 and CHEN 570.

CHEN 691  Reservoir Characterization: Carbonate Rocks  3 cr.
This course is an introduction to the common, modern approaches for the characterization of carbonate reservoirs. State of the art petrographic tools will be introduced. The major depositional environments of carbonate rocks and carbonate platform types as well as the principal controls on carbonate sedimentation will be highlighted. Diagenesis (modification of reservoir properties through time) will be discussed through related processes and products, including the process of dolomitization. An in depth coverage of secondary porosity evolution in carbonate reservoirs will be provided (including elements of appropriate rock-typing). A team based project to solve a case study in reservoir characterization and a field-trip to provide a practical view of carbonate reservoir rocks will be included. Prerequisite: CHEN 490.
Engineering Management Program

Coordinator: Yassine, Ali
Professors: Abdul Malak, M. Asem; Salameh, Moueen
Associate Professors: Maddah, Bacel; Nasrallah, Walid; Yassine, Ali
Assistant Professors: Naoum-Sawaya, Joe; Srour, Issam
Senior Lecturers Charif, Hassan; Noueihed, Nazim; Tannir, Akram; Trabulsi, Samir
Instructors: Itani, Mona; Saad, Youssef

Minor in Engineering Management

The Engineering Management Program offers a minor in engineering management that can be pursued by undergraduate engineering and architecture students, as well as by students from related majors, starting as early as the fall semester of their third year of enrollment. Only students who have a cumulative average of 70 or more are eligible to apply for the minor. To satisfy the requirements of this minor, a student must earn 18 credits of course work from the engineering management course offerings as follows:

- At least nine of the total requirement of 18 credits must be fulfilled from the six undergraduate courses offered by the program, which must include ENMG 400: Engineering Economy. These nine credits must also include either ENMG 500: Engineering Management I, or ENMG 501: Engineering Management II.
- The other nine credits can be satisfied by taking courses either from the list of undergraduate courses (offered by the program), or from the elective graduate courses offered by the program (See AUB Graduate Catalogue).

A minimum grade of 70 is required for a course to be counted toward the fulfillment of a minor in engineering management. Additionally, a cumulative average of 75 or above in all the minor courses is required.

Undergraduate Courses

ENMG 400 Engineering Economy 3 cr.
A course that covers principles, basic concepts, and methodology for making rational decisions in the design and implementation of real engineering projects; time value of money, depreciation, comparing alternatives, effect of taxes, inflation, capital financing and allocation, and decision under uncertainty. Prerequisite: STAT 230 or equivalent. Every semester.

ENMG 500 Engineering Management I 3 cr.
A course on operations research modeling concepts with emphasis on linear programming; topics include: linear programming, network programming, and project management. Annually.
ENMG 501  Engineering Management II  3 cr.
A course outlining basic management models used to optimize operation systems; discrete- and continuous-time Markov chains and their application in modeling queues, inventories, and production process behavior. Prerequisite: STAT 230 or equivalent. Annually.

ENMG 502  Construction Management  3 cr.
A course on organizing for construction projects; pre-construction activities; bidding and contracts; fundamentals of construction planning, monitoring, and control; application of construction control tools: CPM, materials management, operations analysis, and quality control. Annually.

ENMG 503  Specifications and Cost Estimation  3 cr.
A course on the structure of construction documents and their interrelationships; bidding requirements; general and particular contract conditions; administrative and procedural requirements for construction; technical specifications; construction cost estimation process; and unit rates determination. Prerequisite: ENMG 502 or CIVE 580. Annually.

ENMG 504  Engineering Ethics  3 cr.
A course on engineering ethics covering responsibility in engineering; framing the moral problem; organizing principles of ethical theories; computers, individual morality, and social policy; honesty, integrity, and reliability; safety, risk, and liability in engineering; engineers as employees; engineers and the environment; international engineering professionalism; and future challenges. Every regular semester.

ENMG 505  Entrepreneurship for Engineers  3 cr.
This course provides students with the tools necessary to create and grow a successful, innovative technology enterprise. Topics include evaluating market opportunities, designing profitable business models, producing a solid business plan, raising capital, addressing legal considerations and developing a winning team. Prerequisite: ENMG 400 or equivalent course.
Faculty of Health Sciences (FHS)
Faculty of Health Sciences (FHS)

Officers of the Faculty

Peter F. Dorman  President of the University
Ahmad Dallal  Provost, ex-officio
Iman Nuwayhid  Dean
Rima Affifi  Associate Dean
Moueen Salameh  Registrar, ex-officio
Salim Kanaan  Director of Admissions, ex-officio
Lokman Meho  University Librarian, ex-officio

Faculty Administrative Support

Mona Katul  Executive Officer/HR Specialist
Amal Kassis  Student Services Officer
Ruba Ismail  Instructor (Grants)
Mitra Tauk  Instructor (Graduate Public Health Program Administration)
Hala Dimechkie  Instructor of Public Health Practice (Communications)
Rabih El Khodr  Instructor of Public Health Practice (Communications)
Zeina Taha  IT Manager
Hilda Nassar  Interim Medical Librarian

Historical Background

The Faculty of Health Sciences (FHS) was first established in 1954 as an independent School of Public Health, the first of its kind in the region. The name of the school was changed to the Faculty of Health Sciences in 1978 to accommodate programs in allied health.

FHS serves to educate and train professionals and competent leaders to help meet the health needs of Lebanon and the region. Currently, FHS hosts four departments: Epidemiology and Population Health (EPH), Environmental Health (EH), Health Promotion and Community Health (HPCH), Health Management and Policy (HMP), and a Medical Laboratory Sciences Program in collaboration with the Faculty of Medicine. FHS offers a BS degree in: Environmental Health or Medical Laboratory Sciences; a master’s degree in Public Health (MPH) (concentrating in EPBS–Epidemiology and Biostatistics, HPCH, or HMP); an MS in Epidemiology; an MS in Population Health; and an MS in Environmental Sciences (concentrating in EH). FHS also provides teaching of public health to students in the Faculty of Medicine.

Accreditation

In October 2006, the Graduate Public Health Program of the Faculty of Health Sciences became accredited by the Council on Education for Public Health (CEPH). CEPH is an independent agency in the United States which is recognized to accredit schools and programs of public health. The GPHP at FHS is the first graduate public health program to be accredited by CEPH outside the Americas. Accreditation indicates that the GPHP of the FHS meets standards for Public Health Education of leading schools of public health in the world.

Mission

The Faculty of Health Sciences prepares professionals in the disciplines of public health and health sciences through graduate and undergraduate programs, and introduces future physicians to public health. It contributes to knowledge and the improvement of the public’s health in the region by conducting scholarly and relevant research and by responding to priority health issues and training needs in collaboration with stakeholders. In all of its functions, FHS promotes and adheres to the principles of ethics, social justice, and collective responsibility.

Vision

The vision of FHS is to contribute to the promotion of the health and well-being of populations through the provision of quality higher education in public health and related disciplines. This is to be accomplished through state–of–the–art research that addresses public health problems particularly relevant to Lebanon, the region, and the developing world, and through transfer of that knowledge to policy makers, program managers, and other practitioners in relevant organizations and fields.

Undergraduate Programs

Admission Requirements

To be eligible for admission to the programs leading to the degree of Bachelor of Science, candidates must have satisfactorily completed the freshman program in the Faculty of Arts and Sciences, or its equivalent, with a minimum cumulative average of 70 and a minimum science average of 70.

Freshman students applying to the first year in Health Sciences must complete the following science requirements: CHEM 101, 101L, 102 and 102L, MATH 101 and 102, (see pages 46–48). In addition to these courses, applicants to the MLS program must take BIOL 101. Courses taken before the student is admitted to any of the BS programs may be credited at the discretion of the appropriate department.

To be eligible for admission to advanced standing (second and third year), a candidate must have completed the equivalent requirements for the first (or second) year of undergraduate study in the Faculty of Health Sciences and meet the following criteria:

• a minimum cumulative average of 70
• a minimum average of 70 in science courses

A student, who has completed a minimum of two semesters of study as a sophomore, or its equivalent, is eligible for admission to the first year in the Faculty of Health Sciences if the following criteria are met:

• a minimum cumulative average of 70
• a minimum average of 70 in science courses

Admission decisions are subject to availability of places in the desired program of study. Lebanese students must present the Lebanese Baccalaureate, or its equivalent, and
The Faculty of Health Sciences offers two minors, which require the completion of a number of courses as specified in the list below. Moreover, electives can be chosen from the following list of courses to satisfy the distributional requirements of social sciences or sciences.

The minor in Environmental Health introduces students to the environmental system and the interactive processes that affect human health, environmental protection, and development.

The minor in Environmental Health requires 15 credits, including the following:

- ENHL 220, plus a minimum of 9 credits selected from the following ENHL courses: ENHL 221, ENHL 230, ENHL 231, ENHL 234 and ENHL 241. The following courses can be selected following the approval of the department: ENHL 232, ENHL 233, ENHL 237, ENHL 242 or ENHL 243.

- The minor in Public Health introduces students to the public health field through exposure to the contemporary issues in public health. Students are given a general overview of the field in HPCH 200 and subsequently get more in-depth knowledge by choosing one course from each of the public health disciplines. A minor in public health allows students to become more aware of the factors influencing health and hence more capable of making choices that influence their own health and that of their communities. In addition, a minor in public health expands students’ career options by exposing them to an increasingly important and expanding profession.

The minor in Public Health requires 15 credits, including the following:

- HPCH 200
- one of the following courses from the Department of Environmental Health: ENHL 220, ENHL 221, ENHL 230, ENHL 231, ENHL 234, ENHL 241
- one of the following courses from the Department of Epidemiology and Population Health: EPHD 203, EPHD 213
- one of the following courses from the Department of Health Promotion and Community Health: HPCH 201, HPCH 202, HPCH 203, HPCH 207
- one of the following courses from the Department of Health Management and Policy: HMPD 204, HMPD 251

The remaining credits can be taken from courses listed above in any of the departments, or from other courses in the faculty, with permission of the instructor.

To graduate with a minor, a student must attain a cumulative average of 70 or more in courses taken to satisfy the requirements of that minor.
Curriculum for Bachelor of Science in Environmental Health

First Year

<table>
<thead>
<tr>
<th>Lecture Hrs./Week</th>
<th>Lab Hrs./Week</th>
<th>Credit Hrs.</th>
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<tbody>
<tr>
<td>BIOL 200</td>
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<tr>
<td>CHEM 208</td>
<td>Brief Survey of Organic Chemistry</td>
<td>3 0 3</td>
</tr>
<tr>
<td>CHEM 209</td>
<td>Introductory Organic Laboratory</td>
<td>1 4 2</td>
</tr>
<tr>
<td>ENGL 203</td>
<td>Academic English</td>
<td>3 0 3</td>
</tr>
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<td>ENHL 220</td>
<td>Introduction to Environmental Sciences</td>
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Second Year

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<th>Credit Hrs.</th>
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<tr>
<td>ENHL 221</td>
<td>Management of Domestic and Hazardous Wastes</td>
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<tr>
<td>ARAB 2xx</td>
<td>Arabic Communication Skills</td>
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<td>ENGL 204</td>
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Promotion

For class promotion from year I to year II, a student must complete a minimum of 30 credits (for EH major) or 31 credits (for MLS major), excluding credits for ENGL 102. For class promotion from year II to year III, a student must complete a minimum of 63 credits (for EH major) or 65 credits (for MLS major).

Majorless Status

Students who refrain from following the assigned course curriculum, will be automatically given the status of majorless. Majorless students in the Environmental Health program are required to take ENHL 220. Majorless students are given two academic semesters to transfer to the desired major. If, by the end of the second semester, the student does not secure acceptance to the desired major, s/he is dropped from the Faculty.
## Curriculum for Bachelor of Science in Medical Laboratory Sciences

### First Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Lecture Hrs./Week</th>
<th>Lab Hrs./Week</th>
<th>Credit Hrs.</th>
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<tr>
<td>BIOL 201</td>
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<th>Credit Hrs.</th>
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<th>Credit Hrs.</th>
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<td>ENHL 236</td>
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<th>Lab Hrs./Week</th>
<th>Credit Hrs.</th>
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<td>HPCH 237</td>
<td>Theories and Methods of Health Behavior</td>
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<th>Lab Hrs./Week</th>
<th>Credit Hrs.</th>
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<td>Free Elective</td>
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### Second Year

<table>
<thead>
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<th>Semester</th>
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<th>Lab Hrs./Week</th>
<th>Credit Hrs.</th>
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<tbody>
<tr>
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<td>MLSP 207</td>
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<td>MLSP 208</td>
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<tr>
<td><strong>Total</strong></td>
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</table>
Practical Training in Laboratory Medicine

A total period of ten months (July to June excluding a one month vacation in September) to cover practical experience and application of theoretical knowledge in the following areas of laboratory medicine, for the periods and credits indicated below:

<table>
<thead>
<tr>
<th>Duration</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LABM 220</td>
<td>Clinical Chemistry and Endocrinology</td>
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<tr>
<td>LABM 230</td>
<td>Clinical Hematology and Reception</td>
</tr>
<tr>
<td>LABM 240</td>
<td>Clinical Microbiology</td>
</tr>
<tr>
<td>LABM 250</td>
<td>Clinical Parasitology and Urinalysis</td>
</tr>
<tr>
<td>LABM 260</td>
<td>Serology</td>
</tr>
<tr>
<td>LABM 270</td>
<td>Blood Banking</td>
</tr>
<tr>
<td>LABM 280</td>
<td>Cytogenetics, Molecular Diagnosis and Histotechniques</td>
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</table>

<table>
<thead>
<tr>
<th>Lecture Hrs./Week</th>
<th>Lab Hrs./Week</th>
<th>Credit Hrs.</th>
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</thead>
<tbody>
<tr>
<td>Second Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LABM 202</td>
<td>Clinical Chemistry II</td>
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<tr>
<td>LABM 210</td>
<td>Cytology and Histological Techniques</td>
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<td>MBIM 223</td>
<td>Parasitology for MLS students</td>
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<td>MLSP 202</td>
<td>Clinical Hematology II</td>
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<td>Systematic Bacteriology</td>
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<td>MLSP 259</td>
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<table>
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<tr>
<th>Summer Session</th>
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<tr>
<td>Practical Training in Laboratory Medicine</td>
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<tbody>
<tr>
<td>Third Year</td>
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<tr>
<td>First Semester</td>
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<tr>
<td>EPHD 203</td>
<td>Epidemiology and Biostatistics</td>
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<tr>
<td>HMPD 204</td>
<td>Introduction to Health Services Administration</td>
<td>3</td>
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<tr>
<td>LABM 233</td>
<td>Genetics and Molecular Biology</td>
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<td>LABM 235</td>
<td>Medical Mycology</td>
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<td>Practical Training in Laboratory Medicine</td>
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<td><strong>Total</strong> 17</td>
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<table>
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<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>PHIL 205</td>
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<tr>
<td>Practical Training in Laboratory Medicine</td>
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<td><strong>Total</strong> 16</td>
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</table>
Department of Environmental Health

Chairperson: *Jurdi, Mey*
Professors: *Jurdi, Mey; Nuwayhid, Iman*
Associate Professors: *Habib, Rima; Massoud, May*
Assistant Professor: *Kamleh, Rabih*
Instructors: *El Helou, Nida; Nasr, Joumana*

The Department of Environmental Health offers a three-year program in environmental health. Students are admitted to the department after the completion of the freshman science program or its equivalent, and awarded a Bachelor of Science degree upon graduation. The curriculum provides a broad education in basic sciences and a fundamental knowledge of environmental health. Emphasis is placed on the evaluation and control of major environmental health problems in developing countries in such fields as water supply, waste disposal, food hygiene, occupational health, air and control of disease vectors. Students in this program are also required to take public health courses in the fields of epidemiology, biostatistics, health services administration, and public health education, which lead to a minor in public health.

Due to increased environmental concerns, Lebanon and countries in the region are in great need of qualified personnel capable of planning and implementing programs for the improvement of the human environment. This provides great job opportunities for graduates of this program in various sectors such as public/governmental agencies, international organizations, private companies, non-governmental organizations and academic/research institutions.

**ENHL 200  Environment and Health  3.0; 3 cr.**
This course exposes the students to major local and global environmental issues relating to air, water, land and energy and the importance of proper integrated management to promote and protect public health and achieve sustainable development. In addition, the course highlights the importance of environmental laws and policies as major tools in the management of environmental health issues. Environmental ethics is also emphasized as a critical core factor of the management processes. The importance of environmental awareness of different stakeholders is exposed as a means to achieve proposed objectives. *Open to freshman students only.*

**ENHL 220  Introduction to Environmental Sciences  3.0; 3 cr.**
An introductory course that explores the interdisciplinary nature of environmental studies. This course covers a variety of topics: population growth, biodiversity, air and water pollution, work environment, domestic and hazardous wastes, energy, technology, environmental economics, ethics, and policy. Preventive and control programs are discussed within the overall context of sustainable development.

**ENHL 221  Management of Domestic and Hazardous Wastes  3.0; 3 cr.**
A course that introduces the elements of solid waste management: sources, characterization, generation rates, collection, transportation, and disposal technologies. Concepts are presented within the context of integrated management: reduction, reclamation, recycling, and disposal. Socioeconomic implications at the community and national levels are emphasized. *Prerequisite: ENHL 220.*

**ENHL 223  Environmental Microbiology  3.0; 3 cr.**
A course that introduces the concept of quality control in terms of wholesomeness and safety. Management of food from production to consumption (preparation, processing, preservation, storage, marketing, trading) is thoroughly discussed. Emphasis is placed on the developed, implementation, and appraisal of food control programs (such as HACCP) at the national and international level. *Prerequisites: BIOL 200/201, CHEM 208 and ENHL 220.*

**ENHL 224  Occupational Health and Toxicology  3.2; 4 cr.**
A course that focuses on the principles of occupational health and toxicology and emphasizes the importance of environmental laws and policies as major tools in the management of occupational health and toxicology. Exposures to hazardous agents in the environment are discussed with emphasis on the working environment, routes of entry, mode of action, toxicity, metabolism, and dose-response relationships. Health hazards to workers and principles of recognition, evaluation, and control of work hazards are presented. The principles of risk assessment are introduced. *Prerequisites: BIOL 200/201, CHEM 208/209 and ENHL 220.*

**ENHL 225  Instrumentation, Analytical Techniques and Sampling  2.3; 3 cr.**
A course that focuses on the basic concepts and application of different sampling methods, and instrumental and analytical techniques: electrical conductance, absorption spectrophotometer (visible, ultraviolet light, infrared, atomic absorption), emission (flame photometry) and chromatography (gas chromatography, high performance liquid chromatography, ion chromatography).

**ENHL 226  Water and Wastewater Quality Control  1.4; 3 cr.**
A course that focuses on the principles of water management (both in quantity and quality) with emphasis on fresh water resources for domestic and multi-purpose utilization. Characterization, treatment, reclamation, and recycling of wastewater are also discussed. National and international guidelines, standards, and directives for water and wastewater management are presented. *Prerequisite: ENHL 220.*

**ENHL 227  Food Quality and Control  4.0; 4 cr.**
A course that introduces the concept of quality control in terms of wholesomeness and safety. Management of food from production to consumption (preparation, processing, preservation, storage, marketing, trading) is thoroughly discussed. Emphasis is placed on the developed, implementation, and appraisal of food control programs (such as HACCP) at the national and international level. *Prerequisites: BIOL 200/201, CHEM 208 and ENHL 220.*
ENHL 241  Indoor and Outdoor Air Pollution  
A course that discusses exposure and health effects of indoor (e.g., asbestos, tobacco smoke, formaldehyde, radon) and outdoor air pollutants. Students are introduced to modeling, quality determination, and management strategies. Prerequisites: CHEM 208, ENHL 220 and senior standing.

ENHL 242  Environmental Management Tools and Applications  
A course that provides an overview of the general principles relating to environmental management tools and applications. Topics covered include environmental impact assessment, environmental auditing, and environmental regulations and standards. To provide students with practical experience, they are requested to conduct a community-based environmental health project. Emphasis is placed on investigating the problem and proposing management strategies. Senior standing required. Prerequisite: Completion of all the ENHL courses of first and second year; corequisite ENHL 241.

ENHL 243  Global Environmental Issues  
A course that reviews a specific global environmental issue in which students are required to write a paper and present a seminar on the selected topic. Emphasis is placed on stating the problem clearly and presenting control strategies and recommendations for action plans. Senior standing required. Prerequisites: ENHL 241 and ENHL 242.

<table>
<thead>
<tr>
<th>Modes of Analysis</th>
<th>English and Arabic (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (12)</th>
<th>Natural Sciences (9)</th>
<th>Quantitative Thought (6)</th>
<th>Major Courses</th>
</tr>
</thead>
</table>
| Lecture Course (9+12+12+9+6+27) | • Required Arabic Course (3)  
• Required English Courses: ENGL 203(3), 204(3) | • PHIL 209(3)  
• 3 electives (9) | • HMPD 251(3)  
• HPCH203(3)  
• HPCH 237(3) or HMPD 204(3)  
• non-FHS elective (3) | • BIOL 200(4)  
• CHEM 208(3) | • EPHD 203(3)  
• EPHD 213(3) | • ENHL 220(3), 221(3), 230(4), 231(3), 233(3), 234(4), 237(4), 241(3) |

| Lab (4+4) | | | | | • EPHD 203(2) | • ENHL 232(3), 234(4), 233(3), 237(4) |

| Seminar (2) | | | | | | • ENHL 242(3), 243(3) |

| Research Project (4) | | | | | | • EPHD 213(3) | • ENHL 242(3), 243(3) |

| Fieldwork | | | | | | • ENHL 236 |

Students take, in addition to the above required courses, 9 or 12 free elective credits in various fields and modes of analysis.
Department of Epidemiology and Population Health

Chairperson: Chaaya, Monique
Professors: Chaaya, Monique; DeJong, Jocelyn; Sibai, Abla; Zurayk, Huda
Professor of Public Health Practice: Myntti, Cynthia
Visiting Research Professor: Makhlouf Obermeyer, Carla
Assistant Professors: Al-Dewachi, Omar; Ghandour, Lilian; Jaffa, Miran
Visiting Assistant Professor: Fares, Souha
Visiting Assistant Professor of Public Health Practice: Fouad, Fouad
Instructor: El Khalil, Asmar

The Department of Epidemiology and Population Health offers required and elective courses to undergraduate students in the Faculty of Health Sciences. The courses introduce students to the basis of Epidemiology and Biostatistics, Survey Methods, and Population Health.

EPHD 203  Epidemiology and Biostatistics  2.2; 3 cr.
An introductory course offered to undergraduates on the basic principles of epidemiology and biostatistics. This course introduces students to the types and sources of data in measuring population health, the different epidemiological study designs, and exploratory data analysis. Furthermore it introduces students to inferential statistical methods commonly used in the biological and health sciences. This course includes both theory and applications in the form of discussions and lab sessions, and introduces students to basic skills in the use of the statistical package SPSS.

EPHD 213  Survey Methods  2.2; 3 cr.
A course that covers basic principles of survey methodology, and enables the student to design and execute a survey research study. Topics covered include formulation of research questions and objectives, sampling and survey designs, question and questionnaire design for different types of survey topics, data collection techniques, analysis and interpretation of survey data, and research ethics. Prerequisite: EPHD 203 or an Introductory biostatistics or consent of instructor

EPHD 227  Population and Development  2.1; 3 cr.
A course designed to introduce students to important demographic concepts and which aims to enable them to analyze how population trends have consequences for society, the environment and public health. Special emphasis will be placed on the Middle East and North Africa, examining issues such as changes in marriage, the family and in age-structures and why these are important in the region.

Part-time

Undergraduate Catalogue 2013–14
Department of Health Promotion and Community Health

Chairperson: Makhoul, Jihad
Professor: Afifi, Rima
Associate Professors: Abdulrahim, Sawsan; Kabakian-Khasholian, Tamar; Makhoul, Jihad
Assistant Professor: Nakkash, Rima
Senior Lecturer: El Kak, Faysal
Lecturer: Kallash-El-Khoury, Michel
Instructors of Public Health Practice: Kalot, Joumana; Najem, Martine
Instructor: Kanj, Mayada

Departmental courses are designed to introduce students to the theory and concepts of the field of Health Promotion and Community Health, with an emphasis on the socio-cultural aspects of health behavior change. The Department of Health Promotion and Community Health contributes courses to undergraduate programs. The department also contributes courses to and coordinates a Teaching Diploma in Health Education with the Department of Education at the Faculty of Arts and Sciences.

The department hosts the Health Education Resource Unit (HERU) which was established in 1986 to act as the service arm of the Department. HERU is a community oriented initiative that serves as a resource for health promotion for Lebanon and the Arab region by developing health education materials, training health promotion professionals, networking, and conducting service related research in response to community needs.

The following courses are offered by the Department:

**HPCH 200 Global Public Health** 3.0; 3 cr.
In this course, students will receive an introduction to global public health issues with special emphasis on developing countries and through the framework of liberal education. As such, students will learn basic principles of public health in ways that encourage them to become more civically responsible. This will be accomplished through readings from the sciences, social sciences, and the humanities on public health issues which influence the region. Students will be trained in the course to critically evaluate health problems, identify contributory causes, propose solutions and think about strategies to improve health.

**HPCH 201 Health Awareness** 3.0; 3 cr.
A course that aims to increase understanding of the social dimensions of health and illness and the factors that relate to healthy living. This course tackles common health concerns as they relate to the individual, with an emphasis on prevention and wellness lifestyle behavior. This course is open to students from all faculties.

**HPCH 202 Sexuality and Health** 2.0; 2 cr.
This course aims to provide students with an overview of human sexuality and its dimensions within a framework of health and wellness. Through discussions, lectures and assignments, students will learn about the interaction between the biological, social, and health/medical aspects of sexuality and discourses surrounding sexuality in our part of the world. Some of the issues include: (1) Development of sexuality and sexual and gender identities, (2) Sexuality and reproductive health, (3) Sexuality and Arab culture, (4) Sexuality expressions/behaviors and public health, (5) Sexuality and gender-based violence.

**HPCH 203 Health Communication** 2.2; 3 cr.
A course that provides an introduction to the assumptions we make about communication and key elements of the communication process. Factors that inhibit communication as well as some of the functions of communication as they relate to increasing positive health behavior and group effectiveness are dealt with. This course aims to enhance writing and oral presentation skills, as well as effective interaction skills with peers and supervisors at work. Students cannot receive credit for both HPCH 203 and EDUC 238.

**HPCH 209 Socio-Cultural Factors in Health and Illness** 3.0; 3 cr.
An introductory course on the social and behavioral theories and concepts that apply to the analysis of health-related behaviors. Emphasis is placed on core concepts relating to health and illness, and on the main models relating to the study of health behavior at the personal, familial, institutional, and cultural levels.

**HPCH 237 Theories and Methods of Health Education** 3.0; 3 cr.
A course that introduces students to the major theories of health behavior and health promotion. Emphasis is placed on the application of health behavior theories to health promotion and education practice. Students cannot receive credit for both HPCH 237 and EDUC 237.

*Part-time*
Department of Health Management and Policy

Chairperson: Saleh, Shadi
Associate Professors: Saleh, Shadi; El-Jardali, Fadi
Associate Professors of Public Health Practice: Jabbour, Samer; Kassak, Kassem
Assistant Professors: Alameddine, Mohamad; Tanzi, Vito; Yassin, Nasser
Instructor of Public Health Practice: Kambris, Mona
Instructor: Germani, Aline

Departmental courses are designed to introduce students to the principles and practices in the field of health management and policy, with an emphasis on managerial functioning in healthcare organizations. The Department offers a few undergraduate courses in health administration, and contributes to courses, catered to major and minor programs.

The following courses are offered by the department:

HMPD 203  Medical Terminology  1.0; 1 cr.
A course that provides students with a basic understanding of the principles of medical term construction and a vocabulary of commonly used terms in diagnosis, operations, radiological investigations, and laboratory tests.

HMPD 204  Introduction to Health Services Administration  3.0; 3 cr.
A course that provides students with basic knowledge and skills demanded to assist in managing healthcare and related organizations. The objective of the course is to acquaint the students with the principles of healthcare systems, human resources management, financial materials management, and issues related to quality of care and regulation.

HMPD 212  Introduction to Health Planning  3.0; 3 cr.
A course that portrays the application of planning theory to health concerns. This course covers basic terms and concepts relating to health planning and also acquaints students with some tools of prediction and decision-making.

HMPD 251  Introduction to Health Care Economics  3.0; 3 cr.
An introduction to the basic principles of microeconomics and the elements necessary to apply these principles to the health care field. This course introduces usable economic tools, especially those that will improve the efficiency of resource allocation and decision-making in the health sector.

Part-time
Program of Medical Laboratory Sciences

Coordinator: Ramia, Sami
Professor: Ramia, Sami
Assistant Professors: Yazbek, Soha; Melhem, Nada
Instructor: Khatib, Rolla

This program is run in coordination with the Department of Pathology and Laboratory Medicine in the Faculty of Medicine.

The MLS program is designed to prepare students for a career in the profession of medical laboratory sciences by acquiring theoretical knowledge and practical skills in various disciplines of the specialty. Besides presenting theoretical knowledge, the program is dedicated to training students in the reliable performance of physical, chemical, and biological tests by utilizing routine and automated techniques. In addition, students are trained to develop the ability to interpret generated laboratory results and hence contribute to the diagnosis of disease. Continuing one's education, and updating skills and knowledge, as well as medical professional ethics, are emphasized.

MLSP 201 Clinical Hematology I 3.0; 3 cr.
A course that introduces students to fundamental concepts in hematology, including the development of blood cell elements, normal physiology of blood cells, and their disorders. This course focuses on anemia, with a special emphasis on diagnosis. First semester.

MLSP 202 Clinical Hematology II 3.0; 3 cr.
A course that consists of lectures and demonstrations in hematology with emphasis on coagulation and hemostatic disorders, white blood cell anomalies, and leukemia. Second semester.

MLSP 203 General Microbiology 2.2; 3 cr.
A course that covers structure and morphology of micro-organisms, nutritional requirements and growth, sterilization and disinfection, introduction to microbial genetics, collection and handling of clinical specimens, culture techniques for clinical specimens and expected pathogens, antibiotic sensitivity testing, and assay. First semester.

MLSP 204 Systematic Bacteriology 2.4; 4 cr.
A course that covers the characteristics of bacteria of medical importance with concentration on the diseases they cause, pathogenesis, mode of transmission, control and methods for isolation, identification, and interpretation of results. Second semester.

MLSP 207 Immunology and Blood Banking 2.0; 2 cr.
A course that consists of lectures in basic immunology, including types of immune responses, cells of the immune response, antigens, antibodies, and complement system, as well as basic principles in blood banking and transfusion medicine. First semester.
MLSP 208 General and Diagnostic Virology 2.0; 2 cr.
An introduction to virology covering the general characteristics of viruses, their classification, mode of transmission, pathogenesis, and the diseases they cause in man, is the focus of the first part of this course. The second part emphasizes viral diseases of public health importance, including their epidemiology, control, and possible prevention. First semester.

MLSP 211 Seminar 1.0; 1 cr.
A seminar in which students are trained to read recently published scientific papers in medical journals, summarize, and present the information. This process also involves discussion and critiques of the presented manuscripts. Second semester.

MLSP 259 Diagnostic Serology 1.0; 1 cr.
An introduction to the principles of serologic reactions and laboratory techniques in the diagnosis of infectious diseases. Second semester.

Below are descriptions of the required courses offered by several departments at the Faculty of Medicine: Biochemistry, Microbiology and Immunology, Pathology and Laboratory Medicine, and Physiology.

BIOC 255 Biochemistry for MLSP 3.0; 3 cr.
The course provides an overview of structure, function, and metabolism of basic biological micro/macro molecules; a general review of the genetic makeup; and emphasizes the clinical relevance by correlating disease to basic information. The course is an introductory biochemistry course, offered to undergraduate students in the Medical Lab Sciences Program and related fields. Second semester.

LABM 201/202 Clinical Chemistry I and II 2.0/3.0; 2 /3 cr.
A pair of courses in which the main objective is to acquaint students with fundamentals of clinical chemistry, including various analytical procedures, instrumentation, and methods used for determination of clinical analytes. Correlation of laboratory results with clinical manifestation is also an integral part of these courses. These two courses cover all aspects of routine clinical chemistry testing, such as carbohydrates, electrolytes, acid-base balance, blood gases, nitrogen metabolites, proteins, enzymes, lipids and lipoproteins, calcium metabolism, liver function tests as well as some advanced topics (hormones, therapeutic drug monitoring, toxicology) and specialized techniques like chromatography (HPLC and GC/Ms). A pair of courses in which the main objective is to acquaint students with fundamentals of clinical chemistry, including various analytical procedures, instrumentation, and methods used for determination of clinical analytes. Correlation of laboratory results with clinical manifestation is also an integral part of these courses. These two courses cover all aspects of routine clinical chemistry testing, such as carbohydrates, electrolytes, acid-base balance, blood gases, nitrogen metabolites, proteins, enzymes, lipids and lipoproteins, calcium metabolism, liver function tests as well as some advanced topics (hormones, therapeutic drug monitoring, toxicology) and specialized techniques like chromatography (HPLC and GC/Ms). First and second semester respectively.

LABM 210 Cytology and Histological Techniques 2.0; 2 cr.
A course that includes a series of lectures and demonstrations on cell biology, a review of normal histology of various human organs, a description of examples of pathological changes, lectures on techniques of tissue handling, and preparation and staining of sections and smears for cytological material. Members of the department and the department of Human Morphology.

LABM 220 Clinical Chemistry and Endocrinology 0.20; 4 cr.
Practical experience in clinical chemistry and endocrinology. Eight weeks.

LABM 230 Clinical Hematology and Reception 4.20; 4 cr.
Practical experience in clinical hematology special procedures and reception area. Prerequisites: MLSP 201 and MLSP 202.

LABM 231 Clinical Laboratory Quality Systems 1.0; 1 cr.
This course is intended to give MLS students a thorough understanding of the quality systems as implemented in clinical laboratories with practical examples in order to relate theory to practice. The course includes all the basic elements and tools required to implement the quality system essentials across all phases of the laboratory workflow: pre-analytical, analytical, post-analytical.

LABM 233 Genetics and Molecular Biology 2.0; 2 cr.
A course that includes an introduction to human genetics, comprising the structure and function of DNA and the classification of genetic disorders. Diagnostic techniques in human genetics (cytogenetics, biochemical, and molecular) will be covered, as well as molecular techniques applied in pathology and microbiology.

LABM 235 Medical Mycology 1.0; 1 cr.
A course that covers the different kinds and types of fungi (yeast and mold). This course discusses their disease spectrum mode of infection, gross requirements, and cultural and non-cultural methods of identifications as well as antifungal drugs and susceptibility testing of fungi.

LABM 240 Clinical Microbiology 3.2; 4 cr.
Practical experience in clinical microbiology (aerobic and anaerobic bacteriology, mycobacteriology, mycology, and susceptibility testing). Eight weeks. Prerequisites: MLSP 203 and MLSP 204.

LABM 250 Clinical Parasitology and Urinalysis 1.5/2.0; 2 cr.
Practical experience in clinical microscopy pertaining to parasitology, urinalysis, and spermogram. Four weeks. Prerequisite: MBIM 223.

LABM 256 Serology 1.5/2.0; 2 cr.
Practical experience in clinical immunology and serodiagnostic techniques. Four weeks. Prerequisite: MLSP 259.

LABM 270 Blood Banking 1.5/2.0; 2 cr.
Practical experience in blood banking and transfusion medicine. Four weeks. Prerequisite: MLSP 207.

LABM 280 Cytogenetics, Molecular Diagnostics and Histotechniques 0.20; 2 cr.
Practical experience in reception, cytogenetics, and histotechniques. Four weeks. Prerequisite: LABM 210.

MBIM 223 Parasitology for MLS Students 2.2; 4 cr.
A diagnostic parasitology four credit course offered to MLSP junior students in spring semester of each academic year. The purpose of the course is to provide the basic principles and concepts of parasitic diseases and their laboratory diagnosis. Emphasis is placed on life cycles, pathogenesis, preventive measures and in-depth laboratory identification of the parasites. Second semester.

PHYL 246 Physiology for Nursing Degree Students and Undergraduates 4.0; 4 cr.
A course that outlines fundamental principles of human physiology and the mechanisms governing the function of different body organs. Prerequisite: BIOL 246 or BIOL 201. Annually.
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<thead>
<tr>
<th>Modes of Analysis</th>
<th>Languages (9)</th>
<th>Humanities (12)</th>
<th>Social Sciences (9)</th>
<th>Natural Sciences (14)</th>
<th>Quantitative Thought (3)</th>
<th>Major Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Course</td>
<td>Required Arabic Course (3)</td>
<td>PHIL 205(3)</td>
<td>HMPD 204(3)</td>
<td>BIOL 201(4)</td>
<td>EPHD 203(3)</td>
<td>MLSP 201(3), 202(3), 203(3), 204(4), 207(2), 208(2), 259(1)</td>
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<td></td>
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<td>3 electives (9)</td>
<td>HPCH 203(3)</td>
<td>CHEM 208(3)</td>
<td></td>
<td>LAMB 201(2), 202(3), 210(2), 231(1), 233(2), 235(1)</td>
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<td></td>
<td>Elective (3)</td>
<td></td>
<td>PHYL 246(4)</td>
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<td>MBIM 223(4)</td>
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<td>BIOC 255(3)</td>
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</tbody>
</table>

| Lab (3+1+5)       | BIOL 201(4) | CHEM 209(2) | EPHD 203(3) | MLSP 203(3), MLSP 204(4), MBIM 223(4) |
| Seminar (1)       | MLSP 211(1) |

| Practical Training (20) | LABM 220(4), 230(4), 240(4), 250(2), 260(2), 270(2), 280(2) |
Center for Research on Population and Health (CRPH)

Director: Carla Makhlouf Obermeyer

The mission of the Center for Research on Population and Health is to support research on issues at the intersection of population and health in Lebanon, the region, and internationally, and to disseminate findings to scientists, policymakers, and the public. The Center has led a multi-disciplinary research program on reproductive health, childbirth, youth, tobacco control, and mental health, and seeks to expand to new areas, and to strengthen comparative research in the Arab region and beyond. Members and affiliates of the Center are epidemiologists, physicians, social scientists and public health professionals who combine expertise in particular public health issues with a concern for how new evidence can contribute to policies and interventions to improve health.

Research Activities

The Center’s research activities are undertaken by interdisciplinary research working groups formed through collaboration among FHS faculty, graduate students, and colleagues in the Arab region and beyond. Current regional working groups include the Choices and Challenges in Changing Childbirth Group, the Women’s Reproductive Health Working Group, the Youth Working Group, the Youth Sexual and Reproductive Health Group, the Tobacco Control Group, the Social Inequalities in Health Group, and the MATCH (Multi-country African HIV Testing and Counselling for HIV) study.

The Center provides researchers at FHS with resources and technical assistance for data management and analyses; access to regional data sets; proposal development, and support for new areas of research.

Research Collaborations

Ongoing collaborations with research institutions and groups in the region include the Social Research Center at the American University in Cairo, the Institute of Community and Public Health at Birzeit University in Palestine, the Department of Community Medicine at Damascus University, and the regional Reproductive Health Working Group.

CRPH also hosts researchers who wish to visit the Faculty of Health Sciences with the goal of collaborating with FHS faculty or of pursuing innovative research or writing activities.
Outreach and Practice Unit (OPU)

Coordinator: Germani, Aline
Instructors of Public Health Practice: Kalot, Joumana; Najem, Martine
Instructor: Kanj, Mayada

The mission of the Outreach and Practice Unit (OPU) is to advance public health practice at the Faculty of Health Sciences to impact the health of populations in Lebanon and the region. The OPU aims to facilitate the transfer of knowledge and skills in the field of public health, build community partnerships, develop human capabilities, advance service learning, and enhance the culture of collective responsibility.

The OPU fulfills its mission through the following activities:

- Evidence-based community interventions: OPU develops and implements community partnerships to promote individual and community health.
- Effective workforce development and continuing education: OPU offers diverse, multidisciplinary and financially sustainable training programs.
- Service learning: OPU facilitates service learning courses and provides students with venues to practice the knowledge learned in the classroom while providing a service to community.

The Unit Coordinator reports to the Dean of FHS. The OPU is supported by the academic departments at FHS and external resource persons.

OPU works closely with different local, national, regional, and international entities including but not limited to academic institutions, hospitals, UN agencies, NGOs, ministries and governmental agencies, professional associations, municipalities, and local communities in Lebanon and across the Arab World.
Rafic Hariri School of Nursing (HSON)
Rafic Hariri School of Nursing (HSON)

Officers of the School

Peter F. Dorman  President of the University
Ahmad Dallal  Provost, ex-officio
Mohamed H. Sayegh  Vice President for Medical Affairs and The Raja N. Khuri Dean, Faculty of Medicine and Medical Center
Huda Abu–Saad Huijer  Director of the Rafic Hariri School of Nursing
Samar Noureddine  Assistant Director for Academic Affairs
Moueen Salameh  Registrar, ex-officio
Salim Kanaan  Director of Admissions, ex-officio
Lokman Mehio  University Librarian, ex-officio

Faculty

Convener/Chair Division of Master of Science in Nursing Program  Farhood, Laila F.
Convener/Chair Division of Baccalaureate Program  Abbyad Weir, Christine
BSN Program Coordinator:  Adra, Marina N.
Professors:  Abu–Saad Huijer, Huda; Clinton, Michael; Farhood, Laila F.
Professors Emeriti:  Khalaf, Wadad; Makarem, Selwa
Associate Professor:  Noureddine, Samar N.
Clinical Associate Professor:  Arevian, Mary T.
Assistant Professors:  Abi Fakr, Lina; Darwish, Hala J.; Dumit, Nuhad Y.
Clinical Assistant Professors:  Abyad Weir, Christine; Adra, Marina N.; Khoury Naihef, May R.; Sabbagh, Lina Younan; Salameh, Elie
Clinical Instructors:  Alayan, Nour; Madi, Dina M.; Massouh, Angela; Tashjian, Hera

Historical Background

The School of Nursing, founded in 1905, was the first nursing school in the Middle East. The five–year Bachelor of Science in nursing program, established in 1936, was replaced in 1964 by a four–year program leading to the degree of Bachelor of Science in Nursing. Students entering the school as sophomores graduate in three calendar years. A two–year associate degree in nursing program was established in 1980 and discontinued in 1984. The RN-BSN program was reactivated and launched in 2003. The Masters of Science in Nursing (MSN) program was launched in 2003. The Bachelor of Science in Nursing program (BSN) and the MSN program are registered by the Department of Education of New York State, HEGIS codes 1203.00 and 1203.10, respectively. The BSN and MSN programs are accredited by CCNE, the Commission on Collegiate Nursing Education, in the USA. AUB School of Nursing is the first School of Nursing outside the US territories to be accredited by CCNE.

Mission

The mission of the School of Nursing is to promote and maintain the highest educational standards of excellence, integrity, and professionalism in nursing, following the American model of nursing education and practice. The school aims to provide learning opportunities that will enable students to develop into competent nurses who respect cultural diversity while coordinating and delivering high–quality, compassionate nursing care in Lebanon and the region, guided by ethical principles. The faculty believes education is an interactive process between faculty and students with both taking responsibility for active learning. The baccalaureate program, drawn primarily from the humanities, sciences, and caring disciplines, focuses on the use of nursing theory and research as a basis for practice. The master’s program focuses on preparing nurses for advanced nursing practice roles, and is based on the use and generation of research—based knowledge to guide practice. Nursing students at AUB learn to think critically, develop professional attitudes and leadership skills, and appreciate the value of life—long learning and freedom of speech.

Vision

The Rafic Hariri School of Nursing aspires to become the leading school of nursing in Lebanon and the region; nationally and internationally recognized for excellence in education, research, and service.
The school is committed to offering cutting-edge culturally-relevant and internationally recognized graduate and undergraduate education, fostering life-long learning and scholarship, developing leaders in nursing and health care, and attracting a competent and culturally diverse student body.

**Undergraduate Program Outline**

**Admission**

Students holding diplomas from a 12–year secondary school may gain admission to the School of Nursing as first year nursing students (see pages 42–45 for required courses at the freshman level). Freshman students wishing to transfer to the School of Nursing from AUB or another institution may gain admission provided they complete the required freshman courses.

**Bachelor of Science in Nursing (BSN)**

The School of Nursing follows the admission policies and criteria of the University. For further details see the section on Admissions on pages 34–45 of this catalogue.

**RN–BSN Program**

The curriculum is designed to permit the graduates of a technical program in nursing to pursue the degree of Bachelor of Science in Nursing provided the university entrance requirements are met. The time limit for completion of the program should not exceed six calendar years. A selected number of nursing courses may be validated if applicable.

Preferred requirement for admission to the program is three years experience, in addition to the English Entrance Exam. The candidate may be asked to interview with the school's director and/or program coordinator.

**BS/BA-BSN Accelerated Program**

The School of Nursing accelerated program is designed for individuals who have a BS/BA in fields other than nursing. The streamlined curriculum permits students to earn a BSN in 24 months. Students who graduate from this program are entitled to sit for the National Colloquium Exam to become registered nurses. The admission to the BS/BA-BSN program requires the following:

- BS/BA degree in a field other than nursing
- A minimum GPA of 75 including prerequisite courses and general education requirements
- Completion of the following pre-requisite courses prior to admission: ENGL 204, PSYC 201, Biostatistics course, PSYC 210, SOAN 201, and four elective courses.

**Transfer from the Freshman Class**

Transfer students from the Freshman class of the Faculty of Arts and Sciences may apply to the junior year at the Rafic School of Nursing. To be eligible for admission the applicant must:

- have completed at least 24 credits prior to their registration in Fall or in Spring semester
- have achieved a minimum cumulative average of 70

**Transfer from other Faculties at AUB**

Transfer students from other faculties at AUB may apply to the BSN program. To be eligible for admission the applicant must:

- have completed at least 24 credits prior to their registration in Fall or in Spring semester
- have achieved a minimum cumulative average of 70

**Transfer from other Universities**

Transfer students from other universities in Lebanon or abroad may apply to the junior year. To be eligible for admission the applicant must:

- have completed 30 sophomore credits (1 year) or more prior to their registration in Fall or in Spring semester
- have achieved a minimum cumulative average equivalent to the AUB average of 70
- submit the most recent transcript of their grades
- meet the English Language Proficiency Requirement

Once a student is accepted the assigned academic adviser follows up with the student on credit transfer and course equivalences. The student should submit course syllabi and description of courses; a grade of C as equivalent to an AUB grade of 70 or above is required for transfer. Furthermore, accepted students must complete at least 45 credits at AUB.

**Dual Degree**

Students may, upon approval of the Faculty concerned, complete the requirements for a second simultaneous degree while registered in the same faculty (two different degree structures) or another Faculty at AUB. In such a case, a student will be granted two separate degrees at the same time of graduation. If tuition differs, students will pay the higher of the tuitions.

All final admissions decisions depend on the overall quality of the eligible applicant pool and the number of available places in the faculty concerned for the semester in question. The applications are treated in terms of grade requirements similar to transfer applications across faculties/schools.

Information about deadlines and applications are available on the following link:


**Courses**

**Numbers Preceding Course Titles**

Nursing courses are numbered according to level and they normally follow a sequence. See curriculum for the Bachelor of Science in Nursing and course descriptions on pages 495–497, 499–502.

**Numbers Following Course Titles**

- The first number following the title of a course indicates the number of class hours per week
- The second number indicates the clinical hours required each week
- The last number indicates the number of credit hours applied toward graduation. The credit assigned to each course is stated for the semester.
Frequency of Courses
Courses marked fall/spring/summer are offered accordingly during each academic year.

Graduation Requirements
All recommendations for graduation are made by vote of the faculty, upon the recommendation of the academic committee.

To be eligible for graduation with the degree of Bachelor of Science in Nursing, the requirements include the following:
• completion of the prescribed program of study with a minimum of 102 credits after the freshman class or equivalent, 90 credits for those entering as registered nurses
• an overall average of 70, excluding freshman courses
• the maximum time allowed for the completion of the degree program should be within the following specified periods:
  BSN I eight calendar years
  BSN II six calendar years
  BSN III four calendar years
  BSN IV two calendar years

Students must petition the academic committee for an extension of time if needed.

All undergraduate transfer students from AUB or from other recognized institutions of higher learning, to the School of Nursing need to complete the required prerequisites and all required nursing courses. A minimum residency period of one year or 30 credits for within AUB transfers, and 45 credits for transfers from outside must be completed at AUB.

Course credits pertinent to the nursing curriculum may be transferred according to criteria set by the admission and academic committees.

Licensing
Graduates are qualified for the licensing examination in Lebanon (Colloquium).

Academic Rules and Regulations
For information on Academic Advisers, Categories of Students, Correct Use of Language, and Graduation with Distinction and High Distinction, see pages 49–67 for General University Academic Information in this catalogue.

Attendance
Classes and Laboratories
• Students are expected to attend all classes, laboratories, and any other required activities. Absence by students, whether excused or not, from any class or laboratory session, does not excuse them from their responsibility for the work done or for any announcements made during their absence.

• Students who are absent from more than one fifth of the number of lectures of any course during a semester lose all credit for the course.
• Students may not be excused from laboratory and field requirements. All missed clinical and field requirements must be made up. In case of repeated absences from clinical courses, over one fifth of the total hours, the student may be asked to drop the course.
• A student who withdraws from a theory course has to withdraw from the corresponding clinical course.

Examinations and Quizzes
• Students are not allowed to be absent from announced final examinations and quizzes unless they present an excuse considered valid by the coordinator of the course. The course coordinator may then require the student to take a make–up examination.
• Students taking non–nursing courses from the Faculty of Medicine and other faculties of the University are required to follow the attendance regulations of that faculty.

Grading System
In the Rafic Hariri School of Nursing the following grading system is used:

<table>
<thead>
<tr>
<th>Cumulative Average</th>
<th>GPA Average</th>
<th>Cumulative GPA</th>
<th>GPA Average</th>
<th>Cumulative GPA</th>
<th>GPA Average</th>
<th>Cumulative GPA</th>
<th>GPA Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;60</td>
<td>0</td>
<td>67</td>
<td>1.86</td>
<td>75</td>
<td>2.73</td>
<td>83</td>
<td>3.46</td>
</tr>
<tr>
<td>60</td>
<td>1</td>
<td>68</td>
<td>1.98</td>
<td>76</td>
<td>2.82</td>
<td>84</td>
<td>3.54</td>
</tr>
<tr>
<td>61</td>
<td>1.13</td>
<td>69</td>
<td>2.09</td>
<td>77</td>
<td>2.92</td>
<td>85</td>
<td>3.63</td>
</tr>
<tr>
<td>62</td>
<td>1.26</td>
<td>70</td>
<td>2.2</td>
<td>78</td>
<td>3.02</td>
<td>86</td>
<td>3.7</td>
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<tr>
<td>63</td>
<td>1.38</td>
<td>71</td>
<td>2.31</td>
<td>79</td>
<td>3.11</td>
<td>87</td>
<td>3.78</td>
</tr>
<tr>
<td>64</td>
<td>1.5</td>
<td>72</td>
<td>2.42</td>
<td>80</td>
<td>3.2</td>
<td>88</td>
<td>3.86</td>
</tr>
<tr>
<td>65</td>
<td>1.63</td>
<td>73</td>
<td>2.52</td>
<td>81</td>
<td>3.29</td>
<td>89</td>
<td>3.93</td>
</tr>
<tr>
<td>66</td>
<td>1.74</td>
<td>74</td>
<td>2.62</td>
<td>82</td>
<td>3.38</td>
<td>≥90</td>
<td>4</td>
</tr>
</tbody>
</table>

I Incomplete, P Pass, PR In Progress, W Withdraw, F Fail
All final grades are expressed in multiples of one.

Incomplete Grades
• Incomplete course work will be reported as an “I” followed by a numerical grade reflecting the evaluation of the student available at the end of the semester. This evaluation is based on a grade of zero on all missed work and reported in units of five—thus a grade could be 155 for example.
• To secure permission to complete the work for a course, a student must submit a valid excuse to the instructor of the course and the academic committee within two weeks from the date of the scheduled final exam for the course.
• Students permitted to complete work for a course must do so within four weeks from the start of the next regular semester. After the incomplete work is done and evaluated by the faculty member, a grade change will be considered by the director of the school (upon the recommendation of the academic committee) and a new grade reported to the Office of the Registrar.
• If no valid excuse is presented and the work, if permitted, is not completed within the time limits specified above, the "I" will be dropped, and the numeric grade available becomes the final grade in the course.

• For the purposes of averaging the numeric grade is used, until changed through the procedure set above.

Withdrawal from a Program
To maintain student status, a student must register every semester, excluding the summer session, unless required by the program. Students who do not register can be readmitted provided they can complete the requirements within the time limit of the program.

Promotion
Students shall be promoted at the end of the summer session after completion of 30 or more credits beyond the requirements from the previous level. However, students who register in October, lacking six or fewer credits for completion of a class, will be registered in the next higher class at the discretion of the academic committee. In order to be promoted, students must attain a minimum average of 65 in the sophomore year and 70 in the following years.

Placement on the Dean's Honor List
To be placed on the Dean's Honor List at the end of a semester a student must
• carry at least twelve credits of courses other than those repeated
• not be on probation
• have passed all the courses of the semester and attained in all the courses an average overall of 85 or be ranked in the top 10 percent of the class and have an overall average of 80.
• not have been subjected to any disciplinary action within the University

Failures and Deficiencies
Placement on Probation
A student will be placed on probation for any of the following reasons:
• if the student fails six or more credits at the end of a semester
• if the student does not attain the minimum required semester average of
  – 65 for BSN II, or
  – 70 for the following years

Students in their freshman and sophomore years will be placed on probation at the end of their first semester only if they fail in one half or more of the credit hours carried.

These regulations do not apply to part-time students until they have completed at least 12 credits. For part-time students, a semester is defined as consecutive courses totaling 12 credits.

Removal from Probation
Action to remove probation at the end of a semester will be taken provided the full-time student meets the following requirements:
• passes all courses taken during the semester

• achieves the minimum required average for that semester
• achieves the minimum yearly average required

Repeating Courses
• A student may repeat any course with the consent of the adviser and course coordinator.
• All required courses that a student fails must be repeated. No course may be taken more than three times.
• When a course is repeated, the highest grade obtained will be considered in the calculation of the cumulative average.
• A student who fails or withdraws from a course may be delayed from graduating.

Repeating the Year
• The academic committee may allow a student to repeat the year if the student
  • fails in one third or more of the credit load attempted during that year or
  • fails to remove probation within two semesters or
  • fails to attain the minimum yearly average

A student repeating the year must register for a full load and repeat all courses in which the student has scored below the minimum required for that year.

Dismissal from the School of Nursing
A student may be dismissed by vote of the faculty upon the recommendation of the academic committee if the student
• fails to remove probation within two semesters
• fails in one-third or more of the load attempted during that year and fails to attain the minimum yearly average
• fails to satisfy the requirements of a repeated year
• is not making satisfactory academic progress, has not shown sufficient professional promise, or has behaved in a manner below the norms expected by the school

Application for Readmission
When, in accordance with university regulations, a student is dropped, the implication is that the student is not qualified to continue his/her education at the School of Nursing. Consideration for readmission is given for one of the following reasons:
• if the student was not able to do his/her work efficiently because of health reasons (in such cases, the school relies on a medical report from the university physician)
• if the adviser of the student or a faculty member or administrative official of the University knows of certain family problems that may have influenced the academic achievement of the student
• if, after spending one or two years at another institution, the student is able to present a satisfactory record and recommendation

Ordinarily, supporting documents for the first two reasons must be presented within 30 days after the student is dropped from the school, but in exceptional cases this presentation may be made at the beginning of the following regular semester.
Disciplinary Action
A student engaging in academic misconduct, such as cheating on examinations or plagiarism, will be referred to the Student Affairs Committee and the Director.

Awards
Penrose Award
A non-cash honorary award made on the basis of scholarship, character, leadership, and contribution to university life, to an outstanding graduate of the school.

Women’s Auxiliary Awards
- Mary Crawford (Florence Nightingale)
- Nada Alameddine Kanso
- Emily Asfour
- Poppy Haddad
- Alexandra Jureidini
- Naja Morston
- Henriette Sabra
- Hanneh Shahine
- Ann Smith
- Leila Ily

Cash and certificate awards are granted to senior students who meet the following criteria: academic achievement, professional integrity and seriousness of purpose, contribution to professional and university life, and willingness to join AUBMC after graduation.

Women’s Auxiliary Contracted Scholarship
Annette Hajjar Scholarship. Recipient should work at AUBMC for the contracted period.

Lions Award
A non-cash award granted to an outstanding student who has been commended by the faculty of the School of Nursing.

Curricula

Bachelor of Science in Nursing

First Year

Freshman curriculum requires completion of 30 credits. The following courses are required:

<table>
<thead>
<tr>
<th>First Semester</th>
<th>No. of Weeks</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 101 (3 cr.), BIOL 101 (3 cr.), ENGL 102A (3 cr.)</td>
<td>16</td>
<td>64</td>
<td>-</td>
<td>64</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 203</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>HUMR 246</td>
<td>16</td>
<td>32</td>
<td>28</td>
<td>60</td>
<td>3</td>
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<tr>
<td>NURS 200</td>
<td>16</td>
<td>32</td>
<td>-</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>ARAB 201A or 201B</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
</tbody>
</table>

Total | 224 | 28 | 252 | 15 |

Second Year

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>No. of Weeks</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
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</thead>
<tbody>
<tr>
<td>NURS 201</td>
<td>16</td>
<td>35</td>
<td>-</td>
<td>35</td>
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</tr>
<tr>
<td>NURS 202</td>
<td>16</td>
<td>35</td>
<td>-</td>
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</tr>
<tr>
<td>PHYL 246</td>
<td>16</td>
<td>64</td>
<td>-</td>
<td>64</td>
<td>4</td>
</tr>
<tr>
<td>MBIM 237</td>
<td>16</td>
<td>32</td>
<td>28</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 204</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
</tbody>
</table>

Total | 176 | 98 | 274 | 14 |

GE Refer to List of Courses under General Education Section
1 Students are required to choose from the freshman courses in natural sciences, social sciences and humanities. Natural Sciences: BIOL 105 or 106; CHEM 102; GEOL 101,102 or 103; PHYS 101,103 or 200; Social Sciences: ECON 101, PSPA 101; Humanities: ARSL 101, CIVE 111,112 or 115, ENGL 103, 104, 106, 107 or 108, HIST 101, 102 or 200, PHI 101 or 102
2 Electives as necessary to add up to 30 credits in total
3 For Arabic speaking students. For other students credits have to be replaced by an elective
4 One credit hour of laboratory is the equivalent of two clock hours weekly per semester, one clinical hour is the equivalent of three clock hours
5 Level is decided by placement test in the Department of English, Faculty of Arts and Sciences. Students who are placed in intensive English may be delayed in their graduation.
<table>
<thead>
<tr>
<th>Third Year</th>
<th>No. of Weeks</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHRM 240 Pharmacology</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>NURS 300 Nursing Care of Adults I: Theory and Practicum</td>
<td>16</td>
<td>32</td>
<td>112</td>
<td>144</td>
<td>5</td>
</tr>
<tr>
<td>NURS 304 Nursing Care of the Expectant Family: Theory and Practicum</td>
<td>16</td>
<td>32</td>
<td>112</td>
<td>144</td>
<td>5</td>
</tr>
<tr>
<td>PSYC 210 Lifespan Development Psychology</td>
<td>8</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>160</td>
<td>224</td>
<td>384</td>
<td>16</td>
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<tr>
<td>Second Semester</td>
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<tr>
<td>NURS 302 Nursing Care of Adults II: Theory and Practicum</td>
<td>16</td>
<td>32</td>
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<tr>
<td>NURS 306 Nursing Care of the Children, Theory and Practicum</td>
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<td>144</td>
<td>5</td>
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<tr>
<td>ELEC Elective Humanities</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>ELEC Elective Humanities</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>160</td>
<td>224</td>
<td>384</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Summer Session</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>SOAN 201 Introduction to the Study of the Society</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>ELEC Elective Humanities</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>NURS 307 Practicum I</td>
<td>8</td>
<td>-</td>
<td>96</td>
<td>96</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>96</td>
<td>96</td>
<td>192</td>
<td>6</td>
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</table>

**Fourth Year**

<table>
<thead>
<tr>
<th>No. of Weeks</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NURS 400 Critical Care Nursing, Theory and Practicum</td>
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<td>84</td>
<td>116</td>
</tr>
<tr>
<td>NURS 402 Mental Health and Psychiatric Nursing, Theory and Practicum</td>
<td>16</td>
<td>32</td>
<td>112</td>
<td>144</td>
</tr>
<tr>
<td>NURS 406 Nursing Research</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
</tr>
<tr>
<td>NURS 404 Nursing Informatics</td>
<td>16</td>
<td>32</td>
<td>-</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td>144</td>
<td>196</td>
<td>340</td>
<td>14</td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NURS 408 Community Health Nursing, Theory and Practicum</td>
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<td>32</td>
<td>112</td>
<td>144</td>
</tr>
<tr>
<td>NURS 410 Leadership and Management in Nursing, Theory and Practicum</td>
<td>16</td>
<td>32</td>
<td>112</td>
<td>144</td>
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<tr>
<td>ELEC Elective in Humanities</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
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<tr>
<td>NURS 411 Intensive Practicum II</td>
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<td>144</td>
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<td>Total</td>
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<td>368</td>
<td>480</td>
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<tr>
<td>Grand Total</td>
<td>1200</td>
<td>1234</td>
<td>2434</td>
<td>102</td>
</tr>
</tbody>
</table>

**RN–BSN (Revised)**

<table>
<thead>
<tr>
<th>No. of Weeks</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOC 246 Biochemistry for Nurses</td>
<td>16</td>
<td>64</td>
<td>-</td>
<td>64</td>
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<tr>
<td>ENGL 203 Academic English</td>
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<td>48</td>
<td>-</td>
<td>48</td>
</tr>
<tr>
<td>HUMR 246 Human Morphology for Nurses</td>
<td>16</td>
<td>32</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>PSYC 201 Introduction to Psychological Science</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
</tr>
<tr>
<td>ARAB 201A or B Basic Arabic Grammar and Syntax or Readings in Arabic Literature</td>
<td>16</td>
<td>48</td>
<td>-</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>240</td>
<td>28</td>
<td>268</td>
<td>16</td>
</tr>
</tbody>
</table>

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*GE* Refer to List of Courses under General Education Section

* One credit hour of laboratory is the equivalent of two clock hours weekly per semester, one clinical hour is the equivalent of three clock hours.

* Level is decided by placement test in the Department of English, Faculty of Arts and Sciences.
## Undergraduate Catalogue 2013–14

### Rafic Hariri School of Nursing (HSON)

#### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYL 246</td>
<td>Physiology for Nursing</td>
<td>16</td>
<td>64</td>
<td>84</td>
<td>4</td>
</tr>
<tr>
<td>MBIM 237</td>
<td>Microbiology and Immunology for Nursing</td>
<td>16</td>
<td>32</td>
<td>60</td>
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</tr>
<tr>
<td>NURS 210</td>
<td>Pathophysiology</td>
<td>16</td>
<td>32</td>
<td>32</td>
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<tr>
<td>NURS 205</td>
<td>Foundations of Professional Nursing</td>
<td>16</td>
<td>32</td>
<td>32</td>
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</tr>
<tr>
<td>NURS 203</td>
<td>Biostatistics for Nurses(^4)</td>
<td>16</td>
<td>48</td>
<td>48</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>208</strong></td>
<td><strong>28</strong></td>
<td><strong>236</strong></td>
<td><strong>14</strong></td>
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#### Summer Session

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHRM 240</td>
<td>Pharmacology</td>
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<td>48</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>NURS 308V</td>
<td>Maternal-Child Nursing, Theory and Practicum</td>
<td>8</td>
<td>48</td>
<td>142</td>
<td>6</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>96</strong></td>
<td><strong>144</strong></td>
<td><strong>240</strong></td>
<td><strong>9</strong></td>
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</tbody>
</table>

### Second Year

#### First Semester

<table>
<thead>
<tr>
<th>No. of Weeks</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOAN 201</td>
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<tr>
<td>PSYC 210</td>
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<td>ENGL 204</td>
<td>16</td>
<td>48</td>
<td>84</td>
<td>3</td>
</tr>
<tr>
<td>ELEC</td>
<td>16</td>
<td>48</td>
<td>84</td>
<td>3</td>
</tr>
<tr>
<td>ELEC</td>
<td>16</td>
<td>48</td>
<td>84</td>
<td>3</td>
</tr>
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<td><strong>Total</strong></td>
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<td><strong>0</strong></td>
<td><strong>240</strong></td>
<td><strong>15</strong></td>
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</table>

#### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lecture Hrs.</th>
<th>Lab. or Clinical Hrs.</th>
<th>Total Clock Hrs.</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 312</td>
<td>Mental Health and Psychiatric Nursing, Theory and Practicum</td>
<td>16</td>
<td>32</td>
<td>112</td>
<td>5</td>
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<tr>
<td>NURS 313</td>
<td>Leadership and Management in Nursing, Theory and Practicum</td>
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#### Summer Semester

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<td>NURS 311V</td>
<td>Nursing Care of Adults, Theory and Practicum</td>
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</tbody>
</table>

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\(^4\)SE Refer to List of Courses under General Education Section

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### Course Descriptions

#### NURS 200 Introduction to Nursing

2.0; 2cr.

Introduces concepts basic to the nursing profession. The nature of nursing as a profession, past, present, and future, is studied with a focus on the role of nurses in meeting the health needs of humanity throughout the health–illness continuum. Fall.

#### NURS 201 Introduction to Nursing Practice

1.2; 2cr.

This course introduces students to concepts and interventions basic to nursing practice. The course uses the nursing process as the organizing framework, and the concepts of health, nursing, client, and environment are integrated throughout. Performance of basic client care skills are emphasized, including the scientific rationale for both health promoting and health restoring nursing interventions. Prerequisites: NURS 200 and HUMR 246. Spring.

#### NURS 202 Health Assessment

1.2; 2cr.

The course focuses on assessment of health across the life span and provides the student with the knowledge and skills needed to assess the health status of individuals from infancy to old age. Emphasis is placed on assessment of the physical, psychosocial, and cultural dimensions of the individual. The course includes lectures and practical experiences in the assessment of individuals to identify normal and abnormal findings. Co-requisite: NURS 201. Spring.

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\(^4\) One credit hour of laboratory is the equivalent of two clock hours weekly per semester, one clinical laboratory hour is the equivalent of three clock hours
NURS 203  **Biostatistics for Nurses**  3.0; 3cr.
This course is designed to introduce the BSN students to the concepts and applications of statistics in the nursing field. The course starts with a general overview of probability, types of data, and ways to summarize and present the data. The course then introduces the concept of hypothesis testing and the methods to carry them. Applications on the computer using the SPSS software will be discussed in class. Summer.

NURS 205  **Foundation of Professional Nursing**  2.0; 2cr.
In this course the student will explore recent issues affecting the nursing profession in terms of role expansion of the nurse. The nursing process is covered as an organizing framework for nursing practice.

NURS 210  **Pathophysiology**  2.0; 2cr.
This course focuses on the biologic alterations that affect body dynamic equilibrium or homeostasis. The content of this course is organized into three areas of focus based on the health–illness continuum: 1) control of normal body function 2) pathophysiology or alteration in body function 3) system or organ failure. Prerequisites: BIOC 246, HUMR 246, PHYL 246, and MBIM 237. Summer.

NURS 300  **Nursing Care of Adults I, Theory and Practicum**  2.2.6; 5cr.
This course covers scientific principles in the care of adults presenting with medical-surgical problems. It builds on the framework of man, environment, health and nursing. The practicum provides students with opportunities to apply knowledge in clinical practice. Prerequisites: NURS 202, NURS 210. Fall.

NURS 302  **Nursing Care of Adults II, Theory and Practicum**  2.2.6; 5cr.
This course is a continuation of NURS 300. Emphasis is placed on the following dysfunctions: metabolic and endocrine, neurologic, eye, ear, nose, throat, renal and urinary, integumentary, hepatic and biliary, rheumatic, as well as the infectious process. Prerequisites: PHRM 240, and NURS 300. Spring.

NURS 304  **Nursing Care of the Expectant Family, Theory and Practicum**  2.2.6; 5cr.
This course focuses on reproductive health, from conception to the neonatal period. The content stresses the nurse’s role in reproductive health and risk management. The practicum provides clinical application of knowledge, focusing on women in the childbearing cycle, the newborn, and families as clients in the hospital and outpatient settings. Prerequisites: NURS 202 and NURS 210. Fall.

NURS 306  **Nursing Care of Children, Theory and Practicum**  2.2.6; 5cr.
This course focuses on the care of children, from infancy through adolescence. Topics include ambulatory and in-patient care, as well as primary, secondary and tertiary care. The practicum provides the students with opportunities to assess health needs of children based on knowledge of growth and development, and to implement nursing care, based on the nursing process. The roles of nurse as teacher, patient advocate and nurturer are emphasized. Prerequisites: PHRM 240, NURS 304, and PSYC 229. Spring.

NURS 307  **Practicum I**  0.9; 0cr.
This course is designed to provide students with opportunities to practice advanced nursing skills learned in previous nursing courses, and builds on experiences gained in the sophomore and junior years. Prerequisites: NURS 300, NURS 301, NURS 304 and NURS 306. Summer.

NURS 308V  **Maternal Child Nursing, Theory and Practicum**  3.9; 6cr.
This course focuses on the childbearing family from conception to the newborn period as well as primary and tertiary care of the ill child from infancy to adolescence. The clinical component emphasizes the application of knowledge acquired in class in the care of the childbearing family and children with illnesses from infancy to adolescence.

NURS 311V  **Nursing Care of Adults, Theory and Practicum**  3.9; 6cr.
Facilitates the development of advanced knowledge and application of scientific principles in the care of clients representing medical-surgical problems of the adult population. This course builds on the framework of person, environment, health status, and nursing. The clinical component provides an opportunity for advanced clinical application of concepts discussed in class in the care of patients and their families.

NURS 312  **Mental Health and Psychiatric Nursing, Theory and Practicum**  2.8; 5cr.
The holistic philosophy of clients as bio–psycho–social entities is stressed in both mental health and mental illness. General theories of psychiatry and mental health therapies are presented. The course provides clinical experience in psychiatric–mental health settings. Emphasis is placed on the quality of coping abilities of clients in varying degrees of stress and crisis. Opportunities are provided for students to work collaboratively with multi–disciplinary health teams to assess, plan, and implement relevant nursing interventions in both mental health and illness. Prerequisites: SOAN 201, and PSYC 202. Fall and Spring.

NURS 313  **Leadership and Management in Nursing, Theory and Practicum**  2.8; 5cr.
This course discusses concepts of leadership, management, creativity, analysis, power, change, and evaluation. Students investigate, analyze, and conceptualize the different modalities of leadership, utilizing nursing and management theories. The practicum allows the student to explore his/her role as a potential leader. The learner observes and assists in the practice of different modalities of leadership and managerial skills in a variety of health care settings.

NURS 314  **Community Health Nursing, Theory and Practicum**  2.8; 5cr.
The course provides knowledge in the broad area of the field of nursing, public health, and primary health care. The levels of prime concern are the small group, including the family and its individual members, and the large group, including the community. The focus of the clinical component is on the promotion and maintenance of high levels of health and well-being, and prevention of illness and disability. Fall and Spring.

NURS 400  **Critical Care Nursing, Theory and Practicum**  2.4; 4cr.
This course focuses on the care of clients with critical care problems. Emphasis is placed on cardiovascular and respiratory problems, neurologic disturbances, shock, sepsis, metabolic and endocrine imbalances, altered nutrition, renal failure, emergency and disaster nursing. The practicum provides opportunities to apply knowledge in clinical settings. Prerequisite: NURS 302. Fall.

NURS 402  **Mental Health and Psychiatric Nursing, Theory and Practicum**  2.8; 5cr.
This course provides the mental health setting for self-awareness and therapeutic use of self in effective communication. The holistic philosophy of clients as bio-psycho-social entities is stressed in both mental health and mental illness. General theories of psychiatry and mental health therapies are presented. The practicum provides clinical experience in psychiatric mental health settings. Emphasis is placed on the quality of coping abilities of clients in varying degrees of stress and crisis, with experiences in working with multi-disciplinary health teams to assess, plan, and implement relevant nursing interventions. Prerequisites: Senior standing, SOAN 201, and PSYC 201. Fall and Spring.
NURS 404  Nursing Informatics  2.0; 2cr.
This course focuses on the history of health care informatics, basic informatics concepts, and health information management applications. The student progresses from developing knowledge of basic concepts and methods of health care informatics; to learning about specific information management applications in health care administration, practice, education, and research; and finally to a hands-on experience with a specific application of his/her own choosing. Prerequisite: Consent of instructor. Fall.

NURS 405  Critical Care Nursing, Theory and Practicum  2.6; 4cr.
This course addresses the management of critically ill adults. Emphasis is placed on diagnostic reasoning, interventions, and outcome assessment in patients presenting with complex cardiovascular, respiratory, renal and metabolic problems, as well as trauma. The clinical component provides experiences where students apply concepts learned in class in critical care areas in the hospital. Prerequisite: NURS 311V.

NURS 406  Nursing Research  3.0; 3cr.
Focuses on the process involved in the scientific approach and its application to nursing. Special emphasis is on the basic research steps, the research design, assessment measures, and data analysis with a focus on research utilization. Prerequisite: NURS 203. Fall.

NURS 408  Community Health Nursing, Theory and Practicum  2.8; 5cr.
This course provides knowledge in the broad field of nursing, public health, and primary health care. The levels of primary concern are the small group, including the family and its individual members, and the large group, including the community. The practicum provides field practice through collaboration with other health professionals in primary care settings, with focus on health promotion, maintenance, and the prevention of illness and disability. Prerequisite: Senior standing. Fall and Spring.

NURS 410  Leadership and Management in Nursing, Theory and Practicum  2.8; 5cr.
This course discusses how professional nursing incorporates the concepts of leadership, management, creativity, analysis, power, change, and evaluation. In this course students investigate, analyze, and conceptualize the different modalities of leadership, utilizing nursing and management theories. The practicum allows students to explore their role as potential leaders. Students observe and assist in the practice of different modalities of leadership and managerial skills in a variety of health care settings. Prerequisite: Senior standing. Spring.

NURS 411  Intensive Practicum in Area of interest  0.9; 0cr.
This course focuses on preparing students towards their transition to professional nursing practice. Opportunities are provided for students to synthesize knowledge and refine skills acquired in the planning, provision and evaluation of nursing care, communication, and interdisciplinary practice in a clinical area of their interest. Consent of instructor is required for the site of clinical practice. Prerequisite: Senior standing. Spring.
Radiologic Technology Training Program

Program Coordinator: Mansour, Zepure

General Information

The Radiologic Technology program offers two years of theoretical and clinical training in all diagnostic imaging modalities. Theoretical training is provided in the program's facilities located in the sub-basement of the Medical Center, and clinical training is provided in the Department of Diagnostic Radiology of the Faculty of Medicine.

The program also offers post-certificate courses in specialized imaging modalities.

Admission

The minimum requirement for admission to the first year is the Lebanese Baccalaureate, or its equivalent. Applicants must take the SAT I and the University's English Entrance Examination or TOEFL, as specified in the admissions section of this catalogue.

Curriculum

First Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
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<tr>
<td>XR 101 Orientation</td>
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<td>XR 103 Physics</td>
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<td>XR 105 Anatomy and Physiology</td>
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<td>XR 107 Image Production and Processing</td>
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<td>XR 109 Radiographic Technique</td>
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<td>XR 112 Fundamentals of Nursing and Patient Care</td>
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Second Year

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<td>XR 203 Radiologic Equipment</td>
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<td>XR 205 Introduction to Principles of Diseases</td>
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<td>XR 208 Sectional Anatomy</td>
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<td>XR 204 Radiologic Equipment</td>
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<tr>
<td>XR 206 Introduction to Principles of Diseases</td>
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<td>XR 220 Mammography</td>
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<td>XR 226 Magnetic Resonance I</td>
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<td>XR 228 Magnetic Resonance II</td>
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Course Descriptions

**XR 101 Orientation, Theory**
An overview of the field of radiologic technology and its role in health care delivery. Students are oriented to academic and administrative structure, and the profession as a whole. Basic principles of radiation protection are introduced. The ethical and legal responsibilities of the profession are discussed.

**XR 102 Clinical, Practicum**
Clinical training in the Department of Diagnostic Radiology.

**XR 103 Physics, Theory**
A course that focuses on units of measurement, the structure of the atom, electrostatics, electricity, magnetism, AC generators, DC motors, transformers, and rectification of AC.

**XR 104 Physics, Theory**
An introduction to modern physics, production of x-rays, x-ray interactions, radioactivity, production of radionuclides, and health physics.
<table>
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<td>XR 106</td>
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<td>XR 108</td>
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<td>XR 202</td>
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<td>XR 204</td>
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<td>XR 205</td>
<td>Introduction to Principles of Disease, Theory</td>
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<td>XR 206</td>
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<td>XR 214</td>
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<tr>
<td>XR 220</td>
<td>Mammography, Practicum, and Projects</td>
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<td>XR 222</td>
<td>Ultrasonography, Practicum, and Projects</td>
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<td>XR 224</td>
<td>Computed Tomography, Practicum, and Projects</td>
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<td>XR 226</td>
<td>Magnetic Resonance I, Practicum, and Projects</td>
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<tr>
<td>XR 228</td>
<td>Magnetic Resonance II, Practicum, and Projects</td>
<td>14 cr.</td>
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</tbody>
</table>
Continuing Education Center (CEC)
Continuing Education Center (CEC)

Mission

The mission of CEC is to meet the lifelong educational and training needs of all learners in the local community and the region. Harnessing AUB’s resources in various fields of knowledge, CEC offers a variety of standard and customized certificate programs, non-credit courses, and workshops in Lebanon and the region. CEC aims to enhance professional and technical skills while addressing the needs for personal development and cultural enrichment.

Background

In line with its mission to serve the region and its commitment to lifelong learning, AUB offers a variety of certificate and diploma non-credit programs, non-credit courses, intensive professional courses, as well as special programs for older people and children of AUB alumni. The Continuing Education Center (CEC) at the American University of Beirut is a division of the Office of the Vice President for Regional External Programs (REP). CEC promotes AUB’s motto “so that they may have life and have it more abundantly” and stands at the heart of AUB’s strategic background.

Officers of the Center

Andre Nahas
Acting Vice President, Regional External Programs

Ziad Shaaban
Director, Continuing Education Center

Center Administrative Support

Hala Barakat Nahas
Program Officer

Wafa Abou Daher
Assistant to the Director

May Abu Haidar
Administrative Assistant

Instructors

Abdallah Dahdouh, Tania; Abdallah, Khaled; Abou Chacra, Nader; Ali, Maysoon; Atiyah, Rima; Attalah, Tania; Azzam, Nadia; Chidiac Siblini, Hoda; Daccache, Jenny; Deeb, Rima; Diab, Dazy; Dibo, Amal; El-Asaad, Karma; El Hage, Johnny; Farouk-Abiad, May; Geha, Monah; Ghayalini, Salim; Hammoud, Mirna; Helou, Joseph; Hodeib, Heba; Jabar, Silvana; Maalouf, Jacki; Nadra, Mirna; Najjar, Farida; Nassif, Mona; Obeid, Laure; Papazian, Pateel; Rawas, Mahmoud; Rouhana, Amal; Rubeiz, Samir; Salem, Jehad; Shaa, Rima; Shibaklo, Mona; Shibeir, Elie; Shebaya, Sara; Shibi, Bassel; Shibi, Shibi; Sobaah, Joe; Tayara, Khaled; Tukan, Mounir

General Criteria for Admission

Students applying to one of the certificate or diploma programs should submit a secondary school or university certificate. Also, a minimum score of 400 in EEE (TOEFL: CBT 163 or IBT 57) is required for admission. Applicants who are graduates of an English speaking university are exempted from the English language test. An applicant might also be required to report for an interview with the program coordinator.

A student with an EEE score of 350-399 (TOEFL: CBT 155 or IBT 50) will be allowed to take a maximum of two courses in one of the certificate programs provided that s/he sits for the EEE/TOEFL at the end of the second course, s/he will be disqualified for the certificate and will not be allowed to register for another course in that certificate. The student will have to take more English courses before being allowed to re-register to complete the courses in that certificate program and become eligible for a certificate upon completion of course requirements.

Students applying for enrollment in English language courses are required to sit for a placement test given at CEC to all new applicants before the semester begins.

Enrollment in special courses is generally open to all learners from diverse educational backgrounds.

Vision

CEC aspires to become a center of excellence in providing quality education and training in a variety of fields to a diverse population of learners in Lebanon and the Middle East and North Africa (MENA).

Programs of Study


CEC students may also consider enrolling in individual courses to continue their professional development without earning a certificate. These students will be provided with attestations of courses completed.

In addition to the certificate courses, CEC offers non-certificate courses in various areas including languages, information technology, SAT, MCAT, GMAT, radiography, photography, interior design, leadership skills, project management, and green building; develops intensive professional courses tailored to corporate clients in Lebanon and the region; and organizes public workshops that aim at helping participants maintain a competitive edge throughout their career path. CEC also oversees a special program designed for older people (University for Seniors), and, in collaboration with the Office of Alumni Relations and the Worldwide Alumni Association of the American University of Beirut (WAAAUB), offers a special summer program to children of AUB alumni throughout the world to strengthen the ties between AUB and all of its alumni.
Graduation Requirements for Certificate and Diploma Programs

A certificate or a diploma is offered upon the successful completion of all the required courses and attaining a minimum grade of 60/100 in each course, with a minimum cumulative average of 70/100. If the academic requirements change before the student finishes a specified program of study, the student may follow the new requirements upon the approval of the program coordinator.

Certificate Programs

Accounting Studies Certificate

Objective

The objective of this program is to provide learning opportunities in selected aspects of accounting with emphasis on modern developments.

Certificate Requirements

This program consists of four courses to be completed in two years:

- CACT 101 Principles of Accounting I
- CACT 201 Principles of Accounting II
- CACT 301 Cost Accounting and Control
- CACT 302 Auditing

Community Health Nursing Certificate

The post basic certificate program in community health nursing is designed to provide students with theories of nursing and principles underlying current community health nursing practice. The focus of care is on clients who may be represented as individuals, families, and small groups or larger aggregates and community. The nursing role is developed with emphasis on health maintenance, health promotion and disease prevention as facilitated by health teaching, and appropriate use of community resources. Critical inquiry using nursing research and epidemiological processes is fostered by didactic and clinical learning experiences. Clinical experiences are designed to enhance collaborating effectively with interdisciplinary team members in health care settings.

Concepts and theory are learned through various combinations of classroom discussions, lectures, and seminars, case studies, independent study and guided application in practice. The faculty will carry responsibility in the area of clinical practice by consultative services and participating in demonstrations. Emphasis is placed on the use of community sites including ambulatory care centers, homes, and schools, collaborative activities with Community Institutions and group teaching. The program includes 90 contact hours theory and 180 contact hours clinical.

The post basic Community Health Nursing Certificate program consists of four courses:

- CNRS 310 Introduction to Theories and Concepts in Community Health Nursing
- CNRS 311 Practicum I: Application of Theories and Concepts
- CNRS 312 Advance Concepts and Issues Relevant to Community/Public Health Nursing
- CNRS 313 Practicum II: Planning and Evaluation of Community Based Interventions

Critical Care Nursing Certificate

The program is designed to build on the knowledge and clinical experience of nurses. It consists of 90 contact hours theory and 180 contact hours clinical. The theory part tackles concepts and issues related to assessment, care, and evaluation of critically ill adults. The practicum part includes application of critical care concepts in assessing and managing evidence-based care to critically ill clients. Areas of emphasis include nursing assessment, interventions, and evaluation in critical illness, ventilatory assistance, hemodynamic monitoring, dysrhythmias and EKG interpretation.

The program is based on the nursing process as a framework for building theoretical knowledge and applying nursing care. Concepts such as critical care environment, relationship with patient and family, end-of-life care, infection control and safety, communication, documentation and critical thinking will be integrated in this course. Reading and understanding nursing research, doing library search and using information technology to enhance learning will be incorporated.

The post basic Critical Care Nursing Certificate program consists of five courses:

- CNRS 314 Fundamental Concepts in Critical Care Nursing: Assessment and Evaluation
- CNRS 315 Nursing Management During Critical Care Illness
- CNRS 316 Practicum I: Critical Care Nursing: Assessment and Evaluation
- CNRS 317 Practicum II: Critical Care Nursing: Management
- CNRS 318 Practicum II: Planning and Evaluation of Community Based Interventions

Essentials of Business Certificate

Objective

The objective of this program is to provide learning opportunities in selected aspects of business with emphasis on modern developments. Some may consider enrolling in individual courses to continue their professional development and will be given attestations of courses completed.

Certificate Requirements

The program consists of the following six courses to be completed in three years:

- CACT 101 Principles of Accounting I
- CMKT 101 Principles of Marketing
- CECN 101 Introduction to Economics
- CMGT 101 Principles of Management
- CECN 301 Money and Banking
- CFIN 101 Principles of Finance

Financial Management Certificate

Objective

The objective of this program is to introduce participants to the process of financial decision making to serve various business objectives in different settings. The program enables participants to deal with financial decisions facing businesses, household savers and institutional and individual investors. Participants cover the areas of financial management, financial reports, security analysis, and banking activities.
Certificate Requirements
The program consists of the following four courses to be completed in two years:

- CFIN 201 Business Finance
- CFIN 301 Financial Statements Analysis
- CFIN 302 Investment Analysis
- CFIN 303 Commercial Banking

Human Resource Management Certificate
Objective
The objective of this certificate is to offer instruction on practical, current issues in the human resource field for professional development. Increasingly, companies in Lebanon realize that a motivated, appropriately selected, trained, appraised and compensated workforce is critical to improving company financial performance and success. Human resource professionals facilitate this process through effective management of human resource issues.

Certificate Requirements
The Human Resource Certificate requires successful completion of four core courses to be completed in two years:

- CHRM 101 Overview of Human Resource Management
- CHRM 201 Workforce Planning and Staffing
- CHRM 202 Total Compensation and Benefits
- CHRM 203 Employee Training and Development

Interior Design Certificate
Objective
The Interior Design Certificate Program equips students with the methods and skills needed to temper the urgent problems generated by a rapidly growing demography and to create a friendly urban environment. The courses will address the different types of living spaces, the different concepts of interior design, and the different methods for combining aesthetic factors with cost and functional concerns. Graphic illustrations, sketches, case studies, AutoCAD, and real models will be used.

Target Participants
All individuals with a Baccalaureate level of education may be able to join the certificate program.
Professionals from other areas (engineers, architects, scientists, physicians) are encouraged to take courses from the program.
Amateurs may also be admitted to the program on the basis of an interview with the program coordinator.

Certificate Requirements
The program consists of four courses:

- CINR 101 Introduction to Interior Design
- CINR 102 Colors, Materials, and Lighting
- CINR 201 Presentation Techniques for Interior Designers
- CINR 202 Interiors Architecture Project

Leadership and Management in Nursing Certificate
Objective
The post basic program in Leadership and Management in Nursing helps build the managerial capacity of nurse managers or nurses in charge in leading and managing skills to ensure success in today’s dynamic healthcare environment. It emphasizes the use of creativity in problem solving and decision-making thus promoting critical thinking which is essential to the nursing process. It introduces nurses to the change process and control measures which contribute to the improvement of nursing practice. This program allows the nurses to examine their role as leaders in today’s rapidly changing healthcare environment.

Certificate Requirements
The program consists of four courses:

- CNRS 301 Nursing Leadership Roles and Management Functions
- CNRS 302 Managing Quality Improvement
- CNRS 303 Advanced Management Practice
- CNRS 304 Practicum

Marketing Management Certificate
Objective
The objective of this program is to provide participants with an understanding of the marketing-management process. The basic components of marketing, such as consumer behavior, marketing research, product distribution, promotion, and price planning will be emphasized.

Certificate Requirements
The program consists of the following four courses to be completed in two years:

- CMKT 101 Principles of Marketing
- CMKT 202 Marketing Research
- CMKT 301 Marketing Communications and Advertising
- CMKT 302 Sales Management

Nursing Informatics Certificate
Objective
The post basic certificate in Nursing Informatics is designed to provide students with the knowledge and skills necessary to take a leadership role in the selection and implementation of health care information management systems, and in applying the knowledge gained from the information generated from these systems. This program entails five courses which focus on concepts and issues surrounding technology and information management in today's rapidly changing health care environment.
Certificate Requirements:
The post basic NI program consists of five courses:
• CNRS 305  Data, Information and Knowledge
• CNRS 306  Informatics and the Health Care Delivery System
• CNRS 307  System Lifecycle
• CNRS 308  Issues in Health Care Informatics
• CNRS 309  Data Standards, Terminologies & Implications for Practice

Office Management Certificate
Objective
The objective of this program is to develop efficient executive secretaries to facilitate the complex and demanding jobs of today’s executives.

Certificate Requirements
The program consists of the following four courses to be completed in two years:
• CBUS 101  Introduction to Business
• CBUS 102  Business English
• CBUS 202  Office Procedures and Routines
• CBUS 203  Office Automation

Project Management Certificate
Objective
This certificate program provides participants with the knowledge and skills needed to deliver even the most complex project. The courses reflect a mix of “hard” and “soft” skills that the managers need to deliver. The material used in all classes is drawn from existing, real-life, and current project management tools.

The certificate will also allow organizations to make the best use of resources and provide a career path for project managers to grow.

Certificate Requirements
This program consists of the following five courses:
• CPRM 201  Best Practices in Managing Small to Medium Projects
• CPRM 202  Project Leadership/Communication Skills
• CPRM 203  Project Management Scheduling Tools & Techniques
• CPRM 204  Project Stakeholder Management
• CPRM 205  Advanced Project Management Practical Workshop

Diploma Programs

Human Resources Management (HRM) Diploma
Objective
This diploma program provides a comprehensive overview of HRM roles and responsibilities in the workplace from a strategic perspective. It fosters and develops the participants’ professional expertise and competencies. This diploma program involves an intensive education program using traditional classroom instruction, hands-on case studies, and executive presentations.

Diploma Requirements
This program consists of the following eight courses to be completed in four years:
• CHRM 101  Overview of Human Resource Management
• CHRM 201  Workforce Planning and Staffing
• CHRM 202  Total Compensation and Benefits
• CHRM 203  Employee Training and Development
• CHRM 301  Managing Human Behavior in Organizations
• CHRM 302  Managing the Employment Relationship: HRM, Society and the Law
• CHRM 401  Strategic Human Resource Management
• CHRM 402  Advanced Topics in Human Capital Management

Marketing Management Diploma
Objective
The objective of this diploma is to provide an advanced and comprehensive overview of marketing from basic to strategic. The components of marketing, such as consumer behavior, sales management, marketing communication, marketing research, market segmentation, and strategic marketing planning will be emphasized.

Diploma Requirements
This program consists of the following eight courses to be completed in four years:
• CMKT 101  Principles of Marketing
• CMKT 202  Marketing Research
• CMKT 301  Marketing Communications and Advertising
• CMKT 302  Sales Management
• CMKT 401  Services Marketing
• CMKT 402  Public Relations
• CMKT 403  Consumer Behavior
• CMKT 404  International Marketing

Project Management Diploma
Objective
The Project Management (PM) Diploma is a practical, hands-on program with a clear focus placed on advanced project management knowledge and skills enabling the participant to deliver complex projects based on best practices. The curriculum draws heavily on a long,
acknowledged experience of practitioners and trainers in project, program, portfolio, and risk management.

Diploma Requirements
The PM diploma is composed of 11 components, divided over two parts: PM Certification (5 courses) and a Diploma Focus (4 courses + an elective course + a final graduation project) from among 4 possible tracks:

- Engineering Project Controls
- Business Development, NGOs and Entrepreneurship
- Project Management Office and Program Management
- Enterprise and Project Risk Management

Track I: Engineering Project Controls
The objective of the program is to provide students with the perspectives of major stakeholders of real estate, design, and construction management: owners/developers, consultants/designers/supervision consultants, and contractors. It will provide them with a deeper understanding of how to manage all parties and design projects by taking into consideration the deep impact of quality design on successful implementations. Estimation, planning, contract management, extension of time analysis, and construction management topics will be covered in a practical manner.

Track I consists of the following courses:
- CPRM 301 Cost Estimating, Budgeting, and Controlling
- CPRM 302 Managing Engineering Design Projects
- CPRM 303 Construction Project Management
- CPRM 304 FIDIC Conditions of Contract & Claims and Dispute Resolution
- CPRM 305 Project in Controls
- Elective Course

Track II: Business Development, NGOs, and Entrepreneurship
This program covers a wide spectrum of project management initiatives including business expansion into new geographical areas, marketing management, promotional projects, or internal development planning. The course is ideal for those wishing to establish a business or manage NGO projects. The program will cover all the competencies required for sponsoring projects, and identifying and managing requirements to equip participants to develop projects/business plans.

Track II consists of the following courses:
- CPRM 306 Project Sponsorship
- CPRM 307 Project Management for Entrepreneurs
- CPRM 308 Certified Business Analysis Professional
- CPRM 309 Project Management for NGOs
- CPRM 310 Project in Business Development, Organization development or Entrepreneurship
- Elective Course

Track III: Project Management Office and Program Management
The program features some of the most advanced topics in organizational project management, including Organizational Project Management Maturity Model (OPM3), Portfolio Management, Program Management, and Governance, in addition to PMO setup and enhancement. The program provides sophisticated competencies that will leverage the development of strategic, tactical, or unique program management offices, as required by semi-government, public-private-partnership (PPP), infrastructure, and organizational development initiatives.

Track III consists of the following courses:
- CPRM 311 Project Management Office Setup and Implementation
- CPRM 312 Program Management Professional
- CPRM 313 Project Feasibility and Portfolio Prioritization Techniques
- CPRM 314 Organizational Governance for Enabling Portfolio/Program/Project Management
- CPRM 315 Project in Program Management/PMO Governance
- Elective Course

Track IV: Enterprise and Project Risk Management
The track will focus on performing risk management at portfolio, program, and project levels, as well as on enterprise risk management when adopting it as a strategic decision-making tool to optimize performance across all business functions. The risk management track provides a logical and systematic method of establishing risk methodology: identifying, analyzing, integrating, evaluating, treating, monitoring, and communicating risks in a way that allows organizations to make sound decisions and timely responses to risks and opportunities as they arise.

Track IV consists of the following courses:
- CPRM 316 Achieving Risk Management Professional Certification
- CPRM 317 Quantitative Risk Analysis
- CPRM 318 Enterprise Risk Management using ISO-31000
- CPRM 319 Practical Risk Workshop
- CPRM 320 Project in Risk Management
- Elective Course

Elective Courses
Elective can be any of the focus courses listed above, in addition to the following courses:
- CPRM 321 Strategic Project Management for Executives
- CPRM 322 Extension of Time Analysis & Time Request
- CPRM 323 Contracting and Procurement
- CPRM 324 Earned Value Management
- CPRM 325 Contract Administration and Claim Management
- CPRM 326 Effective Submittal Management in Construction Projects
- CPRM 327 Cost Engineering Certification
- CPRM 328 Project Planning and Scheduling
- CPRM 329 Green Project Management
- CPRM 330 Project Lessons Learned
- CPRM 331 Effective Project Controls for Engineering and Construction Projects
- CPRM 332 Workshop on the Preparation for the PMP Certification Exam
Certificate and Diploma Programs Course Descriptions

**CACT 101 Principles of Accounting I** 42 hrs
This course introduces students to principles of recording transactions, the preparation of financial statements, and completion of the accounting cycle.

**CACT 201 Principles of Accounting II** 42 hrs
This course is a continuation of Accounting I. It covers depreciation policies and procedures, depletion and amortization, income determination, partnership accounts, corporate capital accounts, dividends and retained earnings.

**CACT 301 Cost Accounting and Control** 42 hrs
This course focuses on the nature and purpose of cost accounting; basic techniques of process and job costing; accounting of materials, labor and overhead; development and use of cost budgets and standards for planning and evaluation of performance; cost classification in relation to behavior; and cost condition statements as tools for evaluating alternative courses of action.

**CATE 302 Auditing** 42 hrs
This course focuses on the principles and procedures covering the public accountant's responsibilities in examining and reporting on financial statements of business concerns, including professional ethics, legal responsibility scope, and application of audit procedures.

**CBUS 101 Introduction to Business** 42 hrs
The purpose of this course is to provide students with the opportunity to study many dimensions of the business system. Subjects covered include management and organization, human resource management, information for business decision-making, financial information, and business and its environment.

**CBUS 102 Business English** 42 hrs
The purpose of this course is to focus on the communication requirements of participants in business situations in order to project a professional image and avoid costly mistakes. Guided activities include problem-solving, information transfer tasks, role playing and transfers to participants' work environments to develop confidence in applying common uses of language structures, business terminology, and expressions.

**CBUS 202 Office Procedures and Routines** 42 hrs
The purpose of this course is to present fundamental principles and successful practices for completing office work effectively and efficiently. Subjects covered include techniques for general secretarial duties, such as filing, information processing skills, preparing and publishing reports, handling mail and electronic messages, using effective telecommunication practices, making meeting arrangements, keeping travel arrangements, keeping company books and records, and maintaining good human relations proper etiquette.

**CBUS 203 Office Automation** 42 hrs
This course is intended to introduce students to computer office automation systems which are designed primarily to improve office productivity and efficiency. It focuses on topics like managing documents, electronic filing systems, electronic mail, maintaining calendars and appointments, and word processing using Microsoft Word (advanced features like manipulating tables, merging documents, using style, outline, footnotes, pictures, etc.) and spreadsheets using Microsoft Excel (advanced features like formulas, functions, charts, page setup, database management, filtering, etc.).

**CECE 101 Introduction to Economics** 42 hrs
This course is a survey of economic principles that includes national income accounting and analysis, monetary and fiscal policies, and demand and supply analysis.

**CECE 301 Money and Banking** 42 hrs
This course focuses on management of commercial banks, the structure of commercial banking, management of bank funds and the role of money in the economy.

**CFIN 101 Principles of Finance** 42 hrs
This course is an introduction to the field of financial management, including the institutional framework of finance, the role of finance in the business firm, financial analysis, planning and control, working capital management, cash budgeting, and elements of capital budgeting.

**CFIN 201 Business Finance** 42 hrs
This course is an introduction to major decisions a financial manager has to make, including assessment of the profitability of investment opportunities, short-term and long-term financing alternatives, risk-return tradeoff, and the concept of the goal of wealth maximization.

**CFIN 301 Financial Statements Analysis** 42 hrs
This course focuses on the description and interpretation of reported and audited financial statements, limitations of company reports, analysis of financial ratios, examinations of professional practices regarding measurement and disclosure of financial information, and development of skills needed to read, analyze and evaluate financial statements. *Prerequisite: Business Finance.*

**CFIN 302 Investment Analysis** 42 hrs
This course focuses on the description and analysis of the sources of investment information, various investment vehicles, operations of security markets, trading environment, security valuation models, investment objectives, and modern techniques of investing in securities. *Prerequisite: Business Finance.*

**CFIN 303 Commercial Banking** 42 hrs
This course is an introduction to banking regulations, evolution of banking activities, description of banking accounts and lending practices, functions and operations of commercial banks, credit analysis, liquidity management, assets and liability management, profitability and adequacy measures. *Prerequisite: Business Finance.*

**CHRM 101 Overview of Human Resource Management** 42 hrs
This course introduces the main concepts of managing human resources in organizations, discusses the various roles that HRM departments play and demonstrates how HR policies and practices help support the business strategy. Topics include the strategic role of HRM, job analysis and personnel planning, recruitment and selection, training and development, performance management, compensation and retention as well as the ethical aspect of HRM.

**CHRM 202 Total Compensation and Benefits** 42 hrs
This course conveys applied knowledge about compensation systems for aspiring HR professionals. The course objective is to provide a solid understanding of the art of compensation practice and its role in promoting companies' competitive advantages. It is assumed that students will be best prepared to assume the role of competent compensation strategist if they possess a solid understanding of compensation practices. Thus, we will examine the context of compensation practice, the criteria used to compensate employees, compensation system design issues, employee benefits, and contemporary challenges that compensation professionals will face well into the 21st Century.
**CHRM 203  Employee Training and Development  42 hrs**

Rapid changes in technology and job design, along with the increasing importance of learning- and knowledge-based organizations make training and development an increasingly important topic in human resources development. In this course, the student will learn how to identify training and development needs through needs assessments, analyze jobs and tasks to determine training and development objectives, create appropriate training objectives, design effective training and development programs using different techniques or methods, implement a variety of different training and development activities, and evaluate training and development programs.

**CHRM 301  Managing Human Behavior in Organizations  42 hrs**

This course introduces students to many of the basic principles of human behavior that effective managers use when managing individuals and groups in organizations. These include theories relating to individual differences in abilities and attitudes, attribution, motivation, group dynamics, power and politics, leadership, conflict resolution, organizational culture, and organizational structure and design.

**CHRM 302  Managing the Employment Relationship: HRM, Society and the Law  42 hrs**

The purpose of this course is to increase student knowledge of legislation and practices related to employment and labor law in the work environment and to provide an introduction to the basic elements of the relationship between employers and their employees. This course provides an overview of legal issues affecting human resources management. It focuses on the impact of law on individuals in organizations, recognition of legal problems, and the legal impact of human resources decisions. It also integrates employment and labor laws with social and economic forces shaping the current diverse management-labor environment.

**CHRM 401  Strategic Human Resource Management  42 hrs**

This course is intended to expose students to the "big picture" at the intersection of human resource management, business policy, and competitive strategy. It covers both the design and execution of human resource management strategies and is organized around two central themes, namely: how to think systematically and strategically about aspects of managing the organization's human assets, and what needs to be done to implement these policies and achieve competitive advantage. In essence, the course objective is to have students develop a broader perspective of business through the development of a strategic HR viewpoint.

**CHRM 402  Advanced Topics in Human Capital Management  42 hrs**

This course is designed to give the student insights into contemporary and future HRM issues. It addresses leading-edge human resource management theories and practices in terms of their ability to have a positive impact on organizational results and encourage desired employee attitudes and behaviors. This course will help the student understand the diverse aspects of HRM, while providing knowledge of the tools and techniques of the modern Human Resource Manager. Main topics cover the importance of managing intangible assets, knowledge management and learning organizations, flexibility, empowerment and ethics.

**CINR 101  Introduction to Interior Design  42 hrs**

This course will introduce students to the creation of living spaces, types of interior spaces, space organization, techniques of harmony and esthetics. It will focus on clarifying interior design concepts through graphics, sketches, colors and geometric instruments.

**CINR 102  Colors, Materials, and Lighting  42 hrs**

This course introduces the elements that affect the interior spaces. It focuses on color and its implications; ideas of space and the use of color to solve spatial problems; color harmony and the way colors interact; color qualities and combinations; and the major finish materials used in today's interiors from fabrics to wall coverings and hard surface materials. Students will also learn the fundamentals of lighting design in relation to interior spaces. Visits will be planned to art galleries and factories.

**CINR 201  Presentation Techniques for Interior Designers  42 hrs**

This course focuses on how to present a technical drawing and a basic floor plan. The student will learn to develop interior elevations, and then transform the ideas and drawings into a polished presentation. The course will also introduce the basic tools necessary to translate drafting skills into a digital format using AutoCAD. **Prerequisite: CINR 101.**

**CINR 202  Interior Architecture Project  42 hrs**

This course focuses on how to present a technical drawing and a basic floor plan. The student will learn to develop interior elevations, and then transform the ideas and drawings into a polished presentation. The course will also introduce the basic tools necessary to translate drafting skills into a digital format using AutoCAD. **Prerequisite: CINR 101.**

**CMKT 401  Services Marketing  42 hrs**

This course is an overview of the process of marketing services. It includes a study of the characteristics of services and their marketing implications, developing marketing strategies, creating value, pricing and promoting the service performance, and ensuring a positive customer experience.
This course focuses on the communication between an individual or organization and the public to promote stakeholder acceptance and approval. Students explore traditional and emerging components of the public relations process through mass media, as well as the needs of different types of businesses, such as corporations, non-profit organizations, and governmental offices.

CMKT 403 Consumer Behavior 42 hrs
This course focuses on the customer as the key to market success. Topics covered include the roles of a customer, market values a customer seeks, determinants of customer behavior, the customer's mind-set, customer decision-making, and customer-focused marketing.

CMKT 404 International Marketing 42 hrs
This course is an overview of the scope and challenge of international marketing. Topics covered include the cultural environment of global markets; assessing global market opportunities; and developing and implementing global marketing strategies.

CNRS 301 Nursing Leadership Roles and Management Functions 62 hrs
This course focuses on the requisites and foundations of successful and effective leadership and management. The topics that will be discussed include: organizational structure, strategic and operational planning, time management, staffing, communication, managing conflict, delegation, and performance appraisal.

CNRS 302 Managing Quality Improvement 45 hrs
In this course, students will be provided with the basic concepts and tools necessary to manage quality improvement. Topics include: quality management and utilization, accreditation and risk management, patients relations and patients satisfaction as quality indicator, development of policies and procedures, human resource management, and evidence based nursing management.

CNRS 303 Advanced Management Practice 15 hrs
This is an advanced short course that concentrates on the following major areas: development of policies and procedures, human resource management, and evidence based nursing management.

CNRS 304 Practicum 42 hrs
The practicum would be divided into clinical rotation with hands on or observation depending if the participants are Lebanese or not. Other rotations would be to Human Resources department, patient relation department, quality and risk management office, and nursing office for observation. This course includes a project writing related to improvement initiative or clinical problem.

CNRS 305 Data, Information and Knowledge 30 hrs
This course focuses on the nature of data, the concepts of information and knowledge, principles of relational database systems, operations, information systems, data sets, data standards and classification systems. During the course, students will be able to gain knowledge about developing a database.

CNRS 306 Informatics and the Health Care Delivery System 45 hrs
This course is designed to introduce students to the field of health care informatics. It focuses on the history of health care informatics, basic informatics concepts and health information management applications. During the course, students will discuss and compare information management applications related to administration, education, practice and research.

CNRS 307 System Lifecycle 45 hrs
This course focuses on a structured approach to the selection and implementation of an information system. The course includes four sections corresponding to the five phases of the life cycle: planning, analysis, design, implementation and evaluation.

CNRS 308 Issues in Health Care Informatics 30 hrs
This course is designed to encourage students to engage in a dialogue among themselves and with experts in the field of health care and health care informatics in order to come to some understanding of current issues. Using a single broad case study, students view the issues engendered by the case through the many-colored lenses of ethics, politics, society and law.

CNRS 309 Data Standards, Terminologies and Implications for Practice 30 hrs
This course focuses on Knowledge Representation: data standards, terminologies, and their implications for practice. The terminologies component provides an overview for nursing, and other health care terminologies in use. The data component describes the functions of data standards and implications for informatics as well as professional practices.

CNRS 310 Introduction to Theories and Concepts in Community Health Nursing 45 hrs
This course is designed to introduce students to theories of nursing and principles underlying current community health nursing practice, public health and primary health care. The focus of care is on clients who may be represented as individuals, families, and small groups or larger aggregates and community.

CNRS 311 Practicum I: Application of Theories and Concepts 90 hrs
The practicum course provides students with field practice experiences through collaboration with other health professionals in primary health care settings, clients’ homes and schools. The focus of interventions is health promotion, health maintenance and the prevention of illness and disability.

CNRS 312 Advance Concepts and Issues Relevant to Community/Public Health Nursing 45 hrs
This course addresses advanced concepts and issues relevant to community/public health nursing. Students are provided with advanced knowledge and skills in population, family and individual needs assessment. Areas of focus include health promotion, health education, and management of chronic diseases.

CNRS 313 Practicum II: Planning and evaluation of community based interventions 90 hrs
This course provides field experiences designed to enhance collaborating with interdisciplinary team members in planning, organizing, delivering and evaluating population-focused programs to achieve health goals, including health promotion and disease prevention activities.

CNRS 314 Fundamental Concepts in Critical Care Nursing: Assessment and Evaluation 30 hrs
This course gives an overview of critical care nursing: critical care environment, relationship with patient and family, end-of-life care, infection control and safety, communication and documentation. It also focuses on dysrhythmia interpretation, EKG interpretation, hemodynamic monitoring, and ventilatory assistance.

CNRS 315 Nursing Management during Critical Care Illness 60 hrs
This course aims at enhancing the participants' know how in cases of shock, cardiac alterations, nervous system alterations, acute respiratory failure, acute renal failure, hematological and immune disorders, gastrointestinal alterations, endocrine alterations, trauma, and burns.
CNRS 316 Practicum I: Critical Care Nursing: Assessment and Evaluation 60 hrs
CNRS 317 Practicum II: Critical Care Nursing: Management 90 hrs
CNRS 318 Practicum III: Code Management 30 hrs
CPRM 201 Best Practices in Managing Small to Medium Projects 21 hrs
The course is focused on practicing how to successfully manage small to medium projects. Participants will practice applying best practices and will receive immediate feedback from the expert.

CPRM 202 Project Leadership/Communication Skills 21 hrs
This course is designed to help project managers become better team leaders by honing their skills and improving their knowledge in key areas of communication, motivation, expectation setting and problem solving. Participants will be equipped with practical knowledge, skills, and tools that empower them to lead teams towards successful projects.

CPRM 203 Project Management Scheduling Tools and Techniques 21 hrs
This course provides hands-on project management training using a project scheduling application, and leads participants through the entire project life cycle. The instructor will walk the participants through the various project management processes with a special focus placed on the planning process group as per PMI's standards. Participants will gain in-depth practical knowledge about creating work breakdown structures, activity lists, scheduling activities, resource leveling, and base-lining.

CPRM 204 Project Stakeholder Management 21 hrs
This course is designed to enable the participant to effectively gain an essential understanding of stakeholder communications and management. Project managers will learn how to identify, assess, and manage stakeholders. Various elements of the course are built from a practitioner’s perspective.

CPRM 205 Advanced Project Management Practical Workshop 21 hrs
The workshop will teach practical skills to plan and manage projects throughout the project lifecycle. Participants will gain the confidence needed to tackle issues with competence and increase the probability of completing their projects on time and within budget.

CPRM 301 Cost Estimating, Budgeting, and Controlling 21 hrs
This course provides extensive knowledge about cost planning and scheduling. It covers the classification of cost elements (labor, equipment and material), estimation of the required project resources, allocation on time schedule, and generation of cash flow.

CPRM 302 Managing Engineering Design Projects 21 hrs
In this course, the enrolled candidate will be introduced to processes and procedures governing the project management aspects of the design phase according to current industry standards, principles and international best-practices. Moreover, the concepts are examined at multiple levels ranging from early phase conceptual design to the final and detailed stage of the design process. This gives the participant a more global approach to the management of any project or design task, and it leads to a better integration of efforts towards the project objectives.

CPRM 303 Construction Project Management 21 hrs
This course will provide participants with the required skills needed to be a successful and effective construction or site manager. It provides a general overview of construction management with emphasis on inspection, contract writing, and material testing. It also provides an in-depth discussion of construction management with emphasis on cost estimation, safety/risk management and claim handling.

CPRM 304 FIDIC Conditions of Contract and Claims and Dispute Resolution 21 hrs
This course is designed for the participant to effectively gain an essential understanding of FIDIC contracts, and it outlines the various elements of the FIDIC suite of contracts with emphasis placed on the Conditions of Contract for Construction (The “Red Book”). Besides, in the second part of the course, topics covered will include the basic concepts of delays, tracking delays, mitigating delays, base-lining schedule, as well as analyzing the effect of delay(s) on the baseline schedule. In addition, it includes a detailed guide on the preparation of a comprehensive Extension of Time Request including the prolongation and disruption cost, claims avoidance, parties good and bad practices, and other focal issues in claims and disputes.

CPRM 305 Project in Controls 52 hrs

CPRM 306 Project Sponsorship 21 hrs
As good sponsorship is critical to the success of projects, the professional filling the position should remove the guess work and be ready to take on this leading position. The participant will learn and practice sponsorship best practices at a project, program, and portfolio level.

CPRM 307 Project Management for Entrepreneurs 21 hrs
This course will allow participants to effectively gain an essential understanding of what value integration between business development and project management can add. It will also guide participants through a solid business development roadmap empowered by project management best practices.

CPRM 308 Certified Business Analysis Professional 21 hrs
This course provides a detailed review of all knowledge areas of IIBA’s Business Analysis Body of Knowledge (BABOK®) key concepts, terms, and principles of business analysis. The BABOK is a globally recognized standard for the practice of business analysis and acts as a baseline for practitioners so that it defines the profession of business analysis with its best practices.

CPRM 309 Project Management for NGOs 21 hrs
This course is designed to provide participants with key tools and techniques for people involved in project management in NGOs. It covers the basics of project management in alignment with PMI’s standards as well as topics like the Logical Framework Approach. The instructor will also map PMI’s terminology to the PM terminology used by NGOs.

CPRM 310 Project in Business Development, Organization Development or Entrepreneurship 52 hrs

CPRM 311 Project Management Office Setup and Implementation 21 hrs
The objective of this course is to help participants understand Project Management Office setup and implementation phases, requirements, and steps. It covers topics related to the role of a PMO in an organization and the development of processes, guidelines, and related templates. The course will also focus on how to transfer the developed processes and material to operations with the proper training, mentorship, evaluation, and control.
CPRM 312  Program Management Professional  21 hrs
This course is designed for the participants to effectively gain an essential understanding of, and/or formalize, program management skills and concepts. The course addresses a layer above project management where benefit management is central. It was developed according to the new PMI delineation of a Program Management Professional.

CPRM 313  Project Feasibility and Portfolio Prioritization Techniques  21 hrs
This course focuses on analyzing the expected status of every initiative by conducting a feasibility study, and optimizing the selection in order to maximize the return on organizational capacity. The course capitalizes on the Portfolio PMI standard and highlights some portfolio selection and balancing tools and techniques.

CPRM 314  Organizational Governance for Enabling Portfolio/Program/Project Management (OPM3)  21 hrs
This course provides participants with an understanding of enablers to project/program/portfolio maturity in an organization. An objective assessment of the level of maturity of project, program, or portfolio management matched with a sound improvement plan is central to carrying out those projects or programs, or even portfolio. Presentations and case studies will be used to illustrate such scenarios.

CPRM 315  Project in Program Management/PMO Governance  52 hrs
CPRM 316  Achieving Risk Management Professional Certification  21 hrs
This course will cover risk management from basic to advanced processes. The course is an excellent preparation for those interested in applying for the challenging PMI-RMP Risk Management Professional Certification.

CPRM 317  Quantitative Risk Analysis Concept  21 hrs
The course explores the Perform Quantitative Risk Analysis process by performing a numerical analysis on the effects of identified risks on overall project objectives and prioritizing those risks in order to better plan the responses.

CPRM 318  Enterprise Risk Management Using ISO 31000  21 hrs
This course offers a sound understanding of the International Organization for Standardization (ISO) risk standard released in 2009. It helps to address the needs for understanding the enterprise risk management ins and outs, and for selecting the appropriate risk response plan while adhering to an international standard.

CPRM 319  Practical Risk Workshop  21 hrs
This is a workshop meant to give participants who have completed the “Achieving Risk Management Professional Certification” course extensive hands-on through activities carefully planned to contribute intensively to reinforcing risk management knowledge.

CPRM 320  Project in Risk Management  52 hrs
The objective of this course is to help students understand project management science and how it is used to successfully deliver strategically aligned projects to achieve the company’s ultimate vision. Participants will learn how to incorporate the art and science of project management into new and exciting ways to do business. The course focuses on consolidating project principles across the organization.

CPRM 321  Strategic Project Management for Executives  21 hrs
This course is designed for the participants to effectively gain an essential understanding of, and/or formalize, program management skills and concepts. The course addresses a layer above project management where benefit management is central. It was developed according to the new PMI delineation of a Program Management Professional.

CPRM 322  Extension of Time Analysis and Extension of Time Request  21 hrs
This course will provide in-depth understanding of the concepts and art of preparing and defending Time Extension Requests. Topics will cover the basic concepts of delays, tracking delays, mitigating delays, and analyzing the effect of delay(s) on the baseline schedule. In addition, it is extended to give a detailed guide about preparing a comprehensive Extension of Time Request including the prolongation and disruption costs.

CPRM 323  Contracting and Procurement  21 hrs
This course is meant to give professionals a comprehensive set of tools and techniques to handle contracting procedures as well as procurement cycle for an optimization of the organization benefits.

CPRM 324  Earned Value Management  21 hrs
This course is designed to provide the essential understanding of Earned Value Management to facilitate improvement in project performance outcomes by encouraging the use of EVM on projects. It will focus on EVM’s contribution to provide early warning, achieve cost goals, improve communication, achieve schedule goals, and improve scope management.

CPRM 325  Contract Administration and Claim Management  21 hrs
This course focuses on the importance of contract administration and claim management in any construction project. Most disputed issues in the construction industry initially arise because of a lack of awareness and in-depth know-how about this essential part. Participants will learn how to combine the understanding of the contract clauses and the civil law interpretation in relation with the project’s contract and the construction environment.

CPRM 326  Effective Submittal Management in Construction Projects  21 hrs
This course will familiarize participants with the standards and procedures for managing different types of project submittals (i.e. RFIs, drawings, material submittals, action items, punch lists …) whether from a contractor, a consultant or an owner perspective. The content of the course is tailored to cater to the needs of the construction and engineering industries; in addition, participants will be introduced to several project management software applications used to automate the submittals in construction projects.

CPRM 327  Cost Engineering Certification  21 hrs
This course reflects the sophistication of individuals in today’s cost control industry and it improves one’s knowledge and adherence to best cost management practices. Participants can then apply to CCC/CCE certification with the Association for Advancement of Cost Engineering International (AACEI).

CPRM 328  Project Planning and Scheduling  21 hrs
This course will provide participants with a thorough background in Planning and Scheduling projects. It addresses how to identify, monitor, and balance crucial information for the successful management of projects, and covers the development of a baseline performance management plan (PMP) for the project that will allow the efficient compilation and the timely generation of quantifiable performance comparisons. The comparisons highlight significant performance departures (“actual vs. baseline”) and allow for preventive and early corrective actions. The course will also enable participants to apply for the Scheduling Professional (PSP) certification from AACE-International as well as PMI-SP certification of the Project Management Institute (PMI).
CPRM 329  Green Project Management  21 hrs
The Green Project Manager (GPM®) certification embodies the commitment of a project management professional to act as an agent of change by managing and directing efforts to maximize sustainability within the project life cycle, improving the construct and delivery of goods and services produced as a project deliverable, and thoroughly considering and accounting for environmental impacts in the project management roles assigned using measurable standards. Green Project Manager (GPM®) certification is the first project management credential for individuals demonstrating competency in delivering projects using sustainable methods.

CPRM 330  Project Lessons Learned  21 hrs
This course focuses on the importance of having lessons learned in project context. Moreover, it assists participants in understanding when lessons learned should occur and the framework to document project lessons learned. In addition, it provides practical steps to improve project processes through lessons learned.

CEC offers non-certificate courses in languages, arts, and information technology; it also offers exam preparatory courses and a variety of special courses.

Languages

English language courses are offered at all levels of proficiency, as well as specialized courses for members of various professions and students preparing for the TOEFL and SAT. CEC also serves non-native speakers of Arabic by providing classes in Modern Standard Arabic, and colloquial Arabic. Students may also take classes in a variety of other languages.

English Language

Courses are offered at all levels from beginners to advanced with emphasis on communication competence. Students who complete Level 6 are often able to pass the AUB English Entrance Exam (EEE) or the Test of English as a Foreign Language (TOEFL). Each student’s level is determined by a placement test given to all new applicants before the session begins.

Arabic Language

Standard Arabic Language

CABR 101  Standard Arabic Beginner  48 hrs
This course introduces students to the language through a proper acquisition of the alphabet, pronunciation of the sounds, connection of letters, and formation of words and simple sentences.

CABR 102  Standard Arabic Intermediate  48 hrs
This course focuses on basic grammar structures and vocabulary; and on comprehension and articulation of simple statements, questions, and paragraphs.

CABR 103  Standard Arabic Advanced  48 hrs
This course stresses complex grammar structures and vocabulary needed to comprehend and compose written and oral material.
Colloquial Arabic Language

CARB 201 Colloquial Arabic Beginner 48 hrs
This course focuses on pronunciation and vocabulary needed to engage in simple dialogues such as, greetings, directions, traveling, and shopping.

CARB 202 Colloquial Arabic Intermediate 48 hrs
This course focuses on the basic principles of expression and builds the students’ vocabulary to enable them to comprehend and compose simple sentences needed in day-to-day conversations.

CARB 203 Colloquial Arabic Advanced 48 hrs
This course offers students the opportunity to practice their communication skills in different settings to achieve a comfortable level of verbal interaction in business, social, and formal environments.

Other Languages

CFRN 101 French I 36 hrs
This course provides students with the chance to use the language in familiar contexts both orally and in writing. In Level One, the emphasis is on conversations using basic structures.

CFRN 102 French II 36 hrs
This course provides students with the chance to use the language in familiar contexts both orally and in writing. In Level Two, the student will be able to read and write simple texts.

CGER 101 German I 36 hrs
In this course, students will learn basic vocabulary and sentence formation that would enable them to participate in simple conversations.

CGER 102 German II 36 hrs
In this course, students will learn the basics for writing and conversing in a more professional way. Prerequisite: German I.

CHNS 101 Chinese I 36 hrs
This course provides students with basic working knowledge of Chinese (Mandarin). The course exposes beginners to Chinese Pinyin (spelling with one tone), Chinese characters, Chinese grammar, commonly-used sentence structures, and simple situational dialogues.

CHNS 102 Chinese II 36 hrs
This course is a continuation of Chinese I. Students will learn more characters, grammar, sentence structures, and dialogues; and they will practice simple applied writing. Prerequisite: Chinese I

CARB 201 Colloquial Arabic Language

CAPP 200 Apple iOS Development 24 hrs
In this course, students will learn how to develop fully operational iOS applications. It will provide an overview about mobile application rules and iOS, Objective-C language, Xcode tool, Story Board, View Controllers, Graphics, Animation, Data Management, Motion, Location, and Client-Server Applications; and real life examples on how to develop iOS applications.

CAPP 300 MAC OS X Support Essentials (With Certification) 42 hrs
This course provides an in-depth exploration of troubleshooting on MAC OS X. It is designed to give a tour of the breadth of functionality of MAC OS X and the best methods for effectively supporting uses of MAC OS X systems. The course is a combination of lectures and hands-on case study exercises that provide practical real-world experience. Basic Knowledge of MAC OS X and troubleshooting experience are required.

CSPN 101 Spanish I 36 hrs
This course is designed to provide the student with a basic knowledge of Spanish, both of its conversational form and of the elementary grammatical structure. By the end of the course, the student will be able to engage in simple conversation, read short articles and write letters and simple compositions.

CSPN 102 Spanish II 36 hrs
This course aims to enhance the students’ skills of speaking, listening, reading, and writing. Students who complete this course should be able to communicate in a more professional way. Prerequisite: Spanish I

SAT, GMAT, and MCAT Preparatory Courses

CGMT 201 English for GMAT 30 hrs
This course aims to prepare students for the English (Verbal) component of the Graduate Management Admission Test (GMAT). It helps students improve their essay writing skills, their grammar skills, their ability to read and understand short complex passages, and be able to develop their critical reasoning skills.

CGMT 202 Math for GMAT 30 hrs
This course aims to prepare students for the Mathematical (Quantitative) component of the Graduate Management Admission Test (GMAT). It helps them understand how Computer Adaptive Testing (CAT) works, tackle effectively both types of multiple choice questions that are usually given on the Mathematical sections of the GMAT (i.e., standard multiple choice questions and data sufficiency questions), review in detail the fundamental Mathematical concepts to be tested on the GMAT, and finally help them develop their problem solving skills through extensive practice.

CMCT 201 MCAT Preparatory Course 36 hrs
This course aims to familiarize students with the mathematical and reasoning components of the Medical College Admission Test (MCAT) as determined by the latest editions of Kaplan and Princeton Review, and at enhancing their writing skills and test-taking skills in order to attain a competitive score in the MCAT. Participants will do practice tests in each segment of the MCAT biology, physics, chemistry, writing and verbal reasoning.

CSAT 201 English for SAT 60 hrs
This course aims to familiarize students with the English component of the Scholastic Aptitude Test (SAT). It helps them practice their English language skills and vocabulary.

CSAT 202 Math for SAT 60 hrs
This course aims to familiarize students with the mathematical and reasoning components of the SAT test. It reviews mathematical concepts and helps students practice their basic math and reasoning skills.

Technology in Practice

CAPP 200 Apple iOS Development 24 hrs
In this course, students will learn how to develop fully operational iOS applications. It will provide an overview about mobile application rules and iOS, Objective-C language, Xcode tool, Story Board, View Controllers, Graphics, Animation, Data Management, Motion, Location, and Client-Server Applications; and real life examples on how to develop IOS applications.

CAPP 300 MAC OS X Support Essentials (With Certification) 42 hrs
This course provides an in-depth exploration of troubleshooting on MAC OS X. It is designed to give a tour of the breadth of functionality of MAC OS X and the best methods for effectively supporting uses of MAC OS X systems. The course is a combination of lectures and hands-on case study exercises that provide practical real-world experience. Basic Knowledge of MAC OS X and troubleshooting experience are required.
### CAPP 302 Overview of Final Cut Pro 7
This course introduces students to the primary feature set and basic interface of Final Cut Pro. Students will learn how to perform basic editing functions while familiarizing themselves with the user interface. Topics include basic setup, adjusting and customizing preferences and settings, capturing video and audio, various editing and trimming techniques, Ripple, Roll, Slip and Slide tools, finishing and final output. Knowledge of Mac OS X, computer navigation, and editing terminology is required.

**36 hrs**

### CAPP 303 Introduction to Final Cut Pro 7 (With Certification)
This course focuses on the basic editing functions and aims at familiarizing students with the Final Cut Pro user interface. In this course, student will cut a scene from the TNT television series Leverage, create a promo for SeaWorld’s Believe documentary, as well as master filters and effects as they edit a segment of Playing for Change, the international music-creation event. Students will start with basic video editing techniques and work all the way through Final Cut Pro’s powerful advanced features. They will also learn to mark and edit clips, mix sound and titles, create transitions, apply filters, and more. Topics include basic setup, customizing preferences and settings, capturing video and audio, various editing and trimming techniques, Ripple, Roll, Slip, and Slide tools, audio editing and audio creation, finishing and final output. Knowledge of Mac OS X, computer navigation, and editing terminology is required.

**42 hrs**

### CAPP 304 Introduction to DVD Studio Pro 4 (With Certification)
This course focuses on DVD authoring with DVD Studio Pro 4. It guides students through every aspect of DVD authoring, from initial storyboarding to burning and replication. Using compelling media and real-world production workflow, students will learn how to create amazing MPEG 2 video with Compressor as well as create eye-popping motion menus directly in DVD Studio Pro 4. They will also “author” a DVD by creating buttons, interactive links, slideshows, playlists and even adding alternate audio steam and camera angles. Basic knowledge of the Macintosh OS and Final Pro is required.

**42 hrs**

### CTP 101 Digital Radiography
Digital radiography will acquaint the radiographers with the various digital image acquisition and display systems currently being introduced into the radiology departments. Radiographers will gain technical skills to help them in the transition from an analogue to digital imaging environment. This course will also focus on radiation protection techniques employed with digital systems. This course is approved for credit (38 credits) by the American Society of Radiologic Technologists.

**42 hrs**

### CTP 102 Online Community Management
This course provides students with the knowledge and skills needed to effectively manage their online community in order to increase visibility and market share. It focuses on online user interface, content research and creation, and best online practices of customer relations and public relations. Students will be trained to develop online marketing strategies, campaigns, and advertisements; derive analytics and metrics and build on them for best online results and client-facing reports; and advance digital engagement strategies across stakeholders.

**25 hrs**

### CTP 103 Medical Information Literacy Skills
This course is designed to expose attendees to a wide variety of medical information resources/tools available on the Internet, which are useful for locating specific reliable medical/health information. The course relies heavily on hands-on training and focuses on how to use free and reliable internet resources to do an efficient and productive search.

**32 hrs**

### Special Courses

#### CBSC 201 Balanced Scorecard Management System
This course focuses on developing the understanding of participants about the BSC system. Students will learn how to use the BSC system to keep track of an organization’s performance in order to monitor how well it is achieving its goals. The course includes practical training on developing strategy maps and measuring initiatives.

**45 hrs**

#### CEVP 101 Event Planning
This course is designed to provide the necessary knowledge and skills an event planner should acquire. It focuses on the fundamentals of event planning, the communication process, and event branding and marketing. The course includes organizing and planning actual events taking place on AUB campus.

**36 hrs**

#### CHST 101 History of Lebanon
This course covers the history of Mount Lebanon from the period of Fakhreddine until the Independence in 1943. It focuses on the historical facts & dates; the political, economic, social and demographic changes; and the effects of European powers in shaping Lebanon's history. The course also discusses the Mount Lebanon emirates with particular stress on politics & economy, and the events and policies during World War I and the effects of the war on Lebanon passing by Sykes-Picot and eventually leading to the establishment of present-day Lebanon in its present borders.

**36 hrs**

#### CIPE 201 Business Protocol and Etiquette
This course teaches students how to greet people, converse with them, understand their business and management styles while respecting their cultural attitudes. Topics include: first impressions and networking skills, dressing for success, communication at its best, business lunching and dining etiquette, hosting business potentials, and mastering business meetings.

**36 hrs**

#### CLAB 101 Legal Aspects of Business
The objective of this course is to introduce participants to commercial law and to the legal elements that are required for starting and managing a small business or for the constitution of different kinds of companies. It includes information on various contracts and day-by-day operations from a legal point of view.

**36 hrs**

#### CLDS 101 Leadership Skills
The objective of this course is to introduce the participants to the essential skills needed for a successful leader. Participants will be able to determine their leadership qualities and personal leadership style. They will also understand their responsibility in developing further as leaders. Participants will learn how to set, evaluate, and follow up on short and long-term objectives. This course will use a practical approach emphasizing exercises, discussion, group work, and practical experience. A pre-test will be given at the beginning of the course and a post-test at the end so that participants will be able to evaluate their leadership skills and plan for improvement.

**36 hrs**

#### CLDS 102 Extracurricular Activities Program
The purpose of this course is to introduce participants to the objectives, programs, organization and benefits of the Extra-Curricular Activities Program at various school levels (Elementary through Secondary level). It will emphasize practical activities that contribute to the development of the student’s personality and encourage creativity, voluntary work and good citizenship. It will also focus on the essential skills needed for the leaders and providers of these activities who can be teachers, counselors, NGO leaders and parents.
CLDS 201 Emotional Intelligence 36 hrs
This course is designed to help participants understand the relationship between emotions and decision making, and their role in developing their own emotional intelligence. The course focuses on the importance of emotional intelligence to our health and leadership qualities. Participants will learn to identify their emotions, express themselves clearly, and understand others. They will also learn how to motivate themselves and others, and how to plan for self-management in order to achieve a higher emotional intelligence.

CSTM 201 Stress and Time Management 25 hrs
The course includes case studies, real-life examples, and practical sessions. It is approved for credit (35 PDUs) by the Project Management Institute.

CSTM 205 Implementing LEED NC 2009 8 hrs
This course provides an advanced level of LEED technical training. It fosters understanding of all the LEED NC 2009 prerequisites and credits through going over their individual intents and technical requirements, touching on their required technical standards and calculation procedures, and discussing various compliant sample project applications. The course also discusses the integrated design approach from various perspectives, exhibits the importance of such management strategies for achieving successful green projects, and includes essential preparation materials for “LEED Accredited Professional for Building Design and Construction” (LEED AP BD+C) exam. Prerequisite: CSTM 101.

CPRM 200 The Certified Associate in Project Management - PMP 916 25 hrs
This course provides junior project managers with the basic knowledge and preparation required to pass the CAPM certification exam. It follows the outline of the Project Management Body of Knowledge (PMBOK). Each topic is introduced and discussed, with emphasis on the Inputs-Processes-Tools and Techniques-Outputs structure outlined in the PMBOK. This course is approved for credit (25 PDUs) by the Project Management Institute.

CPRM 300 PMP Exam Preparation - PMP 905 35 hrs
This course introduces senior project managers to the science of Project Management and how it applies to their business; and refreshes the knowledge of those who want to sit for the PMP exam. The basic elements of project management will be discussed: PMP logistics, integration management, project scope management, project time management, cost management, quality management, human resource management, communication, risk, procurement, and professional responsibility. Each topic is introduced and discussed with emphasis on the Inputs-Processes-Tools and Techniques-Outputs structure outlined in the PMBOK. This course is approved for credit (35 PDUs) by the Project Management Institute.

CPRM 205 Implementing LEED NC 2009 8 hrs
This course is designed for students who want to develop their skills in the technical and application.

CPRM 300 PMP Exam Preparation - PMP 905 35 hrs
This course is designed for students who want to develop their skills in the technical and artistic production of photography. It builds on previously acquired skills and guide students in developing personal outlooks towards specific applications of the photographic process. Students will be challenged to explore the concept of developing a series of images that cultivate a personal vision while building a portfolio which illustrates an understanding of various processes and professional presentation. Prerequisite: CPHT 101.

CSKT 101 Sketching 36 hrs
In this course, students will learn how to execute a free hand drawing that is not intended as a finished work. They will be introduced to perspective, proportions, scales and composition.
Public Workshops

CEC draws on the expertise of AUB faculty to respond to the professional training needs in many areas including engineering, medicine, business, English, information technology, education, and agriculture. Public workshops offer participants unique engaging opportunities to acquire the knowledge, skills and strategies that are needed to move forward along the career path. The following are examples of the public workshop topics:

Applying Quantitative Discipline to Asset Allocation
In this workshop, participants will learn how to use quantitative tools effectively to make asset allocation decision in a global investment marketplace. They will be provided with a practical guide on using some powerful quantities tools, from mean variance optimization to dynamic Bayesian statistical modeling, with a few comments on the new direction implied by nonlinear modeling techniques.

Business English
This workshop aims to improve the English language communicative competence of the participants in business and social settings. It focuses on developing participants' productive skills of speaking and writing as well as the receptive skills of reading and listening. It also focuses on the acquisition of a wide range of business expressions, idioms, and grammatical knowledge.

Advanced Negotiation and Conflict Resolution Skills
This workshop gives participants a better understanding of conflicts from an objective point of view. It introduces them to the dynamics of conflicts and offers methods, such as negotiation, through which conflicts can be resolved. Topics include: the explicit and implicit issues inherent in a conflict situation, conflict resolution frameworks and techniques within the context of current organizational decision making models, practical negotiating and conflict resolution skills and experiences that can be applied immediately.

Developing Young Professionals
This workshop is designed to prepare young employees or prospective employees for the work environment. It teaches them business communication, time management, discipline, presentation techniques, and other practical and mental tools that will facilitate their way to success.

Databases Fundamentals
This workshop trains participants to use a scientific method to design a database from business requirements. It focuses on the process of normalization, and gives the participants an overview of the main components of a database engine and techniques for improving query performance and protecting data through views, authorization control, and semantic integrity control.

Scholarships and Awards

Kamil Sadeddin Continuing Education Scholarship
The Kamil Sadeddin Continuing Education Scholarship fund aims to encourage AUB’s community members to enhance their education and become more effective employees by pursuing individual courses and professional certificates at CEC.

All AUB staff members at grade 12 or below are eligible to apply for the Kamil Sadeddin Continuing Education scholarship.

Arab Student Aid International (ASAI) Scholarship
The Arab Student Aid International Scholarship fund aims at providing support to improve the managerial performance of the non-governmental organizations in the private and public sectors. The fund is used to organize customized training courses for NGO leaders that include project-based work aiming at improving their managerial skills. All NGO leaders are eligible to apply.

Arab Student Aid International (ASAI) was founded in 1976 by a group of Arab and American academics and business people who believe in the mission, vision and objectives of the development of human resources in the Arab countries and the Palestinian territories in particular.

Abdul-Hamid Hallab REP Service Excellence Award

Purpose
The purpose of Abdul-Hamid Hallab REP Service Excellence Award is to recognize the accomplishments of outstanding REP consultants from the AUB community who have made major contributions to the AUB mission of serving “the peoples of the Middle East and beyond” and the REP mission of providing “the Middle East and North Africa with world class professional services...while reflecting AUB core values and its commitment to service excellence.” By recognizing these individuals, REP demonstrates its commitment to service excellence and provides incentives for AUB faculty and staff to serve as REP consultants. The award is based on qualitative and quantitative evidence for excellence in consulting work.

Eligibility
Full-time AUB faculty and staff who have served on at least one REP project during the entire fiscal year are eligible to be nominated. Consultants who were nominated in previous years may be nominated again on condition that they haven’t received the award during the previous year.

Criteria for Excellence in Consulting
The Abdul-Hamid Hallab REP Service Excellence Award acknowledges the efforts of faculty and staff members and their contributions to the mission of the University and the mission of REP. The number of projects the faculty or staff member has worked on would not, in itself, be considered sufficient evidence for recognition. The selection committee will rely on qualitative and quantitative measures and on any and all supporting material provided by the nominator and nominee including evaluations by the clients, letters of support received from referees, and other relevant materials. Nominees will be evaluated against these criteria:

• Client focus
• Commitment to service excellence
• Exceptional commitment to the project
• Teamwork

Nomination Procedures
A nomination can be initiated by REP clients, Deans, VPs, project coordinators, and colleagues.
Program Structure

Academic Courses
Participants will learn classical and colloquial Arabic using a curriculum rich in social and cultural activities. Participants will also cover pre-history, contemporary history, and the archaeology of Lebanon through field trips and course work. The language of instruction is English, though Arabic will be used where it is found suitable.

The following academic courses will be offered to each participant:
- **Colloquial Arabic**: Arabic for communicating in common day-to-day situations
- **Literary Arabic**: An elementary knowledge of classical Arabic grammar, expanded vocabulary and basic reading skills
- **Contemporary Lebanese Studies**: This course aims at giving participants a better understanding of Lebanon from the pre-historic period till today. The archaeology program starts with a general introduction to the archaeological sites in Lebanon and surveys prehistoric Lebanon
- **Art Elective**: Students may choose to participate in one of three afternoon courses (photography, drama, or life drawing).

Social Activities
Afternoons on the scenic campus of AUB will be a time for a variety of extracurricular activities. Participants are at liberty to choose from the following social activities:
- Visits to museums, souks, and AUB libraries
- Extensive use of the Charles Hostler Student Center facilities including swimming, gym, basketball courts, and the soccer field
- Volunteer services at AUB Medical Center
- Dinner outings to various destinations in the country.

Country Excursions
One-day and overnight trips to significant historical and cultural destinations throughout Lebanon will ensure participants’ exposure to the diversity Lebanon has to offer.

Field trips may include (among others):
- Visits to the archaeological and historical sites in Jbeil, Batroun, Beiteddine, Mousa Castle, Baalback, Jeita
- Hiking in the Cedars and Qadisha Valley
- Rafting on the Orontes River (Nahr-El-Assi) in Hermel
- Weekly visits to various Lebanese beaches.
Meals and transportation on our planned excursions are included in the program costs.

A completed nomination form should be submitted to REP by the stated deadline. The nominee will then be asked to submit the following documents:
- Letter accepting the nomination
- Curriculum vitae
- Names of three reference persons who are acquainted with nominee’s consulting activities
- Completed self-evaluation form
- All relevant documents that could be considered as evidence for excellence in consulting

A selection committee will create a short list of three nominees according to eligibility, and will present its recommendations to the REP Interfaculty Advisory Committee (RIAC) for final selection based on established criteria.

Award Winners
The winner of the Abdul-Hamid Hallab REP Service Excellence Award will receive a plaque along with personal citation and a cash award of US$1000. Also, a picture and a brief article about the award recipient will be posted on AUB Homepage (via the bulletin and highlights) and REP homepage, and placed in Main Gate magazine and REP Annual Activities Report.

The AUB Summer Program for AUB Alumni Children (SPAAC)

Overview
The American University of Beirut’s Continuing Education Center (CEC), in collaboration with the Office of Alumni Relations and the Worldwide Alumni Association of the American University of Beirut (WAAAUB), offers a special summer program to children of AUB alumni throughout the world to strengthen the ties between AUB and all of its alumni. SPAAC offers AUB alumni children the opportunity to experience campus life while learning about Lebanon’s rich history and culture. The summer program aims at deepening the students’ knowledge of their heritage, expanding their understanding of the modern Middle East, and strengthening alumni ties through the experiences of their children. This summer program is a rich and pleasurable educational experience, and a unique opportunity to enjoy the summer, make new friends, get a taste of college life, and explore Lebanon.

The summer program is open for bright and highly motivated students from around the world between the ages 18 and 21. The participants’ stay on campus will be facilitated and carefully supervised by our highly qualified staff. All participants will be accompanied by our staff for all planned activities including on-campus activities and field trips to extraordinary historical sites throughout Lebanon.

Eligibility
All participants must be either high school or college students and must be at least 18 years of age. Priority will be given to children of AUB alumni. All other applicants will be considered based on availability of vacancies.
University for Seniors

The University for Seniors is an independent program for older adults in AUB’s Continuing Education Center. It aims to create a new and positive face of aging in Beirut, Lebanon and the Middle East Region: one where older adults remain intellectually and socially engaged, energized to learn new things, and active contributors to their communities.

The University for Seniors is different from standard adult education classes, or from many of the offerings of AUB’s Continuing Education Center. Three core principals underline the program: peer-learning, community-building, and intergenerational connections. Peer-learning means that seniors learn from one another rather than from a paid professional instructor. Study group leaders and lecturers are all volunteers. Community-building: the University for Seniors is a membership organization to reinforce the idea that one is joining a community rather than paying for one-off activities. Intergenerational connections: Seniors specifically wish to be connected to the regular AUB student body. These intergenerational connections will be created through multiple academic and extra-curricular activities.

Anyone over 50 may become a member of the University for Seniors. The typical academic year is comprised of two eight week terms, one in the Fall and one in the Spring.

Activities include study groups, lectures, educational trips, and projects with AUB students and more.

For more information about the University for Seniors you can visit our website: www.aub.edu.lb/seniors

You can also reach us by email ufs@aub.edu.lb or by phone 01/350000 extension 1-2563 or 1-3236.

CEC Rules and Regulations

AUB EEE

Applicants who need to sit for the AUB EEE should register for the test two days prior to the examination day, pay an exam fee of L.L. 50,000, and submit two passport photos and an identity card. Registration and test administration are done in Nicely Hall, Room 500.

Student IDs

CEC students are provided with AUB identification cards which they should carry while on AUB campus. In case the student loses his/her ID card that s/he gets upon registration, s/he can get a new one by paying a replacement fee.

Course Offerings

The updated course listing is posted each semester on the CEC website. CEC is under no obligation to offer any of the certificate or diploma courses at all times.

Course Cancellations

CEC reserves the right to cancel any course due to insufficient enrolment or other unavoidable circumstances. All registrants will be notified and a complete refund is made automatically.

Student Withdrawal

Should a student need to withdraw from a course anytime before or after classes officially begin, s/he must inform CEC in writing and return his/her AUB ID (if issued). Non-attendance does not constitute official withdrawal.

Attendance

Attendance to all classes is required. A student who is absent one fourth the number of sessions of a course without a valid excuse will not be entitled to a final grade for that course.

Access to University Facilities

- Students enrolled in CEC courses are entitled to use the reading facilities at Jafet Library but not to check out books.
- CEC students are not entitled to free access to Charles Hostler Student Center. Those who wish to join may apply for a paid monthly membership.

Examinations

Final Examinations are held within one week of the last class session, unless the course instructor specifies otherwise.

Grading System

CEC uses the AUB grading system which is as follows:

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Incomplete

P Pass
All final grades are expressed in multiples of one.

**Repeating a Course**

A student is not allowed to register for the same course more than two times.

**Attestations**

Attestations are offered to students who enroll in individual courses to continue their professional development. Request for attestations can be made in person at the Office of the Registrar.

During registration and examination periods, attestations are not issued.

**Holidays**

The CEC follows the AUB calendar with respect to holidays.

**AUB Rules and Regulations**

All students are expected to abide by the rules and regulations of the University.

**Change of Personal Information**

Students are encouraged to inform CEC about any changes in their contact information.

**Contact CEC**

Continuing Education Center  
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Center for Civic Engagement and Community Service (CCECS)
Center for Civic Engagement and Community Service (CCECS)

Director: Mabsout, Mounir, Professor of Civil Engineering
Associate Directors: Safa Majzoub, Olga (Activities and Planning); Shibli, Rabih (Development and Projects)
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Introduction

Established in 2008, the Center for Civic Engagement and Community Service (CCECS) aims to develop a culture of service and civic leadership within the AUB community and provide opportunities for AUB students, faculty, and staff from all backgrounds to study and respond to social and civic needs. The Center identifies, integrates, and supports university-wide community initiatives, thus upholding AUB’s mission of service towards its community.

The main objective of the center is to seek connections between civic engagement and liberal learning and encourages leadership, scholarship, volunteerism, and community partnerships by: promoting the integration of service to society with academic study and research in a variety of disciplines; encouraging responsibility and leadership through outreach volunteering programs; and building sustainable collaborations and creating close links with the community.

Approach

To fulfill its mission, CCECS has adopted Community Service Outreach Activities, Community-Based Projects and Research, and Community-Based Learning (or Service Learning) which is an academic type of experiential learning combining service with explicit academic learning objectives, preparation for community work, and deliberate reflection. This is achieved by structuring the CCECS into three main service units:

- **Community Outreach Projects unit (COPu)** that aims to organize a strong outreach volunteering program, link with students’ organizations, and reach out to administrative units and academic departments to expand community engagement across campus;
- **Community Development Projects unit (CDPu)** that aims to initiate and/or support inter/multi-disciplinary community-based research and community development projects;
- **Community-Based Learning unit (CBLu)** that aims to integrate the service activities of the center into academic programs and develop service or community-based learning across the university.

A research, documentation, and media hub supports the center and its various units and provides resources on civic engagement to the public.

Partners

The Center works with AUB departments, faculty, centers, and student organizations, and with a growing list of community partners including governmental and non-governmental organizations, and various municipalities throughout Lebanon. It supports the Tomorrow’s Leaders program under the Middle East Partnership Initiative (MEPI) and the University Scholarship Program (USP) by providing community service opportunities to students in the programs and developing service learning at AUB. CCECS also collaborates with centers and institutes within the region and around the world which share a mutual commitment to community service and its implementation through Community-Based Learning. Through the Center, AUB is a founding member of the Ma’an Arab University Alliance, and a member of the Talloires Global Network of Universities and Campus Compact. It is also a partner with nine other universities from Europe, Jordan, and Lebanon on a TEMPUS EU-supported project to develop service-learning and civic engagement partnerships across the curriculum. CCECS also receives donations and funds from various collaborators who support and partner on its various community activities and projects.

Volunteering

CCECS seeks to establish and maintain an active volunteering program at AUB, whereby students mainly, but also faculty and staff, can identify opportunities and options to be involved in projects that best satisfy their aspirations, match their expertise, and respond to critical societal needs. These events and activities involve volunteers with the community at large, and inspire them to develop a relationship with those in need. For more information on volunteering opportunities, contact the Center at ccecs@aub.edu.lb.

The Center’s main focus is on education, public health, the environment, urban and rural sustainable development, philanthropy, and social justice.
Endowed Faculty Chairs, Academic Centers, Programs, Institutes; Student Scholarships, Hardships; Fellowships; Awards; and Research Funds
Salim El-Hoss Bioethics and Professionalism Program
Samih Darwazah Center for Innovation Management and Entrepreneurship
The Anis K. Makdisi Program in Literature
Nae K. Basile Endowed Institute
The Salim Kheireddine/AlMawarid Bank Lecture Series
Farouk Jabre Center for Arabic and Islamic Science and Philosophy
Hussain Alfardan Center for Family Business
The Asfari Institute for Civil Society and Citizenship

Scholarships and Hardship Grants
The scholarships listed below have been made available to needy and deserving students through the generosity of alumni and friends of the University. Many of them represent the income from endowed funds which in some cases are supplemented by an additional grant. A student requesting aid does not apply to a particular fund but is considered for all awards administered by the University for which the student is qualified.

A. Sayour-Greek Orthodox Scholarship
A.M. Rabbat Endowed Scholarship
AANA Washington DC Chapter Scholarship
Abdallah Youssef Lahoud Endowed Scholarship
Abdel Rahman Tabbara Scholarship
Abdul Aziz Al-Bahar Scholarship
Abdul Fattah and Mona Ghali Scholarship
Abdul Ghanmi Hamour Endowed Scholarship
Abdul Ghanmi Hamour Scholarship
Abdul Halim Jabre Memorial Scholarship
Abdul Mohsen Al-Qattan Endowed Scholarship
Abdullah Osseiran Memorial Endowed Scholarship
AbdulMalik Al-Hamar Scholarship
AbdulMalik Yousuf Al-Hamar Memorial Scholarship
Abu Dhabi Alumni Chapter Endowed Scholarship for FAFS
Abu Dhabi Alumni Chapter Endowed Scholarship for FHS
Abu Dhabi Alumni Chapter Endowed Scholarship for Undergraduate-FHS
Abu Dhabi Alumni Endowment Scholarship
Abu Dhabi Alumni Medical Sciences Endowment Scholarship
Adnan Dandan Scholarship
ADS Scholarship
Ahmad Abdul Jabbar Endowed Scholarship Fund
Ahmad Abu Ghazaleh Scholarship
Ahmad S. El-Khalidy Endowed Scholarship
Ahmad Shamsuddin Memorial Endowed Scholarship
Ahmad S. Zaabri Endowed Scholarship
Al-Anoud Afif Al-Mawassami Scholarship
Aifar Education Foundation Scholarship
Alfardan Excellence Sponsorship Scholarship
Ali Abdallah Jammal Memorial Scholarship
Ali Ghendour Endowed Scholarship
Alsaad General Contracting Endowed Scholarship
Ala'a A. Al-Katami Scholarship
Amal and Farouk K. Jabre Endowed Scholarship Fund
Amal Barraj Kamareddine Scholarship
Amin and Penny Hajj Memorial Scholarship
Anis A. Bibi Memorial Scholarship Fund
Anis B. and Mima Malouf Endowed Scholarship
Anis Mouasher Memorial Scholarship
Anonymous Scholarship in c/o Joe Manok
Anonymous Scholarship in c/o Salma Oueida
Anonymous Scholarship in c/o Soha Hmaidan
Anthony Bing Scholarship
Anthony E. Mansour Endowed Scholarship
Antoine Saad Hamra Memorial Endowed Scholarship Fund
APEAL Scholarship for Fine Arts
Applied Medical Scholarship
Applied Medical Scholarship for Needy Students
Arabia Insurance Nabih Faris Memorial Endowed Scholarship
Archak and Maroun Senekjian Scholarship Fund
AREC ‘78 And Friends Endowed Scholarship Fund
AREC ‘80 Endowed Scholarship
Areen Projects Scholarship Fund
ASAI Scholarship
Asfari-LIFE Scholarship
Asfari-Welfare-Unite Lebanon Scholarship
ATFL Scholarship in the name of Joseph J. Jacobs
AUB Alumni Association - Mount Lebanon Branch Scholarship
AUB Alumni Association - Oman Branch Endowed Scholarship
AUB Alumni Association - Qatar Endowed Scholarship
AUB Alumni Association - Swiss Endowed Scholarship
AUB Alumni Association-Greece Branch Scholarship
AUB Alumni Association in Syria Endowed Scholarship
AUB Alumni Association in Syria Scholarship
AUB Alumni Association of North America
AUB Alumni Association- UK Branch Endowment Scholarship
AUB Alumni At NPCC Abu Dhabi Scholarship Fund
AUB Alumni Club of Jordan Scholarship Fund
AUB Alumni Development Scholarship
AUB Alumni Metropolitan NY Chapter Endowed Scholarship Fund
AUB Alumni of Kuwait Society Endowed Scholarship
AUB Alumni Staff of BankMed Scholarship
AUB Alumni Student Scholarship
AUB Alumni-Riyadh Branch Endowed Scholarship Fund
AUB Faculty and Staff Scholarship Fund
AUB Fine and Performing Arts Endowed Scholarship
AUB Scholarship Fundraising Committee Endowed Scholarship Fund
AUB UNRWA-EU Scholarship
Ayman Taji Farouki Scholarship Fund
Azeez and Saleemeh Shaheen Scholarship Fund
Aziz Stephan Scholarship
Aznive Etinoff Memorial Scholarship
Bank of Beirut Scholarship Fund
Banque Audi Scholarship
Barakat-Sawabini Endowed Scholarship Fund
Bashar Hassan Khayat Memorial Endowed Scholarship
Beidas Aboughazale Scholarship
Bliss Memorial Scholarship
BLOM Bank Scholarship for Business Students
Boodai Endowed Scholarship Fund
Boosting You Scholarship
C.R. Whittlesey Memorial Scholarship
C.V. Starr Endowed Scholarship Fund
Camille Sariedine Scholarships
Charles Hagopian Endowed Scholarship
Clapp-Constance Endowed Scholarship
Clas Reunion Endowed Scholarship
Constantine Zurayk Endowed Scholarship
Dani Amal Azzi Scholarship
Daniel and Emily Olivier Endowed Scholarship
Daniel Bliss Scholarship
David A. Fuleihan Endowed Scholarship
David S. Dodge Arabic Fund
David S. Dodge Endowed Scholarship
Dean Robert Najemy Endowed Scholarship
Deloitte & Touche (M.E.) Scholarship
Deutsche Bank MBA Scholarship
Dirnar Y. Afghanim Scholarship Fund
Doris Dodge Endowed Scholarship
Dorothy H. Rogers Memorial Endowed Scholarship
Douma Ladies Charitable Society Endowed Scholarship
Dr. Abdul Afou Kronfol Scholarship
Dr. Affif and Mrs. Zamzam Abdulwahab Scholarship
Dr. Fadlo Raji Abu-Haydar Endowed Scholarship
Dr. Fady and Mrs. Roula Dalloul Sharara Endowed Scholarship
Dr. Farahe Maloof Medical Endowed Scholarship
Dr. Farouk S. Idriss Endowed Medical Scholarship
Dr. Fuad and Alice Trabulsi Endowed Scholarship
Dr. Gebran and Mrs. Salma Farah Endowed Scholarship Fund
Dr. Georges Fakhoury Endowed Scholarship
Dr. Harry G. Dorman Scholarship
Dr. Henri Habib Scholarship
Dr. Jean Moadie Memorial Endowed Scholarship
Dr. John I. Mirhij Scholarship
Dr. Joseph Yammine Endowed Scholarship
Dr. Kassem Faress Foundation Endowed Scholarship
Dr. Marwan Mneimneh Scholarship
Dr. Marwan S. Abouljoud Scholarship
Dr. Maurice H. Bisharat Endowed Scholarship
Dr. Michael A. Shadid Endowed Scholarship
Dr. Muhammad Hijazi and Mrs. Nuha Mikdashi Endowed Scholarship
Dr. Naji Sahyoun Memorial Endowed Scholarship
Dr. Salim Musalli Pasha Scholarship
Dr. Samuel White Endowed Scholarship
Dr. Shahrokh Mokhtari Memorial Endowed Scholarship
Dr. William Carslaw Memorial Scholarship
Scholarships and Hardship Grants

Scholarships and Hardship Grants

Undergraduate Catalogue 2013–14

Dr. Yakub Inati Scholarship
Dr. Yusuf K. Hitti Endowed Scholarship
Druze Foundation For Social Welfare Scholarship Fund
E. Maxine Bruhns Endowed Scholarship
Eastern Province Saudi Arabia Endowed Scholarship Fund
Eileen Page Medical Endowed Scholarship
Elissa A. Bateh & Brothers Foundation Scholarship
Elis and Shirley Matta Endowed Scholarship
Elis A. Husni Endowed Scholarship
Elis M. Doumet Scholarship
Elie Kai Scholarship Fund
Elisa and Stanley Kerr Scholarship
Emile and Helen Chartouni Endowed Scholarship
Engineering and Architecture Alumni Chapter Endowed Scholarship Fund
Enno and Hildegarde Ercklentz Endowed Scholarship
Fadil and Nijmeh Khalil Matta Endowed Scholarship
Fadwa Nassif Taleb Endowed Scholarship
FAFS 50th Anniversary Graduate Student Endowment Fund
FAFS Dean’s Hardship Fund
Fahad M. Al-Rajaan Scholarship
Faisal AlMutawa Endowed Scholarship
Farid and Wafa Saab Scholarship
Farid Sa’d Graduate Endowed Scholarship in Science-Tech.
Farouk W. Agha Scholarship
Farris S. Malouf Memorial Endowed Scholarship
Fatimah Abu-Ghazaleh Scholarship
Fawzi M. Najm Scholarship
FEA Class of 1964 Endowed Scholarship Fund
Fingerprint Endowed Scholarship Fund
Fouda G. Khouri Scholarship Fund
Fouda M. Saleh Scholarship
Francis Asbury Palmer Scholarship Fund
Frank H. Teagle Memorial Endowed Scholarship
Foud Es-Said Scholarship
Foud Muhsin Afnan Memorial Fund
Foud Nakhlieh Endowment Scholarship
Gabriel and Kimberly Rebiz Scholarship
Gaza Endowed Scholarship
General Scholarship Fund
George F. Faris Memorial Scholarship
George Issa Hazbun Memorial Scholarship
George K. Farah Endowed Scholarship
George Salibi Scholarship
Ghassan Al-Mahasini Scholarship
Ghassan and Manal Saab Endowed Scholarship
Ghassan Jdeed Scholarship
Gladys Brooks Scholarship Endowment
Goguikian Foundation Scholarship
Gordon H. Ward Scholarship
Graduate Regional Scholarships-Ford Foundation Match
H. Morton Endowed Scholarship
H. H. Mar Ignatius Zakka Iwas Endowed Scholarship
Habib B. Yared Memorial Endowed Scholarship
Habib Kairouz Scholarship Award
Hamoud and Jamal Makarem Scholarship Fund
Hani Qaddumi Foundation Scholarship
Hanna Bisharash Scholarship
Hanna Said Choulji Scholarship
Harold B. Hoskins Endowed Scholarship
Harry G. Dorman, Jr. and Virginia Whitney Dorman Memorial Scholarship
Hassan Al Shawkwaf Scholarship Fund
Hazrat - Aub Development Scholarship
Husam S. Rasi Scholarship Fund
HH Sheikh Khaled Bin Hamad Al Thani Endowed Scholarship
HH Sheikh Dr. Sultan Bin Mohamed Al Qasimi Endowed Scholarship
HH Sheikh Dr. Sultan Bin Mohamed Al Qasimi Endowed Scholarship for FAFS
Hilene Nicola Ayoub Endowed Scholarship
Hisham H. Tabbara and Marie E. Zouein Scholarship
Howard W. Page Endowed Scholarship
HRH Prince Talal Ben Abdel Aziz Endowed Scholarship
Humam Jabban Scholarship
Husni Ahmad Sawwaf Endowed Scholarship
Hussain and Leila Ammar Scholarship
Hussein Oueini Memorial Graduate Fund
Hussein Oueini Memorial Scholarship
Iliya Harik Memorial Scholarship
Ingeborg Sai’ Scholarship
Issa I. Farah Scholarship
Issam and Noujoud Helou Scholarship
Issam Kronfol Scholarship
J.J. Arakelyan Endowed Scholarship
Jabir Shibli Endowed Scholarship
Jacoby Thaddeus Scholarship
Jacques A. Nasser Endowed Scholarship
Jad Cancer Foundation Scholarship
Jamil and Murad Baroody Endowed Scholarship
Jamil and Murad Baroody Scholarship-Curton
Jamile Dagher Jureidini Endowed Scholarship
Job Fair Committee Endowed Scholarship
Job Fair Committee Scholarship
John Michael Fawaz Scholarship
John Miskoff Endowed Scholarship
John Naim Hanna Dagher Scholarship
Joseph Asmar Endowed Scholarship
Julia Dodge Rea Scholarship
Julia Zaideh Endowed Scholarship
Kamal and Nuha Hemady Endowed Scholarship
Scholarships and Hardship Grants

Kamal El Tayara Scholarship
Kamel Dajani Memorial Scholarship
Karagulla Endowed Scholarship
Karim Habre Endowed Scholarship
Karim W. Nasser Endowed Scholarship
KFI Scholarship
Khadijah Sabahat Kahhalea Takieddine Endowed Scholarship
Khaled and Mona Miqdadli Scholarship Fund
Khaled El-Yashruti Memorial Endowed Scholarship
Khalil and Taghrid Khoury Scholarship Fund
Khalil Arab Scholarship Fund
Khalil Bsheer Memorial Scholarship- Endowment
Khalil Tabet Memorial Endowed Fund
Khushroo N. J. Patel Memorial Endowed Scholarship
Lama Hatoum Scholarship Fund
L'Emir Faysal Majid Arslan Scholarship
Lina Naaman Azhari Endowed Scholarship
Magida El-Roumi Endowed Scholarship
Maher Abu Ghazaleh Scholarship
Mahmoud Dalal Endowed Scholarship
Makram Ghassan Iweini Endowed Scholarship
Malak Tamim Sahli Scholarship
Malcolm H. Kerr Memorial Scholarship Fund
Maloof Family Endowed Scholarship Fund
Mamdouha El-Sayed Bobst Scholarship Fund
Mamdouha El-Sayed Bobst Scholarship-Current
Maria Aziz Scholarship
Maria Shaar Sukkar Scholarship
Marie El-Khoury Scholarship in Fine Arts
Marwan and Lynne Muasher Endowed Scholarship Fund
Marwan Hayek Scholarship
Mary and Archie S. Crawford Scholarship
Mary Bajada Memorial Scholarship for Women
Marzouk Jassim Al Marzouk Scholarship
Matiel Mogannam Endowed Scholarship
Maximilian E. and Marion O. Hoffman Foundation, Inc. Endowed Scholarship for Medical Students
May Halabi Taleb Scholarship
Maysoon Akrawi Dowling Scholarship
Mazen Dajani Scholarship
Medical Alumni Endowed Scholarship
Michael N. Malouf Endowed Scholarship
Michel Alexandre Namour Memorial Endowed Scholarship
Michel Salim Nasser Scholarship
Midis Group Scholarship Fund
Mohamad Ali Zameli and Dina Tabbara Endowed Scholarship
Mohamad S. Dimashkieh Endowed Scholarship
Mohamad Salim Oueida Family Scholarship
Mohieddine Jishi Memorial Scholarship
Monzer Hourani Scholarship
Monzer Wehbe Scholarship Fund
Morris Janowitz Endowed Scholarship
Mounir and Jamileh El-Khatib Scholarship for FEA
Mr. and Mrs. Mustafa Jundi Scholarship Fund
Mr. and Mrs. Nafez Jundi Endowed Scholarship
Mr. Nicholas Abumrad Scholarship Fund
Mrs. Annie and Dr. Munir Nasr Endowed Scholarship
Mrs. Daniel Bliss Endowed Scholarship
Muneef Assaf Farah Endowed Scholarship
Munir Baalbaki Memorial Scholarship
Murex Endowed Scholarship Fund
Murex Scholarship Fund
Mr. and Mrs. Amal Freiji Endowed Scholarship
Nadim Kassar Scholarship
Najeeb N. Meshaka Memorial Endowed Scholarship
Najib Ibrahim Salha Scholarship
Nancy Maysara Sukkar Scholarship
Nasser Saidi Scholarship
Near East Scholarship Fund
Nicola Ziadeh Endowed Scholarship Fund
Nicolas H. and Hannah F. Dagher Endowed Scholarship
Noura Hatem Juffali Endowed Scholarship
Odette Atalla Scholarship
Ohsrn Aidi Scholarship Fund
Oussama Aboughazale Scholarship
Palestinian Cultural Club Scholarship Fund
Palestinian Students’ Fund - Scholarship
Pauline Nadim Makdisi Memorial Scholarship
Petrofac Endowed Scholarship
Philip and Mary G Hitti Endowed Scholarship
Philippe Jabre Scholarship
Pilgrim Endowed Scholarship
President Mahmoud Abbas Scholarship for Palestinian Students in Lebanon
Procter & Gamble Levant Scholarship
Professor Khalil Malouf Memorial Scholarship Fund
R. Bayly Winder Scholarship
Raffy Manoukian Scholarships
Rafic Hariri Endowed Scholarship for Nursing Students
Raja Trad–Dubai Alumni Endowed Scholarship
Ramzi Ackawi Scholarship
Ramzi F. Daouk Memorial Endowed Scholarship
Ramzi Mohamad Safadi Endowed Scholarship
Ramzi Ketliy Scholarship
Ramzi Mohamad Safadi Scholarship in FAS
Ramzi Mohamad Safadi Scholarship in FHS
Ray R. Imani Endowed Scholarship
Reverend Mounir R. Sa'adah Endowed Scholarship
Riad and Hassana Sadik Endowed Scholarship
Riad T. Sadik Scholarship
Rida Imani Memorial Endowed Scholarship
Rifat S. El Nimer Scholarship
Rima Aiko and Maya Farah Makhoul Financial Aid Fund
Riyadh Alumni Chapter Endowed Scholarship for FHS
Scholarships and Hardship Grants

Undergraduate Catalogue 2013–14

Robert and Myriam Linell Endowed Scholarship
Roosevelt and Georgette Fattouch Endowed Scholarship Fund
Roots Group Scholarship
Ruh K. Hindawi Endowed Scholarship for Medical Students
RYMCO Scholarship Fund
S. M. Minassian Endowed Scholarship
Saad Na’man Azhari Scholarship Fund
Saadat Hasan Endowed Scholarship
Sabra Purtili Endowed Scholarship
Sadie B. Latouf Endowed Scholarship
Said Khalaf Scholarship
Sakina Jarudi Scholarship
Salem Saleh Al-Othman Memorial Endowed Scholarship
Salman Al-Ijishy Scholarship Fund
Saloua Raouda Choucair Foundation
Salwa El-Said Endowed Scholarship
Sam and Hiba Al-Rayyes Scholarship
Samer Younis Scholarship
Sami Maurice Atallah Scholarship
Sami V. Abdou Scholarship
Somnia Ghobril Endowed Scholarship
Samia Taji Farouki Arts and Sciences Merit Scholarship
Samih Alami Memorial Endowed Scholarship
Samir Ahmad Zaabri Scholarship
Samir and Malak Abdulhadi Scholarship
Samira Fadi Scholarship Fund
Samuel B. and Grace H. Kirkwood Scholarship
Sarah Al-Turki Endowed Scholarship
Saud Binladin Group Scholarship
Sebouh Mekhejian Scholarship Fund
Selma Shaheen Nursing Scholarship
Seren Dajani Memorial Scholarship Fund
Shadi Refai Scholarship
Shafik Melhem Shabshab Endowed Scholarship
Shafik and Mary Tumeh Endowed Scholarship
Shaheen Brothers Endowed Scholarship
Shake Ketefian Scholarship in Nursing
Shawki Ghoulmoh Endowed Scholarship Fund
Sheikh Aref Yehia Scholarship
Shweir Scholarship Fund
Sidani Scholarship Fund
Sleiman and Sofia Trabulsi Endowed Scholarship
Southern California Chapter Endowed Scholarship Fund
Stella B. Kerr Endowed Scholarship
Stephen A. Miller Endowed Scholarship
Suhael Raseif Farah Endowed Scholarship
Sulayman Salim Alawasidden Baakline-Lebanon Memorial Endowed Scholarship
Suliman S. Olayan Endowed Scholarship
Sumaya Aboughazale Scholarship
Tala Mikdashy Scholarship
Teddy D. Abdou Scholarship
Terry and Pierre Aboukhatr Endowed Scholarship
Teta Endowed Scholarship
The Alexis and Anne-Marie Habib Foundation Scholarship
The Ameen and Sophia Taft, and Nelly Antoun Endowed Scholarship
The Armenian Catholicosate of Cilicia Scholarship Fund
The Armenian Students Endowed Scholarship Fund
The Asfari Scholarship
The Cleveland H. Dodge Foundation Endowed Scholarship
The Cleveland H. Dodge Foundation Scholarship
The Dorothy Fahs-Beck Endowed Scholarship Fund
The Fuleihan Family Endowed Financial Aid Fund
The Herter Endowed Scholarship
The Houda Idriss Memorial Endowed Scholarship Fund
The Khayreddine and Adel Abdul-Wahab Endowed Scholarship
The Makassed - AUB Scholarships
The MasterCard Foundation Scholarship
The Maximilian E. and Marion O. Hoffman Endowed Scholarships
The Medicine Class of 1982 Endowed Scholarship Fund
The Nada Suhail Muasher Endowed Scholarship Fund
The Nemr and Helene Chamoun Scholarship
The Ousseim Foundation Scholarship
The Peggy Smith Scholarship
The Peter Hanna Malak Scholarship
The Ramiz Mikdashy Endowed Scholarship
The Salomon Scholarship for Study in the Humanities and Social Sciences
The State of Qatar Endowed Scholarship
The Suad Husseini Juffali Endowed Scholarship
University Student Faculty Committee Scholarship
USFC 2003 Endowed Scholarship Fund
USFC Endowed Hardship Fund
Violette Haddad Kteily Memorial Endowed Scholarship
WAAUB Jeddah Chapter Endowed Scholarship
WAAUB Jeddah Chapter Scholarship
WAAUB-Dubai and Northern Emirates Endowed Scholarship
WAAUB-Dubai and Northern Emirates Scholarship
WAAUB North Texas Dallas Chapter Scholarship
Wa/el Nohad Chehab Endowed Scholarship for Business
Walida Fansa Scholarship
Walid and Nada Abushakra Endowed Scholarship
Walid Joumblatt Scholarship
William and Aida Haddad Endowed Scholarship for Engineering
William Mitri Endowed Scholarship
Women’s League Scholarship Fund For Handicapped Students at AUB
Women’s Scholarship Fund
Yervant Jidejian Memorial Scholarship
Yumna Hoss Sukkar Scholarship
Yusuf Abu Khadra Endowed Scholarship
Yusuf Abu Khadra Scholarship in Engineering Management
Yusuf and Najat Sarour-Dubai Alumni Endowed Scholarship
Yusuf Mansour Scholarship
Fellowships

Anonymous Pierre Amin Gemayyel End Doctoral Fellowship in FEA
Antoun Saadeh Endowed Doctoral Research Fellowship-FAS
John Waterbury Endowed Fellowship Fund
Louise L. Massabki Fellowship-Scholarship
Mohamad Makhzoumi Endowed Fellowship Fund
Nayel Al Harith Endowed Fellowship
Nizam Shammas Fellowship
The CCC PhD Fellowship in Manufacturing
The Indevco Fellowship Fund
Zakhem Endowed Fellowship

University Prizes and Awards

Murad al-Akl Awards: First prize $150 and second prize $100, awarded on a competitive basis for the best essay, speech, or debate on the subject of “How I Can Serve My Fellow Man.”

Abdul Hadi Debs Endowment Award for Academic Excellence: Three awards not exceeding $1,000 each to graduating students, preferably at the graduate level, in the Faculty of Agricultural and Food Sciences, the Faculty of Arts and Sciences, and the Faculty of Engineering and Architecture. Candidates have an outstanding academic record and have demonstrated their research capabilities through a paper, project, or thesis deemed by the faculty to be worthy of publication.

Abdul Hamid Hallab REP Service Excellence Award: ($1,000) awarded to full time AUB faculty or staff who served on at least one REP project during the fiscal year.

Rosemarie S. Haggar Music Award: ($1,000) awarded to students in the AUB Choir to be used to support a musical performance or for supervised education and research experience outside AUB.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

Faculty of Agricultural and Food Sciences

Edgecombe Memorial Prize: $500 awarded to the outstanding student in third year agriculture.

The Joana Haidar Award: Annual award of $500 to a deserving and needy AREC student having a cumulative average of 75 and above. The student should be environmentally aware and interested in agricultural practices and development.

Kashadurian Award: To a deserving student who was at AREC and has shown outstanding performance in farm skills and practices, and an appreciation for farm life at AREC.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

Dean Thomas M. Sutherland Prizes: Awarded annually at graduation to outstanding Faculty of Agricultural and Food Sciences graduates. For undergraduate excellence, $500 to the recipient of the Penrose Award for the year. For graduate excellence, $1,000 to the MS graduate with the thesis judged best overall for design, research, presentation, and contribution to its field.

Dean Nuhad Daghir FAFS Graduate Student Award of $1,000 to the graduating student with a Masters degree from the Department of Animal and Veterinary Sciences at the faculty of Agricultural and Food Sciences who accumulated the highest average during his/her studies at AUB.

Faculty of Arts and Sciences

Shehadeh Abboud Memorial Excellence Award in English Language: $1,000 awarded to a graduating senior student majoring in English with the highest average in the major English courses during his/her undergraduate studies.

Philip K. Hitti Prize: Awarded in books to the senior student in the Faculty of Arts and Sciences and the Institute of Arts and Sciences who, in the judgment of the president of the University, the dean of the faculty, and the chairman of the department concerned, exemplifies in his/her academic career the scholarly spirit of AUB at its best.

Nicholas Jabre Prize: Awarded on the basis of academic excellence at the discretion of the dean.

Fuad Said Haddad award in Education: $1,000 awarded to the graduate MA student in Education with the best thesis as selected by the Education department of the Faculty of Arts and Sciences.

Sheikh Fawzi Azar Memorial Prize: $200 awarded to student(s) in SBS with a commendable paper or study submitted to the department. Annual balance will be used for the purchase of educational materials and subscription to scientific journals.

Makhlouf Haddadin Award for Outstanding Chemistry Graduate Student: $500 awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

Makhlouf Haddadin Award for the Outstanding Chemistry Undergraduate Student: $500 awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

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Faculty of Arts and Sciences

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HE Ghassan Al-Rashash Excellence Award in Political Studies: The prize ($500) will be awarded to a graduating student with the highest average in the graduate program in Political Studies.

Sheikh Fawzi Azar Memorial Prize: $200 awarded to student(s) in SBS with a commendable paper or study submitted to the department. Annual balance will be used for the purchase of educational materials and subscription to scientific journals.

Makhlouf Haddadin Award for Outstanding Chemistry Graduate Student: $500 awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

Makhlouf Haddadin Award for the Outstanding Chemistry Undergraduate Student: $500 awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

Phil K. Hitti Prize: Awarded in books to the senior student in the Faculty of Arts and Sciences who, in the judgment of the president of the University, the dean of the faculty, and the chairman of the department concerned, exemplifies in his/her academic career the scholarly spirit of AUB at its best.

Nicholas Jabre Prize: Awarded on the basis of academic excellence at the discretion of the dean.

Fuad Said Haddad award in Education: $1,000 awarded to the graduate MA student in Education with the best thesis as selected by the Education department of the Faculty of Arts and Sciences.

Sheikh Fawzi Azar Memorial Prize: $200 awarded to student(s) in SBS with a commendable paper or study submitted to the department. Annual balance will be used for the purchase of educational materials and subscription to scientific journals.

Makhlouf Haddadin Award for Outstanding Chemistry Graduate Student: $500 awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

Makhlouf Haddadin Award for the Outstanding Chemistry Undergraduate Student: $500 awarded at the end of each academic year to a graduating senior chemistry student who has demonstrated research capabilities through a paper or project and has an excellent academic record.

Phil K. Hitti Prize: Awarded in books to the senior student in the Faculty of Arts and Sciences who, in the judgment of the president of the University, the dean of the faculty, and the chairman of the department concerned, exemplifies in his/her academic career the scholarly spirit of AUB at its best.

Nicholas Jabre Prize: Awarded on the basis of academic excellence at the discretion of the dean.

Fuad Said Haddad award in Education: $1,000 awarded to the graduate MA student in Education with the best thesis as selected by the Education department of the Faculty of Arts and Sciences.
Samir Makkadss Award in Economics: The prize will be awarded to the project/thesis during the academic year that best fits the criteria for selection.

The Muhanna Foundation in Mathematics Award of Excellence: $1,000 awarded annually to the most outstanding senior Lebanese student in the Department of Mathematics.

Husseïn Oueini Memorial Award: $4,000 divided equally between a graduating senior student in PSPA with the highest average and the best thesis written during the same academic year, as recommended by the department and dean.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

Amal Saidi Memorial Prize: $500 awarded to a graduating senior excelling in the subject of anthropology or sociology.

The Majida Siniora Memorial Prize in Humanities: $1,500 awarded to a top graduate senior in arts and humanities at the Faculty of Arts and Sciences.

Eli Khoury Award: awarded to one or more graduating students in the Department of Fine Arts and Art History with highest academic achievements.

Lebanon Renaissance Award: to one or more graduating students in political studies, economics, social and behavioral sciences, public administration or history with highest academic achievement.

William Van Dyck Endowed Award in Biology: to the graduating senior student with the highest average.

Computer Science Undergraduate and Graduate Award: $1,500 to the "Best Undergraduate Student" and $1,500 to the "Best Graduate Student".

Faculty of Engineering and Architecture

AREEN Projects award for excellence in Architecture and Design: Six prizes of $2,000, $1,500, and $1,000, awarded to six students based on projects they submit to the department and who are chosen upon the recommendation of a jury. The recipients should have a cumulative average of at least 80 in architecture and design courses during the last four semesters. The graduation project's purpose should be to serve the community in Lebanon, and should demonstrate outstanding and distinctive creativity and aesthetic value.

Farouk W. Agha Excellence Award: $1,000 awarded to a graduating student with a BE degree in Mechanical or Civil Engineering who accumulated the highest average during his/her period of study at AUB.

Fawzi W. Azar Award: $10,000 awarded annually toward the tuition of one or more fifth-year student(s) in the architecture program of the Faculty of Engineering and Architecture based on a project they present in their fourth year that is deemed best by a special jury.

Dean’s Award for Creative Achievement: Awarded to a student in each of the main programs of the Faculty of Engineering and Architecture (architecture, graphic design, civil engineering, computer and communications engineering, electrical engineering, and mechanical engineering) who has demonstrated outstanding creativity in his/her approach to academic work.

The Distinguished Graduate Award: Awarded to a graduating student in each of the undergraduate engineering programs of the Faculty of Engineering and Architecture (civil engineering, computer and communications engineering, electrical engineering, mechanical engineering) in recognition of outstanding academic achievement, character, and contribution to the faculty throughout his/her tenure in the faculty.

The Charli S. Korban Awards: $1,500 awarded annually to an outstanding undergraduate student and an outstanding graduate student, both majoring in the field of electrical engineering.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

Youssef Salam Civil Engineering Award: $1,000 awarded to a graduating student with a BE degree in Civil Engineering who accumulated the highest average during his/her period of study at AUB.

Chakib Richani Design Award: $2,000 first prize and $1,000 second prize awarded through a competition to second, third and fourth year Architecture students and third and fourth year Graphic Design students for the best product design for a theme assigned on a yearly basis based on different announced categories (i.e. furniture, lighting)

BLF Best Thesis Award in Financial and Industrial Engineering: $3,000 awarded for the best thesis in financial and industrial engineering.

Faculty of Health Sciences

Graduate Academic Achievement Award: Non-cash honorary award in recognition of excellence in academic performance. Awarded to a student in the MPH program and a student in the MS programs.

Distinguished Graduate Award: Non-cash honorary award in recognition of excellence in academic performance and community service. Awarded to a senior FHS student.

Distinguished MLS Graduate Award: Non-cash honorary award in recognition of excellence in Medical Laboratory skills with good academic performance. Awarded to a senior student in the Medical Laboratory Sciences program.

Distinguished Graduate Award for Community Service: Non-cash honorary award in recognition of excellence in community service with good academic performance. Awarded to a senior FHS student.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

The Kiram Siniora Memorial Prize in Health Sciences: $1,500 awarded to a top graduate senior from the Faculty of Health Sciences.

Faculty of Medicine

Mrs. Robert J. Lewis Memorial Award: For the best paper written during the current year on neuroscience.

Franklin Thomas Moore — Ethel Jessup Memorial Prize: Established by the children and friends
of Dr. and Mrs. Franklin T. Moore; awarded to the senior medical student who has shown the highest proficiency in obstetrics and gynecology or, lacking such, in any department, and in the student’s personal life a dedication to humanity, a zeal for truth, and a belief in God.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

Dr. Munib Shahid Award: Given annually to the fourth year medical student demonstrating the best performance in internal medicine and a mature character.

Nimr Tuqan Memorial Prize in Pathology: In memory of the late Dr. Nimr Tuqan. To be awarded to the student of Medicine II who excels in his/her work in the Department of Pathology.

Women’s Auxiliary Nursing Students Award: Full tuition for a needy and outstanding student in the School of Nursing.

Ainoir Hamoud Makarem Nursing Award: ($1,000) awarded to Nursing students from Ain Wa Zein, Lebanon.

**Suliman S. Olayan School of Business**

Dr. Emile Ghattas Memorial Award: A cash prize of $1,000 awarded to the best graduating student in the Bachelor of Business Administration program.

Penrose Award: Non-cash honorary awards made to the outstanding graduate of each faculty on the basis of scholarship, character, leadership, and contribution to university life.

The Aida Siniora Memorial Prize in Business: $1,500 awarded to a top graduate senior from the Suliman S. Olayan School of Business.

Fenicia Bank Excellence Award in Finance: $2,500 awarded to a graduating business student, with BBA degree-finance concentration, having the highest average, and on financial aid.

Fenicia Bank Leadership Award in Finance: $2,500 awarded to a Lebanese business student, in his/her last year of BBA study, pursuing a finance concentration, with excellent academic record and demonstrated leadership qualities, and on financial aid.

Quantum Communications Award in Business: to one or more graduating students in Business with highest academic achievements.

**Current and Endowed Research Funds**

AGSC Research and Outreach
The Joseph and Ilham Cicippio Endowed Research Fund at FAFS
Dar Al-Handasah (Shair & Partners) Endowed Fund For Research In Engineering
The Harik Research Fund
Farouk K. Jabre Fund for Biomedical Research
Salim A. Salam Endowment Fund
Maroun Semaan Research Fund for Graduate Students
Mikati Endowed Research Fund for Corporate Social Responsibility
FAS Endowed Research Fund

Khaled Y. Daouk Research Fund
Sheikh Khaldoun Barakat Research Fund
Telus Research Fund
The Hani Salaam Research Fund (CAMES)
ASHRAE Research Fund
Byblos Bank OSB Faculty Research and Development Fund
Faculty List
Deans Emeriti
Daghs, Nahud, PhD, Iowa State University, AVSC
Cortes, Nadim, MD; AUB; Internal Medicine, Endocrinology and Metabolism, Pharmacology and Toxicology

Professors Emeriti
Dagher, Ibrahim, MD; AUB; Surgery, Cardiothoracic
Fakhry, Majid, PhD; University of Edinburgh; Philosophy
Haddad, Fuad Sami, MD; AUB; FRC; Canada; Surgery, Neurosurgery
Illyja, Raja, PhD; University of Texas, Austin; Civil and Environmental Engineering
Issa, Philip, MD; Université Saint Joseph; Radiation Oncology
Kawar, Nasri, PhD; Pennsylvania State University, Agricultural Sciences
Khalafl, Wadad, RN, MSN; Boston University; Medical Surgical Nursing
Khoury, Farid, MD; AUB; Laboratory Medicine
Makarem, Selwa, PhD; Columbia University; Nursing
Maklissi, Samir, PhD; Columbia University; Economics
Mavromatis, Harry, PhD; Princeton University; Physics
Muwafi, Amin, PhD; University of Florida; Mathematics
Nabbuti, Nessim, PhD; University of Texas; Microbiology and Immunology
Nassif, Raif, MD, AUB; MPH, Yale University; Laboratory Medicine
Obeid, Sami, MD; AUB; Clinical Surgery, General
Sakkal, Fateh, PhD; University of Manchester; Mechanical Engineering
Shehadi, Samir, MD; AUB; Surgery, Plastic and Reconstructive
Shwayri, Edmond, MD; AUB; Internal Medicine, Nephrology
Tamouss, Raja, PhD; Massachusetts Institute of Technology (MIT), Nutrition and Food Sciences
Yff, Peter, PhD; University of Illinois; Mathematics

Faculty Members
Abbas, Jabir, MD; AUB; Clinical Associate Professor; Surgery, General Surgery, Surgery
Abbas, Oussama, MD; AUB; Assistant Professor of Clinical Dermatology, Dermatology
Abboud, Ali, MS; Toulouse School of Economics, France; Instructor; Agricultural Sciences
Abboud, Miguel, MD; AUB; Professor; Pediatrics and Adolescent Medicine, Hematology-Oncology
Abbyad Weir, Christine, PhD, RN, WHNP; University of Texas at Austin; Clinical Assistant Professor; Nursing
Abchee, Antoine, MD; AUB; Associate Professor of Clinical Medicine; Internal Medicine, Cardiology
Abdallah, Hanin, PhD; Virginia Polytechnic and State University; Senior Lecturer; Management, Marketing and Entrepreneurship
Abdallah, Sawsan, MD; AUB; Clinical Associate; Pediatrics and Adolescent Medicine
Abd-el-Baki, Jasmine, MD; AUB; Clinical Associate; Dermatology
Abdellnour, Alexander, PhD; University of Michigan; Professor; Experimental Pathology, Immunology and Microbiology
Abdellnour, John, MD; AUB; Clinical Associate; Surgery, Orthopedic Surgery
Abdel-Rahman, Abdel-Fattah, PhD; McGill University; Professor; Geology
Abdul Malak, Assem, PhD; University of Texas, Austin; Professor; Engineering Management Program
Abdulrahim, Sawsan, PhD; University of Michigan; Associate Professor; Health Promotion and Community Health
Abedini, Reza, BA; Tehran Art University; Assistant Professor; Architecture and Design
Abi, Firass, MD; AUB; Instructor of Clinical Surgery; Surgery, General Surgery
Abi, Mohamed, PhD; Purdue University; Assistant Professor; Nutrition and Food Sciences
Abi Fakhri-Saab, Faysal, MD; University of Arizona; Clinical Associate; Diagnostic Radiology
Abi Fakt, Lina, PhD, MSN; University of Phoenix, Arizona; Assistant Professor; Nursing
Abi Khuzam, Faruk, PhD; Syracuse University; Professor; Mathematics
Abi-Rafeh, Randa, MS; AUB; Instructor; Chemistry
Abi-Saad, Georges, MD; AUB; Professor of Clinical Surgery; Surgery, General Surgery
Abi-Saleh, Bernard, MD; Lebanese University; Assistant Professor of Clinical Medicine; Internal Medicine, Cardiology
Abou Assi, Samar, DDS; University of Saint Joseph; Clinical Associate; Otolaryngology and Head and Neck Surgery
Abou Chebel, Naji, MD; University of Saint Joseph; Clinical Instructor; Otolaryngology and Head and Neck Surgery
Abou Dagher, Gilbert, MD; AUB; Assistant Professor of Clinical Emergency Medicine; Emergency Medicine
Abou Faysal, Ibrahim, PhD; Massachusetts Institute of Technology; Associate Professor; Electrical and Computer Engineering
Abou Ghalie, Kamel, PhD; Kansas State University; Professor; Mechanical Engineering
Abou Jaoude, Ramzi, MD; University of Saint Joseph; Clinical Associate; Pediatrics and Adolescent Medicine
Abou Jaoudi, Nadim, DCD; St. Joseph University, Clinical Associate, Otolaryngology and Head and Neck Surgery
Abou-Kheir, Wassim, PhD; Albert Einstein College of Medicine, Yeshiva University; Assistant Professor; Anatomy, Cell Biology and Physiological Sciences
Abou Najm, Majdi; PhD; Purdue University; Assistant Professor; Civil and Environmental Engineering
Abouchacra, Kim, PhD; Pennsylvania State University; Associate Professor of Clinical Otolaryngology; Otolaryngology and Head and Neck Surgery
Abou Zied, Maya, PhD; Massachusetts Institute of Technology; Assistant Professor; Civil and Environmental Engineering
Abou Zied, Nahud, MD; AUB; Assistant Professor of Clinical Neurology; Neurology, Multiple Sclerosis
Abu-Alla, Ali, MD; AUB; Professor; Internal Medicine, Nephrology and Hypertension
Abu Haydar, Fadilo, MD; AUB; Clinical Associate Professor; Internal Medicine, Gastroenterology
Abu Jawdeh, Youssef, PhD; Faculty of Agronomic Science, Belgium; Professor; Agricultural Sciences
Abunnsar, Yaser, MLA; PhD candidate; University of Massachusetts Amherst; Visiting Assistant Professor; Landscape Design and Ecosystem Management
Abu-Musa, Antoine, MD; AUB; Professor of Clinical Obstetrics and Gynecology; Obstetrics and Gynecology
Abu-Husayn, Abdul Rahim, PhD; AUB; Professor; History and Archaeology
Abu-Jawdeh, Siham, PhD; AUB; Lecturer; Arabic
Abu-Khuzam, Hazar, PhD; University of California; Professor; Mathematics
Abu-Raslan, Walid, MBBC; Baghdad University; Clinical Associate; Pediatrics and Adolescent Medicine
Abu-Saad Huijer, Huda, PhD, RN, FEANS; FAAN; University of Florida, Gainesville; Professor; Nursing
Abu Salem, Fatmeh, PhD; Oxford; Associate Professor; Computer Science
Awwad, Johnny, MD; AUB; Associate Professor of Clinical Obstetrics and Gynecology

Awwad, Shady, MD; AUB; Associate Professor of Clinical Ophthalmology; Ophthalmology

Awwad-Maroun, Marie, MD; University of Saint Joseph; Associate Professor of Clinical Anesthesiology; Anesthesiology

Ayyoub, Chakib, MD; University of Saint Joseph; Professor of Clinical Anesthesiology; Anesthesiology

Ayyoub, George, PhD; University of London; Professor; Civil and Environmental Engineering

Ayyoub, Charles, MBBS; University of Adelaide; Clinical Senior Lecturer; Pediatrics and Adolescent Medicine

Azad, Bizhan, PhD; Massachusetts Institute of Technology; Associate Professor; Business Information and Decision Systems

Azar, Cecilio, MD; Kaunas Medical Academy; Clinical Associate, Internal Medicine

Azar, Monique, PhD; Purdue University; Assistant Professor; Mathematics

Azar, Sami, MD; AUB; Professor, Internal Medicine, Endocrinology and Metabolism

Azizi, Fouad, PhD; Dalhousie University; Assistant Professor; Chemical Engineering Program

Baalbaki, Ramzi, PhD; University of London; Professor; Arabic

Baalbaki, Rula, MA; AUB; Instructor; English

Baddoura, Charles, MD; St. Joseph University; Clinical Associate, Psychiatry

Baddoura, Omar, MD; University of Saint Joseph; Assistant Professor; Surgery, Orthopedic Surgery

Badr, Kamal, MD; AUB; Professor; Internal Medicine, Nephrology and Hypertension

Bakhach, Joseph, MD; University of Bordeaux II; Assistant Professor of Clinical Surgery; Surgery, Plastic and Reconstructive Surgery

Bakkour, William, MD; Lebanese University; Clinical Associate, Family Medicine

Badreddine, Rami, MD; AUB; Assistant Professor of Clinical Medicine; Internal Medicine, Gastroenterology

Bakhrach, Joseph, MD; University of Bordeaux II; Assistant Professor of Clinical Surgery; Surgery

Bakir, Musbah, MD; University of Saint Joseph; Clinical Assistant Professor; Ophthalmology

Barada, Kassem, MD; AUB; Professor, Internal Medicine, Gastroenterology; Associate; Anatomy, Cell Biology and Physiological Sciences

Barakat, Nabil, BDS; Cairo University; Clinical Associate; Otolaryngology and Head and Neck Surgery

Barbour, Elle, PhD; University of Minnesota; Professor; Animal and Veterinary Sciences

Barber, Alexander, PhD; Johns Hopkins University; Assistant Professor; Political Studies and Public Administration

Barriche, Michel, PhD; Mediterranean University; Associate Professor; Biology

Barmada, Bicher, MD; University of Saint Joseph; Clinical Assistant Professor Surgery

Basha, Habib, PhD; University of California, Berkeley; Professor; Civil and Environmental Engineering

Bashour, Bana, PhD; The Graduate Center, City University of New York; Assistant Professor; Philosophy

Bashour, Isam, PhD; University of California, Davis; Professor; Agricultural Sciences

Bashshur, Ziad, MD; AUB; Associate Professor of Clinical Ophthalmology; Ophthalmology

Bassim, Marc, MD; AUB; Assistant Professor of Clinical Otolaryngology and Head and Neck Surgery; Otolaryngology and Head and Neck Surgery

Bastian, Bettina, PhD; EPFL University; Assistant Professor; Management, Marketing and Entrepreneurship

Batato, Toufic, MS; University of Toledo, Ohio; Instructor; University Preparatory Program

Batley, Nicolas, MD; Medical University of South Carolina; Assistant Professor of Clinical Family Medicine; Family Medicine

Bauer, Christopher, PhD; Teachers College Columbia University; Instructor; English

Baydoun, Elias, PhD; University of Cambridge; Professor; Biology

Baytayeh, Hoda, PhD; University of Tennessee; Assistant Professor; Education

Bayzarbachi, Ali, MD, PhD; Paris 7 University; Professor, Internal Medicine, Hematology- Oncology; Associate; Anatomy, Cell Biology and Physiological Sciences

Bazzi, Tony, MD; AUB; Assistant Professor of Clinical Obstetrics and Gynecology; Obstetrics and Gynecology

Bazzi, Louay, PhD; Massachusetts Institute of Technology; Associate Professor; Electrical and Computer Engineering

Bielinski-Rahme, Diana, MD; University of Saint Joseph; Clinical Instructor; Family Medicine

Berjawi, Ghina, MD; AUB; Associate Professor of Clinical Radiology; Diagnostic Radiology

Beydoun, Ahmad, MD; AUB; Professor; Neurology; Epilepsy

Bikhaizi, Anwar, PhD; University of Michigan; Professor; Anatomy, Cell Biology and Physiological Sciences

Birbari, Adel, MD; AUB; Professor (on tenure appointment); Internal Medicine, Nephrology and Hypertension; Anatomy, Cell Biology and Physiological Sciences

Bitar, Elias, MA; AUB; Clinical Associate; Surgery, General Surgery

Bitar, Fadi, MD; AUB; Professor; Pediatrics and Adolescent Medicine, Cardiology

Bitar, Khalil, PhD; Yale University; Professor; Physics

Bitar, Mohamad, MD; AUB; Associate Professor of Clinical Otolaryngology; Otolaryngology and Head and Neck Surgery; Pediatrics; Clinical Associate, Pediatrics and Adolescent Medicine

Birzì, Abdul-Rahman, MD; University of Damascus; Assistant Professor of Clinical Internal Medicine; Internal Medicine, Infectious Diseases

Bornead, Peter, PhD; University of Copenhagen; Professor; Civilization Sequence Program

Bou Akl, Imad, MD; AUB; Instructor of Clinical Medicine; Internal Medicine, Pulmonary and Critical Care

Bou Hamad, Imad, PhD; HEC, Montreal; Assistant Professor; Business Information and Decision Systems

Bou Khalil, Pierre, MD; AUB; Associate Professor of Clinical Medicine; Internal Medicine, Pulmonary Medicine and Critical Care

Bouhadir, Kamal, PhD; Auburn University; Associate Professor; Chemistry

Boujaoude, Saouma, PhD; University of Cincinnati; Professor; Education

Boulos, Fouad, MD; AUB; Assistant Professor of Clinical Pathology; Pathology and Laboratory Medicine

Bou Nassar, Makram, PhD; University of Birmingham; Lecturer; Agricultural Sciences

Boustany, Rose-Mary, MD; AUB; Professor; Pediatrics and Adolescent Medicine, Neurology; Biochemistry and Molecular Genetics

Bouzineddine, Amal, PhD; Boston University; Lecturer; Education

Brassier, Ray, PhD; University of Warwick; Associate Professor; Philosophy

Bright, Martin, PhD; University of Cambridge; Assistant Professor; Mathematics

Bualuan, Hayat, PhD; University of Saint Joseph; Lecturer; Civilization Sequence Program

Bulbul, Muhammad, MD; AUB; Clinical Professor; Surgery, Urology

Cash, Keith, PhD; University of Manchester; Professor; School of Nursing

Chaban, Farid, PhD; University of Liverpool; Professor; Electrical and Computer Engineering

Chaaban, Jad, PhD; University of Toulouse; Assistant Professor; Agricultural Sciences

Chaaya, Monique, DPH; Johns Hopkins University; Professor; Epidemiology and Population Health

Chaibine, Hala, PhD; Institut National Polytechnique de Toulouse; Senior Lecturer; Agricultural Sciences
Chahine, Rabih, MD; AUB; Clinical Associate; Obstetrics and Gynecology
Chahine, Salim, PhD; Aix Marseille 3 University; Professor; Finance, Accounting and Managerial Economics
Chakchachio, Zaher, MD; Lebanese University; Instructor of Clinical Pathology and Laboratory Medicine; Pathology and Laboratory Medicine
Chalak, Ali, PhD; Imperial College, London; Assistant Professor; Agricultural Sciences
Chalala, Chimene, DCD (DDS); Lebanese University; Clinical Associate; Otolaryngology and Head and Neck Surgery
Chami, Hassan, MD; AUB; Assistant Professor of Clinical Medicine; Internal Medicine, Pulmonary and Critical Care
Chamieh, Marie-Claire, MS; AUB; Instructor; Nutrition and Food Sciences
Charafeddine, Ali, PhD; University of London; Professor; Physics
Charafeddine, Khallil, MD; AUB; Assistant Professor of Clinical Pathology and Laboratory Medicine; Pathology and Laboratory Medicine
Charafeddine, Lama, MD; University of Saint Joseph; Assistant Professor of Clinical Pediatrics; Pediatrics and Adolescent Medicine, Neonatology
Chebbar, Kaouak, PhD; Columbia University; Assistant Professor; Philosophy
Chedid, Nada, DDS; Université Saint Joseph; Clinical Associate; Otolaryngology and Head and Neck Surgery
Chedid, Riad, PhD; University of London; Professor; Electrical and Computer Engineering
Chehab, Ali, PhD; University of North Carolina at Charlotte; Associate Professor; Electrical and Computer Engineering
Chehab, Ghassan, PhD; North Carolina State University; Associate Professor, Civil and Environmental Engineering
Chelala, Claude, PhD; University of Paris XI School of Medicine; Adjunct Associate Professor; Pediatrics and Adolescent Medicine
Cherfan, Pamela, MD; Saint Joseph University; Clinical Associate; Emergency Medicine
Chidiac, Jose, DCD (DDS); University of Saint Joseph; Clinical Associate; Otolaryngology and Head and Neck Surgery; Associate; Anatomy, Cell Biology and Physiological Sciences
Choucair, Mahmoud, MD; University of Madrid; Assistant Professor of Clinical Medicine; Internal Medicine, Endocrinology and Metabolism
Choueiri, Lina, PhD; University of Southern California; Associate Professor; English
Christidis, Theodore, PhD; AUB; Associate Professor; Physics
Clinton, Michael, PhD, RN, University of East Anglia; Professor; Nursing
Close, Rachel, MS; University of Wisconsin; Instructor; Nutrition and Food Sciences
Costantine, Joseph, PhD; University of New Mexico; Assistant Professor; Electrical and Computer Engineering
Cotran, Khallil, PhD; University of Louisiana, Lafayette; Senior Lecturer; Management, Marketing and Entrepreneurship Track
Currell, David, PhD; Yale University; Assistant Professor; English
Dabbagh, Omar, MD; AUB; Associate Professor of Clinical Pediatrics; Pediatrics and Adolescent Medicine
Dabbous, Aliya, MD; AUB; Assistant Professor of Clinical Anesthesiology; Anesthesiology
Dabbous, Ibrahim, MD; AUB; Clinical Associate Professor; Pediatrics and Adolescent Medicine, Hematology-Oncology
Dagher, Leila, PhD; Colorado School of Mines; Assistant Professor; Economics
Dagher, Ibrahim; Emeritus Professor; Surgery, Cardiothoracic
Dahdah Maurice, MD; AUB; Clinical Associate, Dermatology
Daher-Karim, Rose, PhD; Cleveland State University; Associate Professor of Clinical Pathology and Laboratory Medicine; Pathology and Laboratory Medicine;
Dajani, Nabil, PhD; University of Iowa; Professor; Sociology, Anthropology, and Media Studies
Dakik, Habib, MD; AUB; Professor; Internal Medicine, Cardiology
Dakik, Rajaa, BS; AUB; Assistant Instructor; Chemistry
Dallal, Ahmad, PhD; Columbia University; Professor; History and Archaeology
Dakroub, Roula, MD; AUB; Clinical Associate; Ophthalmology
Daoud, Georges, PhD; University of Quebec at Montreal; Assistant Professor; Anatomy, Cell Biology and Physiological Sciences
Daouk, Majida, MBBC; Ain Shams University; Associate Professor of Clinical Medicine; Internal Medicine, Nephrology and Hypertension
Daouk-Dry, Lina, PhD; City University London; Assistant Professor; Management, Marketing and Entrepreneurship
Darius, Martin, PhD; University of California Santa Barbara; Assistant Professor; Economics
Darwish, Hala, RN, PhD; University of Michigan, School of Nursing, Assistant Professor; Nursing
Darwiche, Nadine, PhD; George Washington University; Professor; Biochemistry and Molecular Genetics, Biochemistry
Darwish, Marwan, PhD; Brunel University; Professor; Mechanical Engineering
Dawy, Zaher, PhD; Munich University of Technology; Associate Professor; Electrical and Computer Engineering
Dbalbo, Ghassan, MD; AUB; Professor; Pediatrics and Adolescent Medicine, Infectious Diseases
Dbouk, Wassim, PhD; Concordia University; Assistant Professor; Finance, Accounting and Managerial Economics
Deeb, Hana, MS; AUB; Instructor; Chemistry
Deeb, Rima, MA; AUB; Instructor; English
Dejong, Jacelynn, PhD; London School of Hygiene and Tropical Medicine; Professor; Epidemiology and Population Health
Dennison, Michael, PhD; Louisiana State University; Assistant Professor; English
Deringil, Selim, PhD; University of East Anglia; Visiting Professor; History and Archaeology
Diab, Hassan, PhD; University of Bath; Professor; Electrical and Computer Engineering
Dib, Nelly, MA; AUB; Instructor, Philosophy
Dibe, Samer, MD; AUB; Clinical Assistant Professor; Surgery, General Surgery
Dietrich, Arne, PhD; University of Georgia; Professor; Psychology
Dimechkie, Riad, MBA; INSEAD; Senior Lecturer; Management, Marketing and Entrepreneurship zu Dohna, Heinrich, PhD; Yale University; Assistant Professor; Biology
Dorman, Peter, PhD; University of Chicago; Professor, History and Archaeology
Doummar, Joanna, PhD; Georg-August Universität Göttingen; Assistant Professor; Geology
Dumit, Yezbak, Nuhad, RN, PhD; University of Colorado, School of Nursing; Assistant Professor; Nursing
Du Quenoy, Paul, PhD; Georgetown University; Associate Professor; History and Archaeology
Egeileh, Michel, PhD; Paris 7 University; Assistant Professor; Mathematics
Eid, Assaad, PhD; Claude Bernard University; Assistant Professor; Anatomy, Cell Biology and Physiological Sciences
Eid, Toufic, MD; Lebanese University; Instructor of Clinical Radiation Oncology; Radiation Oncology
El Ashkar, Khallil, MD; AUB; Clinical Associate; Family Medicine
El Asmar, Khalil, MS; AUB; Instructor; Epidemiology and Population Health
Elbassuoni, Shady, PhD; Max-Planck Institut; Assistant Professor; Computer Science
El-Bitar, Mohamad, MD; AUB; Associate Professor of Clinical; Otolaryngology and Head and Neck Surgery; Clinical Associate; Pediatrics and Adolescent Medicine
El-Dayer, Nader, PhD; New School for Social Research; Associate Professor; Civilization Sequence Program
El-Chelik, Nadia, PhD; Harvard University; Professor; History and Archaeology
Farah, Nadim, MD; AUB; Clinical Assistant Professor; Ophthalmology
Faraj, Walid, MD; University of Jordan; Assistant Professor of Clinical Surgery; Surgery, General Surgery
Farajalla, Nadim, PhD; University of Oklahoma; Associate Professor; Landscape Design and Ecosystem Management
Fares, Souha, PhD; Case Western Reserve University; Visiting Assistant Professor; Epidemiology and Population Health
Farhat, May, PhD; Harvard University; Assistant Professor; Fine Arts and Art History
Farhood, Laila, PhD, CS, RN; University of Maryland; Professor; Nursing; Clinical Associate; Psychiatry
Fara-Awad, Chantal, MD; University of Saint Joseph; Assistant Professor of Clinical Pathology; and Laboratory Medicine; Pathology and Laboratory Medicine, Medical Genetics
Farran, Mohammad, PhD; University of Maryland; Professor; Animal and Veterinary Sciences
Fawaz, Lama, MD; McGill University; Instructor; Experimental Pathology, Immunology and Microbiology
Fawaz, Mona, PhD; Massachusetts Institute of Technology; Associate Professor; Architecture and Design
Feghali, Roland, DDS; Case Western Reserve University; Clinical Associate; Otolaryngology and Head and Neck Surgery
Feghali, Tony, PhD; Purdue University; Assistant Professor; Business Information and Decision Systems
Fleihan, Najwa, MS; AUB; Instructor; Mathematics
Fleszar, Dorota, MA; Warsaw University; Instructor; English
Fleszar, Krzysztof, PhD; Warsaw University of Technology; Assistant Professor; Business Information and Decision Systems
Frangieh, Samer, PhD; University of Cambridge; Assistant Professor; Political Studies and Public Administration
Fuentes, Henri Rico, PhD; Courtauld Institute; Associate Professor; Fine Arts and Art History
Fugate, Courtney David, PhD; Catholic University of Leuven; Assistant Professor; Civilization Sequence Program
Fuleihan, Nabil, MD; AUB; Adjunct Clinical Professor; Otolaryngology and Head and Neck Surgery
Gasheger, Robert, PhD; Ohio State University; Assistant Professor; Civilization Sequence Program
Geera, Fadi, MD; Paris Medical School; Professor; Radiation Oncology
Geha, Hassam, DDS; Université Saint Joseph; Clinical Associate; Otolaryngology and Head and Neck Surgery
Genz, Hermann, PhD; University of Tubingen; Associate Professor; History and Archaeology/Civilization Sequence Program
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