American University of Beirut — Mediterraneo

Notice

Information in this catalogue applies to academic year 2023-24. 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 email addresses by the university and are responsible for checking their post office boxes and email regularly for official announcements and information.

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Academic Calendar (2023-24)

2023	
August 28	Fall Semester Begins
September 6	Opening Ceremony
October 1	Cyprus Independence Day
October 28	Ochi Day
December 4-9	Make-up days and Reading Week
December 11-22	Final Examinations
December 24-January 1	Christmas and New Year Vacation
2024	
January 6	Epiphany
January 18	Spring Semester Begins
March 18	Green Monday
March 25	Greek Independence Day
April 1	National Day
April 26-30 and May 2	Make up days and Reading Week
May 1	Labor Day
May 3-6	Easter Vacation
May 7-18	Final Examinations
June 10	Summer Session Begins
June 24	Orthodox Whit Monday
August 2-3	Make up day and Reading Period
August 5-10	Final Examinations
August 15	Assumption Day

Board of Trustees

University Leadership

Fadlo R. Khuri, MD, President
Wassim El Hajj, PhD, Rector

The University

The American University of Beirut—Mediterraneo (AUB Mediterraneo) is a private, independent, non-sectarian institution of higher learning founded in 1866. It functions under a charter from the Government of Cyprus and is governed by a private, autonomous Board of Trustees.

The university has three faculties: Maroun Semaan Faculty of Engineering and Architecture, Suliman S. Olayan School of Business, and the Faculty of Arts and Sciences. At present, the American University of Beirut—Mediterraneo offers programs leading to bachelor's and Master's degrees.

The language of instruction is English.

Accreditation

Degrees awarded by the American University of Beirut—Mediterraneo are officially registered with the Ministry of Education, Sport and Youth in Cyprus and are accredited by the Cyprus Agency of Quality Assurance and Accreditation of Higher Education (CYQAA). AUB Mediterraneo is also an approved branch campus of the American University of Beirut (AUB) by the New York State Education Department (NYSED) and the Middle States Commission on Higher Education (MSCHE). MSCHE is an institutional accrediting agency recognized by the U.S. Secretary of Education.

AUB, the mother institution of AUB Mediterraneo, operates under a charter granted by the New York State Education Department (NYSED) since 1866, which registers the university's degree programs. AUB is also accredited as an institution by MSCHE: www.msche.org, 1007 North Orange Street, 4th Floor, MB #166, Wilmington, DE 19801, 267-284-5011.

Vision

American University of Beirut — Mediterraneo aspires to be a hub of knowledge exchange and creation that leads social, environmental, and technological advancement through state of the art and pioneering educational offerings, cutting-edge research and creation, and innovative community service.

Mission

American University of Beirut — Mediterraneo is a twin campus of the American University of Beirut, and as such, it brings over 150 years of experience in higher education and research to another part of the world. With its liberal-arts model of higher education and experiential learning opportunities, its support for cutting-edge research and community service orientation, it aims to prepare critical thinkers, global leaders, innovators and responsible global citizens. The University provides an innovative, supportive, and inclusive learning environment that nurtures undergraduate and graduate learning. AUB—Mediterraneo constitutes a unique hub for distinguished collaborative research, forward looking intercultural communication and exchange, as well as a site for intellectual, professional, social, and personal growth.

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 on 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. Since the earliest years, the university has continually expanded and developed new faculties and programs. In 1867, it started the School of Medicine. 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 Maroun Semaan 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.

In August 2023, the American University of Beirut — Mediterraneo, a twin campus of the American University of Beirut, welcomed its inaugural class into three faculties and seven programs in Pafos, Cyprus.

Admissions
Undergraduate Students

All undergraduate degrees are four-years in duration. AUB Mediterraneo programs are cohort-based. This means that we conduct only one admission cycle per year, and all students start in the fall term, which begins at the end of August or the beginning of September depending on the academic calendar for any particular year.

Students completing 12 years of schooling and doing one of the following programs: High school program, IGCSE (O Levels), IB Certificate or any other school leaving certificate, Lebanese

Baccalaureate, French Baccalaureate, Syrian Baccalaureate, Jordanian Tawjihi, German Abitur, Official Government Secondary School leaving Certificate, full IB Diploma or IGCSE/GCE (three A levels or six AS levels in addition to six O levels, excluding Arabic).

Prospective students must submit an undergraduate first-year application with the following documents:
- High school transcript for grades 10 and 11 or their equivalent
- Official form for Applicant Secondary School Record
- An entrance exam **is required** which can be *one option* from the below types*:
    - **Scholastic Aptitude Test (SAT)**
      The SAT can be taken several times. Students can benefit from "super scoring". (i.e., taking the maximum score for each section (Math or Evidence-Based Reading and Writing) from all sessions).
    - **The International AS-level exam**:
      3 AS-Levels with the following subjects:
      Mathematics (Math or Math - Further), and two non-language subjects
    - **Cypriot Lyceum B Class standardized exams**
      Two subjects, one in Math (Basic or Advanced), and another non-language subject

Admission is competitive and based on the results of entrance exam scores provided and the high school transcript as follows:
- 50% on an entrance exam (SAT, AS-Levels, or Cypriot Lyceum B Class standardized exams)
- 50% on the standardized high school averages in grades 10 and 11

In terms of standardized high school averages, students are compared to their class average and to the average of applicants from the same school.
There are no specific cut-off scores. The higher the student's score, the better the chances of being admitted.

* Important Notes on the entrance exam types:
- Only one exam type is considered, and in case multiple exam types are provided one exam per the following precedence order will be chosen: SAT exam then AS-level exams, and then Cypriot Lyceum B Class standardized exams.
- The AS-Level or Cypriot Lyceum B Class standardized exams results for the required subjects are to be provided before the admission application deadline to complete your application. For the SAT results, refer to the deadline section below under "Latest SAT session considered".
- The university reserves the right to stop considering the SAT alternative exams (AS or Cypriot Lyceum B Class standardized exams) from the above list in any term after fall 2023. Thus students are encouraged to plan and take the SAT exam when applying to fall 2024 or later.

Early admission

Please note that a special early admission plan for fall admission has been designed for truly outstanding students who must fulfill the following additional requirements concurrently:
- Submit the undergraduate first-year application by the early admissions deadline
- Class rank in the top 25 percent in Grade 10 and Grade 11
- Entrance exam score(s) **is required** which can be *one option* from the types in the below table*
- An Interview, if you are not providing the SAT exam scores

Applying to	Majors	SAT (super score) Evidence-Based Reading and Writing + Math	International AS-level exam (3 subjects) Math or Math Further & 2 non-language subject	Cypriot Lyceum B Class standardized exams (2 subjects) Math (Basic or Advanced) & 1 non-language subject
Arts	Philosophy, Politics, and Economics	1130	ABB score with an A score in Mathematics (Math or Math - Further)	17-18 grade on each subject
Business	Business Administration in Management	1180	AAB score with an A score in Mathematics (Math or Math - Further)	18-20 grade on each subject
Sciences	Computer Science Industrial Engineering Psychology	1200	AAB score with an A score in Mathematics (Math or Math - Further)	18-20 grade on each subject

Applicants who apply early, but are not admitted early will be considered in regular admissions.

Grade 12 records do not affect admission decisions because students apply to AUB Mediterraneo at the beginning of grade 12. Nevertheless, once the student is admitted, she or he will be required to present evidence of having met the following conditions no later than one month prior to the start of the term:

- Successfully met the English language requirement
- Successfully completed Grade 12 or equivalent
- Successfully received the certificate or diploma (recognized by the Ministry of Education of the originating country) on the basis of which admission was sought (example: Lebanese/French Baccalaureate, IB Diploma, GCE, etc.)

As such, all admission offers are conditional, and admitted applicants may not register until all three of these conditions are met.

Transfer Students

If a student completes **fewer than** 108 ECTS at another recognized institution of higher learning, the following documents will be required to apply as a transfer student:

1. High school records during the last three years of high school (grades 10, 11, and 12);
2. SAT1 scores; or AS level scores; or Lyceum B scores
3. Official transcripts from all institutions attended—a complete record of study;[1]
4. Detailed syllabi (course outlines) of all courses taken;

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[1] Intentionally omitting any university studies will result in dismissal from the AUBM.

5. Certified copy of high school diploma or secondary school certificate, based on at least twelve years of schooling (e.g., Lebanese Baccalaureate, French Baccalaureate, IB Diploma, GCE, high school diploma, etc.)
6. English language requirement (**upon admission and prior to matriculation**)

Admission in this case is competitive and also based on the process described above.

If a student completes **108 or more** ECTS at another recognized institution of higher learning, the following documents will be required:

1. Official transcripts from all institutions attended—a complete record of study;[2]
2. Detailed syllabi (course outlines) of all courses taken;
3. Certified copy of high school diploma or secondary school certificate, based on at least twelve years of schooling (e.g., Lebanese Baccalaureate, French Baccalaureate, IB Diploma, GCE, high school diploma, etc.)
4. English language requirement (**upon admission and prior to matriculation**)

In this case, admission is competitive and based on university GPA.

You may receive credit transfer for courses taken at another recognized university only if the courses match AUB Mediterraneo requirements in terms of contents and evaluation. Transferable credits will be determined only after you submit your complete AUB Mediterraneo application and upon the recommendation of the department(s) concerned after review of the syllabi of the courses you wish to transfer.

We normally consider applications for transfer from universities that are accredited by the ministry of higher education in their home countries.

Second Degree

For candidates who have completed a bachelor's degree (BA or BS) and are interested in completing a second degree, the following applies:

Graduates who have been away from AUB Mediterraneo **for less than** two years after graduation must complete an application for a second degree.

Non-AUB Mediterraneo graduates or graduates who have been away from AUB Mediterraneo for more than two years after graduation must submit an application for admission with the following:

1. Official transcripts from all institutions attended—a complete record of study;[3]
2. Detailed syllabi (course outlines) of all courses taken—not required for AUB Mediterraneo graduates;
3. Certified copy of high school diploma or secondary school certificate, based on at least twelve years of schooling (e.g., Lebanese Baccalaureate, French Baccalaureate, IB Diploma, GCE, high school diploma, etc.)
4. English language requirement (**upon admission and prior to matriculation**)

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[2] Intentionally omitting any university studies will result in dismissal from the AUBM.
[3] Intentionally omitting any university studies will result in dismissal from the AUBM.

Graduate Students

Requirements for Master's admissions to AUB are as follows:

- An undergraduate average of at least 3.3 (or standardized equivalent from other institutions of higher learning) in the major field of study and a cumulative average of at least 2.7 (or standardized equivalent) for all work done at the undergraduate level leading to a bachelor's degree or its equivalent from AUB or other recognized institutions of higher learning are required. In the Maroun Semaan Faculty of Engineering and Architecture, an average of at least 3.3 is required for the last two years of undergraduate study or its equivalent at AUB or other universities as determined by the faculty.
- Official transcripts from all institutions attended—a complete record of study;[4]
- Two recommendation letters from qualified academics;
- A detailed statement of purpose (around 400-500 words) for each choice (major or concentration) indicating the purpose for pursuing graduate study in the particular field at AUB, and specifying the applicant's research interests and/or practical experience in the field is required.
- Additional requirements that are specific to each graduate program as included in the department or program listings exist/are needed.
- English language requirement (upon **admission and prior to matriculation**)

In all cases, an application processing fee is required.

Graduate Students Leave of Absence

All graduate students are expected to make steady and satisfactory progress toward the completion of degrees.

Students who are not enrolled for a period of more than one academic year (two consecutive regular terms and one summer) will be considered to have withdrawn from the program unless they apply for a leave of absence and secure approval of the faculty, which could include a requirement for reapplication.

English Language Requirement (Readiness for University Study in English—RUSE)

Undergraduate applicants

Undergraduate applicants can demonstrate RUSE by submitting satisfactory and valid scores from one of several tests. A score is considered *satisfactory* if it meets or exceeds the minimum requirement set by AUB; it is considered *valid* if the test date is recent enough. Each test has its separate requirement for having satisfactory and valid scores, as detailed in the table below.

Demonstrating RUSE for undergraduate applicants		
Test	Minimum Score	Validity
SAT (evidence-reading and writing)	530	2 years
TOEFL iBT	79	2 years

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[4] Intentionally omitting any university studies will result in dismissal from the AUBM.

IELTS (Academic)	6.0	2 years

When to demonstrate RUSE

All undergraduate applicants are requested to demonstrate RUSE as early as possible, upon receiving their admissions decision from AUB Mediterraneo.

Graduate applicants

Master's applicants, including graduate diploma applicants, can demonstrate RUSE by submitting satisfactory and valid scores from one of several tests. A score is considered *satisfactory* if it meets or exceeds the minimum requirement set by AUB; it is considered *valid* if the test date is recent enough.

Each test has its separate requirement for having satisfactory and valid scores, as detailed in the table below.

Demonstrating RUSE for graduate applicants		
Test	Minimum Score	Validity
TOEFL iBT	97	2 years
IELTS (Academic)	7	2 years
GRE (Verbal)	147	5 years
GMAT (Verbal)	25	5 years

When to demonstrate RUSE

All graduate applicants are requested to demonstrate RUSE as early as possible upon receiving their admissions decision from AUB.

General University Academic Information

Undergraduate

Academic Advisors
Each student has an academic advisor who mentors the student in course selection. Names of advisees and their respective advisors are available through the Student Information System (SIS).

Categories of Students
Full-Time Students carry a minimum load of 30 ECTS per term, or 12 in the summer.

Part-Time Students are restricted to those who need fewer than 12 credits to complete work for an undergraduate degree or to those who are granted special permission from the appropriate faculty committee for health or family reasons.

Non-Degree Students are those who are not working for a degree, but who are taking courses offered for credit.

Auditors are those who register to sit in on classes with the permission of the instructor and who do not take part in any evaluative exercise. Auditing students must be registered and must have settled their fees before being allowed access to any class.

Registration

Requirements

Before proceeding to register, 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 meeting the Readiness for University Studies in English and providing evidence that the student received the diploma, certificate, degree or level of university education on the basis of which s/he applied for and received admission to AUB Mediterraneo.

The registration guide is posted on the web and is included in the admissions package sent to students. Subsequent to confirmation that all conditions have been met, students should follow the steps in this guide.

Students can introduce final adjustments to their schedules during the change of schedule period, which normally extends for one week starting the second day of classes.

Cross-Registration

Students Enrolled at AUB Mediterraneo Taking Courses at Other Universities

A student studying at the AUB Mediterraneo may be allowed to cross-register for a course at other recognized academic institutions if all of the following conditions are met:

- the course is required by AUB Mediterraneo
- the course is not offered at AUB during the term at the end of which the student expects to graduate
- the course in which the student intends to cross-register is equivalent to a course that AUB Mediterraneo offers (the number and title of each of the two equivalent courses should be clearly indicated)
- the chairperson of the department in which the student is majoring sends the Registrar a written statement confirming that all the conditions listed above have been met

- the Registrar authorizes the student to cross-register; the student submits authorization to the concerned institution

Students Enrolled at Other Universities Taking Courses at AUB Mediterraneo

For purposes of cross-registration, students studying at recognized academic institutions who wish to take courses at AUB Mediterraneo must do the following:

- secure permission from their institutions to take specified courses at AUB Mediterraneo
- secure permission from the dean of the faculty concerned at AUB Mediterraneo
- present the above permissions to the AUB Mediterraneo Office of the Registrar
- register in accordance with the instructions specified in the registration guide, copies of which are sent to the institutions.

Study Abroad (Undergraduate Only)

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

Study abroad is strictly prohibited during the final semester of study at AUB Mediterraneo.

Residence Requirements (Undergraduate Students)

Undergraduate students must normally earn their final 90 ECTMs at AUB Mediterraneo. 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 with prior authorization from the advisor, the faculty, and the University Registrar. An AUB student must spend the final term at AUB Mediterraneo.

Residence Requirements (Graduate Students)

To meet the minimum residence requirements for the master's degree, a student must register and be in residence as a graduate student for at least two terms, that is, either for one term and two summers or for four summers.

All requirements for the master's degree must be completed within a period of eight regular terms after admission to graduate study. Students attending only summer sessions must complete all requirements within a period of six summers after admission to graduate study. Extension beyond the maximum allowed period of study requires approval from the faculty Graduate Studies Committee.

Course Loads

Full-time students must carry a minimum load of 24 ECTS per regular term and 12 ECTS in the summer. A full-time student who wishes or is forced to reduce this minimum must petition the appropriate faculty committee.

The credit load in a regular term of a student who continues to be on probation beyond one term or is placed on three non-consecutive probations shall not be fewer than 24 ECTS.

Repeating Courses (Undergraduates Only)

A student who fails a required course must repeat the course at the earliest opportunity. No course may be taken more than three times, which includes course withdrawals. 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 and can figure in the calculation for graduation awards.

Withdrawal from Courses (Undergraduates Only)

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

Students can withdraw from elective courses, down to a minimum of 24 ECTS, no later than 12 weeks (six weeks in the summer term) from the start of the term. Students receive a grade of 'W' for the course.

Attendance (Undergraduate Students)

Classes and Laboratories

- Students are expected to attend all classes, laboratories, and/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 made during any absence.
- Students who, during a term, miss more than one-fifth of the sessions of any course in the first twelve weeks of the term (six 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 "F."
- Students can withdraw from registered courses, no later than 12 weeks (six weeks in the summer term) from the start of the term, provided that their credit load during the term does not drop below 24 ECTS.
- Unless approved by the appropriate faculty committee, a student cannot withdraw or be withdrawn from a course after the announced deadline or if the withdrawal results in the student being registered for less than 24 ECTS.

Attendance (Graduate Students)

A student who is absent without excuse for more than one third of the number of sessions in any course may be dropped by the instructor of the course.

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 made during her/his absence.

- Students who miss more than one-fifth of the sessions of any course in the first ten weeks of a given term (five weeks in the case of the summer term) are dropped from the course if the faculty member has stated in the syllabus that attendance will be taken.
- Students who withdraw or are forced to drop a course receive a grade of "W."
- A student cannot withdraw or be withdrawn from a course after the announced deadline unless approved by the appropriate faculty 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-up quizzes, midterms and class assignments must be completed before the final grade of the course is issued at the end of the term.

Only medical reports and/or qualified professional opinions issued by a recognized medical professional. Should there be a question about the validity of any excuse presented by the student, the matter shall be referred to the appropriate faculty committee. Instructors should make sure there is no time conflict between an exam and a regularly scheduled course.

Grading System

AUB Mediterraneo uses a 4.3 letter grade system according to the following table:

Course Letter Grade	Quality Points
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
F	0.0
I Incomplete	
P Pass	
PR In Progress	
W Withdraw	
NP No Pass	

The GPA is capped at 4.0

Graduate Students

- The minimum passing grade for a graduate course is C+ (2.3).
- The minimum grade for a graduate student enrolled in a graduate course is F (0.0)
- Results of tutorial courses, projects, or theses are reported as Pass (P) or No Pass (NP).
- Prerequisite courses are undergraduate courses taken to make up for deficiencies in the student's background. The minimum passing grade for a prerequisite course is C+ (2.3). However, a department r program may set a higher minimum passing grade.

Change of Grade Policy

After grades are posted on the AUB Mediterraneo Student Information System, 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.

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 shall be made to the course instructor within one week 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 term. In exceptional circumstances, the appropriate faculty committee may decide to give the student additional time to complete a course.

Incomplete coursework is reported as "I". Normally, "I" is followed by a numerical grade or a letter grade reflecting the evaluation of the student available at the end of the term. 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 grade becomes the final grade.

Credit Transfer
For students returning from study abroad
(Undergraduate Students)

Students who study abroad are required to get pre-approval for the courses they plan to register at the host institution.

Upon completion of the Study Abroad Program, students should ensure that the earned credits are transferred toward their degree requirements as follows:

- Students should submit the syllabi (including course learning outcomes if available) of all pre-approved courses that they completed abroad, along with the Study Abroad transcript from the host university, to the relevant faculty Undergraduate Curriculum Committee for final approval of credits earned.
- Students must have their host institution provide an official transcript directly to the AUB Mediterraneo Office of the Registrar
- Approval of credit transfer is contingent upon achieving a minimum passing grade at the study abroad university.
- The Office of the Registrar can act directly if a similar course equivalence has already been approved by a Curriculum Committee. As each course is approved for equivalence, the Office of the Registrar dates the decision and ensures that all courses are re-evaluated after five years. Re-evaluation to determine whether a transfer course continues to meet AUB requirements in terms of content and credit hours includes assessment of course learning outcomes.
- Credits received through Study Abroad Programs will show as pass only on the AUB transcript.

For students admitted as transfer students from other institutions (Undergraduate Students)

Upon completion of registration for their first term at AUB, students should make sure credits earned at other institutions that count toward program requirements at AUB are transferred as follows:

- Students must submit the following to the Undergraduate Curriculum Committee of the relevant faculty for final approval of credits earned: They must submit the syllabi (including course learning outcomes if available) of all courses completed at the other institution, the transcript of the courses issued by the institution received, and a course equivalence form signed by the chair of the department offering the equivalent course. Students are encouraged to seek approval of credit transfer within one month of the start of their first term or as soon as possible thereafter.
- Students must have their host institution provide an official transcript directly to the AUB Mediterraneo Office of the Registrar.
- Approval of credit transfer is contingent upon achieving a minimum passing grade equivalent to AUB Mediterraneo's C+. in each course as determined by the Undergraduate Curriculum Committee of the relevant faculty.
- The Office of the Registrar can receive direct requests from students and can act directly if similar course equivalence has already been approved by a Curriculum Committee. As each course is approved for equivalence, the Office of the Registrar dates the decision and ensures that all courses are re-evaluated after five years. Re-evaluation to determine whether a transfer course continues to meet AUB requirements in terms of content and credit hours includes assessment of course learning outcomes.
- Credits received through Study Abroad Programs will show as pass only on the AUB transcript.
- The Office of the Registrar keeps a log of accepted grade equivalencies for courses offered by local, regional and international universities to ensure consistent implementation across all majors of the grade equivalence policy for credit transfer.

Credit Transfer

Master's Degree Program

Graduate courses taken beyond the bachelor's degree requirements at AUB Mediterraneo, or at other recognized institutions, are not transferable for credit toward master's degree requirements

unless the applicant attained a cumulative average of at least B+ (3.3) in the undergraduate courses taken in the major or related field of study. Only graduate courses in which the applicant earned an equivalent grade of B+ (3.3) or above can be transferred. No more than 9 credits are transferable provided they are not credits earned by internship, thesis or practicum, and degree minimum residency requirement is maintained. For master's degrees with more than 33 credits, the maximum number of transferable credits can be up to 12 credits.

From One Master's Degree to Another

Graduate courses taken at AUB (or at other recognized institutions), in which the applicant earned an equivalent grade of B+ (3.3) or above, may be transferred to another master's degree at AUB. No more than 9 credits are transferable provided they are not credits earned by an internship, thesis or practicum, and degree minimum residency requirement is maintained. For master's degrees with more than 33 credits, the maximum number of transferable credits can be up to 12 credits. Approval by the department or the academic unit concerned and the faculty/school Graduate Studies Committee is required for all transfers. Normally, credits counted toward another graduate degree at AUB or another institution cannot be transferred if they have already been used to satisfy requirements for another awarded graduate degree.

Use of Graduate Transfer Credits in GPA

Credits earned at other institutions or at AUB beyond the requirements of the bachelor's degree and transferred into the master's program are not included in the calculation of a student's grade average while pursuing a master's degree. Such courses are reported as pass (P). Transfers of credit earned at the master's level or while registered as a graduate not working for a degree from AUB are not subject to the above limitations but require the recommendation of the department chair and approval of the faculty/school Graduate Studies Committee.

Undergraduate Transfer within the University, Same Faculty

Students who wish to transfer from one major to another within the same faculty may do so only after completion of at least two full terms of work in their current major. In all cases, they must:

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

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

Undergraduate 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. They must apply within deadlines specified in the university calendar.

Dean's Honor List (Undergraduate Only)

To be placed on the dean's honor list at the end of the term, a student must

- be carrying at least 24 ECTS,
- not be on probation,

- have passed all courses and attained an overall average of A- or be ranked in the top 10 percent of the class and have an overall average of B+,
- not have been subjected to any disciplinary action within the university during the term,
- and be deemed worthy by the dean to be on the honor list.

Probation—Undergraduate Students

Placement on Academic Probation

A student is placed on academic probation if the student's overall average is less than C at the end of the first through fourth regular terms, or if the term average is less than C+) in any subsequent term, excluding the summer term.

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

For evaluation purposes, the minimum number of ECTS at the end of the second regular term at the university should be 60, including all repeated courses, and 30 in each subsequent fall or spring term, including all repeated courses.

Courses/credits taken during a summer term are counted towards the term average of the next regular term. If the number of ECTS taken in any one regular term is less than 30 (for approved reasons), courses/credits taken during that term are counted toward the term average of the next regular term.

Credit for incomplete courses will be included in the term in which the incomplete courses were taken. The evaluation for that term 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 the student has been placed on probation.

Removal of Probation

Probation is removed when the student attains a term average of C or better in the third or fourth regular term or a term average of C+ or more in any subsequent regular term. The student is off probation during the term following the one in which such grades are earned.

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

Dismissal and Readmission

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

- if the student's overall average is less than D at the end of the second regular term

- if the student fails to clear academic probation within two regular terms, 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 terms (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.

Probation—Graduate Students

Good Standing
A graduate student is in good standing when her/his graduate grade cumulative average is B+ (GPA: 3.3) or above. A student must be in good standing in order to be awarded a degree.

Probation and Removal of Probation
The academic performance of the student is first evaluated by the department upon completion of 18 ECTS of coursework after initial enrollment towards the degree and then is evaluated every term/term thereafter.

- A student is placed on probation if s/he attains a cumulative average of C+ (2.3) or more, but less than B+ (3.3), or fails any course taken for graduate credit.
- A student placed on probation due to average must remove the probation by the end of the following regular term/term by attainment of a cumulative average of at least B+ (3.3).
- A student placed on probation due to course failure should retake and pass the course the next time it is offered. In case this condition cannot be met, the student, in consultation with the advisor, must petition the faculty.

Dismissal
The Faculty Graduate Studies Committee may dismiss a master's student, in consultation with the department/program, from graduate study if any of the following conditions arise:

- Probation status due to average is not removed in the term following the first probation, excluding students admitted on probation (see previous section on probation and removal of probation).
- The student receives probation for a second time during the degree residency.
- The student attains a cumulative average of less than C+ (2.3) after completion of 9 credits or fails two courses in one term.
- The student attains a cumulative average of C+ (2.3) or above but less than B+ (3.3) in any term, and fails one course in that term (this rule does not apply to the first term of study).
- The work of the student is considered to be unsatisfactory in the opinion of the department or program, regardless of the grades obtained.
- The student fails the comprehensive examination twice or the thesis defense twice.

Plagiarism

Students who fail to properly credit ideas or materials taken from another commit plagiarism. Putting your name on a piece of work—any part of which is not yours— constitutes plagiarism, unless that piece is clearly marked and the work from which you have borrowed it is fully identified. Plagiarism is a violation of the university's academic regulations and is subject to disciplinary action.

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 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.

Disclosure of Student Records

Information about notification of rights under U.S.C. 438(6)(4)(8), The Family Educational Rights and Privacy Act of 1974) can be found on the Office of the Registrar website.

Graduation

Students are strongly advised to prepare their registration schedules with their advisors to ensure graduation requirements are fulfilled. Failure to do so may mean a student has to spend an additional term or more at AUB Mediterraneo to complete graduation requirements.

Undergraduate Graduation Requirements

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 her/his degree program within these specified times must petition the Student Academic Affairs Committee for an extension of time.
- A minimum of seven terms of residence is required beginning with the freshman class, or five terms beginning with the sophomore class. For purposes of this requirement, two summer sessions shall be considered equivalent to one term.
- Transfer students from other recognized institutions of higher learning must spend the final three terms and complete at least 45 credits at AUB, out of which a minimum of 21 credits should be in the major. For purposes of this requirement, two summer sessions shall be considered equivalent to one term.
- A minimum of 240 ECTS for students who enter as freshmen (180 of which should be courses numbered 200 or above) and 180 ECTS (in courses numbered 200 or above) for students who enter as sophomores.

Departmental Requirements

The requirements are a minimum of 72 ECTS in the major department in courses numbered 200 or above, of which a minimum of 60 ECTS must be numbered 210 or above. Also, a cumulative average of C+ (2.3) in the major plus any additional requirements set by the department. A student must be admitted into her/his departmental major for at least the last term prior to graduation.

Master's Degree Graduation Requirements

To be eligible for graduation with a master's degree from the AUB Mediterraneo, a graduate student:
- must have attained a cumulative course average of B+ (3.3) or above,
- should not be on probation by the time the coursework is completed,
- must have completed the minimum credit hours of coursework designated by the
- specific program,
- must have passed the comprehensive exam,
- must have completed thesis requirements for the thesis option degrees,
- must have completed project requirements for the non-thesis option degrees,
- and must have met the residence requirements specified for the master's degree.

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 must notify the Office of the Registrar of their intention.

Names on Diplomas and Degrees

Names on diplomas and degrees are spelled exactly as they appear on passports or identity cards and must be confirmed prior to Senate vote to award the degrees. Once graduated, name spelling cannot be changed.

Graduation with Distinction and High Distinction—Undergraduate Students Only

To graduate with distinction, a student must:

- have an average of A- (3.7) or higher in all work of her/his final academic terms, including summers: (two summer sessions are equivalent to one term) during which 60 credits or more have been completed at AUB
- and be recommended by her/his department for distinction

To graduate with high distinction, a student must:

- have an average of A (4.0) or higher in all work of her/his final academic terms, including summers: (two summer sessions are equivalent to one term) during which 60 credits or more have been completed at AUB
- and be recommended by her/his 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. For transfer students, if the number of credits completed at AUB Mediterraneo is less than 60, then the completed credits are used as the measuring criteria.

Passports and Visas

Non-Cypriot students joining AUB Mediterraneo must have valid passports and student visas issued by the Government of Cyprus.

Payment of Fees

All students must finalize registration, including payment of tuition and other charges, by the announced deadlines. Those who do not with be administratively deregistered from their courses.

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 at 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
- Each AUB student must pay all her/his 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 for the first and second terms. 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.

- Students who demonstrate financial need must formally apply to the Office of the Comptroller for deferred payment arrangements for tuition fees by the stated deadline in the academic calendar. 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.

- 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 term 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 her/his financial obligations, the university reserves the right to place an encumbrance on the student's record that prevents registration for future terms 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.

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 terms:

- 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

Financial Aid

Financial aid will be available for qualified students who are accepted and enrolled at AUB Mediterraneo and are in good academic standing. It can be awarded on an annual basis or for the duration of the program depending on the specific type. AUB Mediterraneo reserves the right to modify or cancel awards at any time for the following reasons: changes in financial or academic status, discovery of incorrect or falsified information by the applicant or applicant's family, or errors in the determination of need and eligibility for financial aid.

Financial aid can be of different kinds:

1. Need based grants
2. Merit based grants
3. Graduate assistantships
4. Work study
5. Donor funded scholarships
6. Externally funded grants or loans by student's national government
7. Bank loans (forthcoming based on future discussions with local banks

Need-based grants

To be eligible for any grant where financial need is a component, the student must meet the following criteria:

1. Accepted or enrolled at AUB Mediterraneo on a full-time basis, normally 30 ETCS credits. Graduate students may receive financial aid if they register for at least 6 ETCS credits.
2. Must demonstrate financial need as determined by the Interfaculty Financial Aid Committee.
3. Must be in good academic standing (demonstrate satisfactory academic performance).

Need-based grants are available for one degree at each level of study.

Full-time graduate students must apply for graduate/research assistantships at the faculty where they are enrolled. Additionally, they are expected to apply for any externally funded grants or loans for which they are eligible.

Application for need-based grants

Students must complete a financial aid application for the term in which they will begin their studies. Grants are awarded for the summer term only to students who are required by their program to register for summer courses. The applicant and parents are required to submit all form and supporting documents by the deadline.

Interviews may be conducted with the applicant and parents.

Documents required include, e.g., photograph, official transcripts, employment records for each member of the family, employee income statements, recent school statements and receipts for fees paid for each dependent child, a family civil status record, copies of rental contracts or ownership deeds to all properties, copies of car registration for each car owned by each member of the family, copies of loan agreements with supporting documents, copies of bank statements for every member of the family, all the same documents for the spouse if married, any additional documents that would support the application.

Merit-based grants

Students may be eligible for entrance scholarships and continuing scholarships. An entrance scholarship is awarded to an admitted student in competition with all other admitted students. Entrance scholarships are valid for the first two terms only. A continuing scholarship is awarded to full time status

an admitted student in competition with all other admitted students. Continuing scholarships are valid for the term of the program, provided that the student maintains all eligibility criteria as outlined in this document.

There is no application for a merit-based grant. The number of grants available in each category is subject to availability of funds, and students will be notified with their letter of acceptance if they are the recipient of one of these grants.

Graduate Assistantships

Applicants to graduate programs can request consideration for a graduate assistantship by filling appropriate information in the admissions application. Renewal for continuing students should be managed through their department or faculty/school in line with existing faculty/school guidelines.

Donor-funded scholarships

All students may apply for donor funded scholarships by searching the database of available opportunities. The application process for each will vary based on the terms of the donor agreement.

Disbursement

All financial aid controlled by AUB Mediterraneo is disbursed by direct credit to the student's account at the beginning of each term. External funding each has its own particularities.

Restrictions

Financial aid is not awarded to students:

1. Registered on a part-time basis, except in rare circumstances.
2. Placed on probation: Allocations will only be renewed when academic probation is removed.
3. Receiving full graduate/research assistantships.
4. Who submit incorrect or incomplete information in their applications.
5. Who are not working for a degree.
6. Who are full-time research assistants.
7. Who are participating in a study abroad program.
8. Enrolled in a University Preparatory Program.

Financial aid may be cancelled or reduced in the following cases:

1. Student withdraws from all registered courses during a term.
2. Student is enrolled for less than 12 credits at the undergraduate level.
3. Student provides incorrect or incomplete information after registration.
4. Students whose financial aid has been cancelled may be required to repay the amount received to remain at AUB.

Faculty of Arts and Sciences

Institute for the Liberal Arts

Mission Statement

The Institute for the Liberal Arts in the Faculty of Arts and Sciences at AUB—Mediterraneo fulfills the university's commitment to the philosophy, standards, and practices of American liberal arts education. ILA is the academic and administrative home of the program in General Education, a core component the undergraduate experience which expresses the university's unique character as an Anglophone university anchored in the Arab world and operating in a primarily Hellenophone part of Europe. ILA cultivates excellence in teaching and research across a broad range of humanistic and scientific disciplines and encourages active student life on campus. In all its activities, ILA aims to express humane values and an ethic of care that extends from the individual and the campus community to the Mediterranean region and the wider world.

General Education Program

The mission of the General Education program is to help us understand ourselves, the world, and our role in it. The program will allow students learn to think critically and analyze intellectual and social issues in their historical and contemporary frameworks from a variety of disciplinary perspectives. It does so while also enhancing problem-solving skills and abilities for life-long learning. Students will recognize and reflect on their values, their civic responsibilities and their general roles in society.

- After completing the General Education Program, students will be able to:
- Demonstrate intellectual independence in pursuit of knowledge.
- Make informed and logical arguments through critical thinking abilities.
- Reflect on one's values.
- Contribute effectively to the community.
- Critically reflect on one's own transformative university experience

PROGRAM REQUIREMENTS	ECTS
Compulsory courses	English and Arabic 24 ECTS
Elective courses **Communication and Digital Literacy (24 ECTS)** - *Our Understanding of Communication (24 ECTS)* - *First Semester Student Experience (0 ECTS Requirement)* - *Writing in the Discipline (6 ECTS in the Discipline; to be fulfilled through a major course)* - *Digital Literacy (6 ECTS in the Discipline; to be fulfilled through a major course)* **Understanding our World (18 ECTS)**	66 ECTS (in the disciplines)

This is fulfilled by 18 ECTS in the natural sciences and quantitative reasoning; at least 6 ECTS in each category) **Understanding Ourselves (36 ECTS)** - *Understanding Our Cultures and Histories (24 ECTS)* (Includes 6 *ECTS* in Greek Studies) - *Understanding Societies and Individuals (12 ECTS)* **Understanding Our Role in The World (12 *ECTS*)** - *Understanding Our Values (6 ECTS)* - *Understanding Our Engagement (6 ECTS)* **Thematic Requirements:** (Not additional to above; but need to be fulfilled through the courses taken above and/or in students' majors) - *Social Inequalities (6 ECTS from above)* - *The History of Ideas (CVSP) (6 ECTS)*	
Undergraduate / Postgraduate assignment	
Practical training	
Total ECTS	**90 ECTS**

GE COURSE OFFERINGS PER SEMESTER:

Fall Courses Offered by ILA

ARAB 203 Beginner Arabic I (Understanding Our Communication)

BIO 210 Human Biology (Understanding the World)

BIO 201 General Biology I (Understanding the World)

CVSP 201 Ancient Near East and Classical Civilizations (Understanding Our Cultures and Histories)

CVSP 203 The Making of the Modern World ((Understanding Our Cultures and Histories)

CHEM 201 Chemical Principles (Understanding the World)

ENGL 203 Academic English (Understanding Our Communication)

ENGL 206 Technical English (Understanding Our Communication)

HPCH 205 Introduction to Public Health (Understanding the World)

ENGL 212 Shakespeare (Understanding Our Cultures and Histories)

MATH 101 Calculus and Analytic Geometry I (Our Quantitative Reasoning)

MATH 201 Calculus and Analytic Geometry III (Our Quantitative Reasoning)

MATH 203 Mathematics for the Social Sciences I(Our Quantitative Reasoning)

MATH 219 Linear Algebra (Our Quantitative Reasoning)

PHIL 213 Ancient and Medieval Philosophy (Understanding Our Cultures and Histories and Greek Studies)

STAT 201 Elementary Statistics for the Social Sciences(Our Quantitative Reasoning)

STAT 230 Introduction to Probability and Random Variables(Our Quantitative Reasoning)

Fall Courses Offered by Other Programs

CMPS 200 Introduction to Programming (Our Quantitative Reasoning)

CMPS 211 Discrete Structures (Our Quantitative Reasoning)

ECON 203 Survey of Economics (Understanding Societies and Individuals)

ECON 211 Elementary Microeconomic Theory (Understanding Societies and Individuals)

PHIL 201 Introduction to Philosophy (Understanding Our Cultures and Histories)
PHIL 210 Ethics (Understanding Our Values)
PHIL 211 Introduction to Logic (Our Quantitative Reasoning)
PSPA 201 Introduction to Politics (Understanding Societies and Individuals)
PSPA 210 Introduction to Political Thought (Understanding Our Cultures and Histories)
PPE 2 Economic Justice (Understanding Societies and Individuals)
PPE 4 Political Economy (Understanding Societies and Individuals)
PSYCH 201 Introduction to Psychology (Understanding Societies and Individuals)

Spring Courses Offered by ILA
Arab 204 Beginner Arabic II (Understanding Our Communication)
CHEM 203 Introductory Chemical Techniques (Understanding the World)
CVSP 202 Medieval, Islamic and Renaissance Civilizations (Understanding Our Cultures and Histories)
CVSP 204 Contemporary Studies (Understanding Our Cultures and Histories)
ENGL 242B The Illiad (Understanding Our Cultures and Histories and Greek Studies)
ENGL 204 Advanced Academic English (Understanding Our Communication)
HIST 243 History of the Arab East and Egypt in the 20th Century (Understanding Our Cultures and Histories)
HPCH 205 Introduction to Public Health (Understanding the World)
MATH 102 Calculus and Linear Algebra II (Our Quantitative Reasoning)
MATH 202 Differential Equations (Our Quantitative Reasoning)
MATH 204 Mathematics for the Social Sciences II (Our Quantitative Reasoning)

Courses and Course Descriptions

Our Understanding of Communication

ARAB 203 Beginners' Arabic as a Foreign Language I   **6 ECTS**
This course introduces students who have no previous knowledge of Arabic to the Arabic language and culture within its Lebanese setting. The course utilizes an integrated approach to Arabic and emphasizes communicative tasks and contexts. By the end of the course, students will be able to speak and write simple connected sentences about themselves, their families and their immediate environment, and read and listen to short authentic texts.

ARAB 204 Beginners' Arabic as a Foreign Language II   **6 ECTS**
A continuation of ARAB 203. By the end of this course, students reach Intermediate-Low to Intermediate-Mid proficiency in Arabic on the ACTFL scale. *Prerequisite: ARAB 203 or placement after testing.*

ENGL 203 Academic English   **6 ECTS**
A course designed to develop critical thinking, reading, and writing at the undergraduate level. Students compose essays based on their analysis of and response to thematic articles presented in class.

ENGL 204 Advanced Academic English   **6 ECTS**

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: ENGL 203. This course does not count toward graduation for students in MSFEA.

ENGL 206 Technical English   **6 ECTS**

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: ENGL 203. *For students in MSFEA only.*

Our Quantitative Reasoning

MATH 101 Calculus and Analytic Geometry I   **6 ECTS**

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. *MATH 101 may be taken for credit after a student has passed MATH 203. MATH 203 may not be taken for credit after a student has passed MATH 101.*

MATH 102 Calculus and Analytic Geometry II   **6 ECTS**

Techniques of integration, improper integrals, polar coordinates, conic sections, analytic geometry in space, parametric equations, and vector functions and their derivatives. *Prerequisite: MATH 101.*

MATH 201 Calculus and Analytic Geometry III   **6 ECTS**

Sequences and series, Taylor approximation, Multivariable functions, partial derivatives, multiple integrals, cylindrical and spherical coordinates, and integration along curves. *Prerequisite: MATH 102.*

MATH 202 Differential Equations   **6 ECTS**

Integration of vector fields along curves and on surfaces, Green's theorem, Stokes's theorem, divergence theorem; first-order differential equations, linear differential equations, series solutions, Bessel's and Legendre's functions, the Laplace transform, and systems of differential equations. *Prerequisite: MATH 201.*

MATH 203 Mathematics for Social Sciences I   **6 ECTS**

Mathematical notations and basic notions; properties of real numbers; factoring polynomials; functions and their graphs; straight lines and parabolas and their equations; Gaussian elimination; exponential and logarithmic functions; limits and continuity; basic differential calculus. *Not open to students with prior credit in MATH 101 (or its equivalent) or MATH 201. MATH 101 may be taken for credit after a student has passed MATH 203. MATH 203 may not be taken for credit after a student has passed MATH 101.*

MATH 204 Mathematics for Social Sciences II   **6 ECTS**

Matrix operations, inverses and determinants; elementary combinatorics; introduction to probability; random variables; binomial, normal and Poisson distributions; basic integral calculus; introduction to differential equations; partial derivatives and extremal points of multivariable functions. *Prerequisite: MATH 101 or MATH 203.*

MATH 218 Elementary Linear Algebra with Applications   **6 ECTS**

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.*

MATH 219 Linear Algebra I   **6 ECTS**
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.*

MATH 251 Numerical Computing   **6 ECTS**
Computer number representations and round-off errors; Basic techniques in numerical analysis: root finding; Gauss elimination and PLU decomposition; polynomial and spline interpolation; differentiation and integration, Richardson extrapolation; solving initial value problems for ordinary differential equations and systems of differential equations. Implementations and analysis of algorithms are stressed. Projects using MATLAB or similar tools are assigned. *Prerequisites: CS 200 or EECE 230 or EECE 231, and MATH 201. Prerequisite or Co-requisite: MATH 218. Students cannot receive credit for both MATH 251 and CS 251.*

STAT 201 Elementary Statistics for the Social Sciences   **6 ECTS**
Data organization and frequency distributions; measures of central tendency and dispersion; probability and random variables; binomial and normal distributions; estimation, and hypothesis testing.

STAT 230 Introduction to Probability and Random Variables   **6 ECTS**
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; mixture of distributions; covariance and correlation, independent random samples and the central limit theorem; basics of point and interval estimation and hypothesis testing. *Prerequisite: MATH 201. Students who complete STAT 230 cannot receive credit for STAT 201.*

Understanding the World

BIOL 201 General Biology I   **6 ECTS**
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.

BIOL 210 Human Biology   **6 ECTS**
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.

CHEM 201 Chemical Principles   **6 ECTS**
A theoretical introduction to chemical principles, stressing atomic structure, bonding, stoichiometry, gases, solutions, acids and bases, solution equilibria.

CHEM 202 Introduction to Environmental Chemistry   **6 ECTS**
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.

CHEM 203 Introductory Chemical Techniques   **4 ECTS**

A laboratory course on the methods of quantitative analysis, physical chemistry measurements, and inorganic semi-micro qualitative analysis, with applications to environmental problems. Pre- or corequisite: CHEM 201 or CHEM 202.

HPCH 205 Introduction to Public Health — 6 ECTS

An introductory course intended to introduce undergraduate students to the basic concepts, disciplines, principles of public health, and how public health functions and integrates other professions. Students learn how to link biological, physical and socio- political factors to health and illness, situated at individual, community, institutional and global levels through interactive lectures and consequent application sessions. Examples and case studies of contemporary health challenges and interventions from the world and particularly the Arab region will be used.

PHYS 210 Introductory Physics II — 6 ECTS

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.*

PHYS 210L Introductory Physics Laboratory II — 2 ECTS

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.*

Understanding Our Cultures and Histories

CVSP 201 Ancient Near East and Classical Civilizations — 6 ECTS

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 202 Medieval, Islamic, and Renaissance Civilizations — 6 ECTS

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 203 Enlightenment and Modernity — 6 ECTS

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 204 Contemporary Studies — 6 ECTS

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 207 Ancient, Medieval, and Renaissance Civilizations (Thematic)   **6 ECTS**
Individualized courses designed to explore the periods covered in CVSP 201 and 202, utilizing a
thematic approach. Examples of themes that will be explored include: 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.

CVSP 208 Modern and Contemporary Studies (Thematic)   **6 ECTS**
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.

ENGL 212 Shakespeare   **6 ECTS**
A course that covers representative plays by Shakespeare, with attention to form, cultural context,
and theatrical practice. Attention may be given to Shakespeare's poetry, adaptation and reception,
and Mediterranean connections. Readings may vary from term to term. Prerequisite: ENGL 203.

ENGL 242B The Iliad   **6 ECTS**
In this course students study the Iliad in its entirety, in conjunction with representative critical and
creative responses. Attention is given to the mythological, linguistic, poetic, and material
backgrounds to Greek epic and the role of Homeric poetry in later Greek and world culture.
Prerequisite: ENGL 203.

HIST 243 History of the Arab East and Egypt Since 1920   **6 ECTS**
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.

PHIL 213 History of Ancient and Medieval Philosophy   **6 ECTS**
A survey of ancient and medieval philosophy from the pre-Socratics to Aquinas.

Understanding Societies and Individuals

QUAL 201 Qualitative Research Methods in Social/Political Sciences and Humanities   **6 ECTS**
The course introduces qualitative research methods commonly used in the Social-Political Sciences
and Humanities. A wide range of qualitative methods will be covered in the course and students will
then be able to apply these to specific disciplines. Topics covered in the course include: concept and
research question formation, research strategies and tools, such as literature review, textual
analysis, interviewing, participant observation and ethnographic research, content/discourse
analysis, oral history and biography, archival research, as well as issues of research funding,
visualization and the politics and ethics of qualitative research.

Understanding Our Role in the World

CECS 200 Community-based Learning   **6 ECTS**
This course provides students with a community-based learning experience conducted in the form of
a tutorial. The student is supervised by a faculty member to conduct a project that identifies a need
in the community and develops an approach to address that need. Supervised projects can be
completed over the course of a whole regular semester or in a more condensed format during the
winter or summer terms.

Department of Computer Science

Mission Statement

The Department of Computer Science at the American University of Beirut prepares students for advanced studies and professional careers in the dynamically changing world of computing and information technology. Our program combines the theoretical foundations of computing with the practical knowledge of software development vital to industry, to provide broad and integrated curriculums.

The department offers a Bachelor of Science (BS) degree in computer science, designed to be completed typically in four years.

The department has vigorous research programs in graphics and multimedia, networking and security, machine learning and data science, high-performance computing, data mining and information retrieval, and software engineering. Our faculty members are committed to contributing to the advancement of the field of computing through   scholarly activities, in which our students play a vital role.

Bachelor of Science in Computer Science

The Bachelor of Science program aims at imparting graduates with a solid foundation in computing at both the theoretical and practical levels, thus conferring the ability to design, build, and deploy sophisticated systems using state-of-the-art technologies in a broad array of areas. It also develops 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, algorithmic, computability, calculus, and logic) for analysis and problem solving, and disciplined development of modern software systems. The BS program adheres to ACM's (Association of Computing Machinery) standards for knowledge areas learning outcomes.

Degree Requirements

To graduate with a Bachelor of Science in computer science, a student must complete the following requirements:

University General Education Requirements

The General Education requirements are the following:

- English Communication Skills (12 ECTS), Arabic Communication Skills (12 ECTS)
- Quantitative Reasoning (6 ECTS)
- Understanding the World (12 ECTS)
- Understanding Our Cultures and Histories (24 ECTS)
- Understanding Our Thinking, Learning and Doing (12 ECTS)
- Understanding Our Role in The World (12 ECTS)

Major Requirements

Computer science: CMPS 201, CMPS 202, CMPS 211, CMPS 214, CMPS 215, CMPS 261, CMPS 221, CMPS 231, CMPS 240, CMPS 242, CMPS 244, CMPS 261, CMPS 270, CMPS 271, CMPS 290 and 36 additional ECTS in computer science courses numbered 214 and above.

Technical electives: 6 ECTS to be chosen from the following:

- CS elective numbered 214 or above,
- PSYC 222, PSYC 229,
- Mathematics: MATH 101 (Calculus I), MATH 102 (Calculus II), MATH 201 (Calculus III), MATH 218 (Linear Algebra and Differential Equations), STAT 230 (Probability & Statistics)

All prospective computer science majors are expected to complete CMPS 201, CMPS 202, CMPS 211, and MATH 101, Math 102, Math 218 in the first year. Computer science majors are expected to maintain an average grade of at least 2.2 in computer science courses. Students must have a grade of at least C+ in CMPS 201, and a grade of at least C+ in CMPS 202 before they are allowed to enroll in most CS courses.

Sample Study Plan for BS

A typical study plan could have the following distribution of CS courses:

First Year

· Fall term: CMPS 201, CMPS 211, MATH 101, ENG, GE

· Spring term: CMPS 202, MATH 102, MATH 218, ENG, GE

Second Year

· Fall term: CMPS 214, CMPS 221, CMPS 270, MATH 201, GE

· Spring term: CMPS 231, CMPS 244, CMPS 271, STAT 230, GE

Third Year

· Fall term: CMPS 215, CMPS 240, CMPS 261, GE, GE

· Spring term: CMPS 242, CS elective, CS elective, GE, GE

Fourth Year

· Fall term: CMPS 290, CS elective, CS elective, GE, GE

· Spring term: CS elective, CS elective, TECH elective, GE, GE

Courses and Course Descriptions

CMPS 201 Introduction to Programming   **6 ECTS**
This course introduces students to programming and computational thinking. A high- level programming language is used. Students will learn the principles of imperative and object-oriented programming in addition to basic data types, flow control (repetition and selection constructs), procedures and functions, parameter passing, scoping, recursion, arrays, and classes. Students are briefly introduced to simple algorithms and data structures.

CMPS 202 Intermediate Programming with Data Structures   **6 ECTS**
This course consolidates algorithm design and programming techniques, with an emphasis on abstract data types. The course introduces students to the design, analysis, and implementation of data structures as well as some of the key algorithms operating them. Topics include lists, stacks, queues, deques, sets/maps, search trees (binary search trees and AVL trees), heaps/priority queues (heap sort), hash tables, and graphs (breadth-first search and depth-first search). Prerequisite: a grade of at least C+ in CMPS 201. *Every term.*

CMPS 203 Programming for Everyone   **6 ECTS**

This course is designed for students with no prior exposure to computer science or programming. It aims to help students, regardless of their major, to feel justifiably confident of their ability to write small programs that allow them to accomplish useful goals. To this end, it provides students with a brief introduction to many topics in computer science so they will have an idea of what is possible when they need to think about how to use computation to accomplish some goals later in their career. The course will use the Python programming language. Not open to computer science students.

CMPS 208 Computing for Business   **6 ECTS**

This course introduces Excel as a computer tool to plan, create, and use spreadsheets to formulate and solve business problems. It exposes students to a wide coverage of spreadsheet topics from introductory concepts such as problem formulation, writing formulas and functions, charting, grouping, and error prevention to more powerful and advanced features such as pivot tables, and analysis needed in decision-making. In addition, it boosts students' ability to collect, analyze, and forecast business and financial data to generate valuable insights. The course offers students an opportunity to apply skills in a laboratory environment in which they can experiment using Excel business problems designed for some selected topics. It provides the tools to perform modeling, calculations, analysis of various phenomena encountered in other courses such as finance, operations management, human resources, etc.

CMPS 211 Discrete Structures   **6 ECTS**

This course introduces students to discrete structures, focusing on those relevant to computing sciences. Topics covered include Logic and Proofs, Sets, Sequences, Functions, Growth of Functions, Algorithms and their complexities, Induction and Recursion, Counting, and Recurrence Relations. *Every term.*

CMPS 214 Algorithms and Data Structures   **6 ECTS**

This course introduces systematic methods for the design and (asymptotic) analysis of advanced algorithms and data structures. Topics include searching, sorting, order statistics, divide-and-conquer, greedy algorithms, dynamic programming, multi- threaded algorithms, matrix algorithms, as well as (advanced) graph algorithms. Several data structures are also studied such as red-black trees, binomial heaps, Fibonacci heaps, and suffix trees. *Prerequisites: CMPS 211 and a grade of at least C+ in CMPS 202. Annually.*

CMPS 215 Theory of Computation   **6 ECTS**

A course that covers basics of automata and language theory, computation theory, and complexity theory. Topics include regular expressions, finite automata, context-free grammars and parsing, push down automata, closure properties, Turing machines, Church's thesis, reductions and decidability, time complexity and NP-completeness, space complexity, polynomial-space and log-space computations, circuit complexity, probabilistic computations and complexity classes, approximation algorithms, and selected topics as time permits. *Prerequisites: CMPS 214. Annually.*

CMPS 216 Algorithmic Graph Theory   **6 ECTS**

This course explores algorithmic graph theory by visiting some of its core theorems, key problems, and efficient algorithms and tools. The main goal is to systematically present essential results for the design of graph algorithms. Mathematical properties of graphs will be used in developing new algorithms and showing that these algorithms work correctly and efficiently. The course assumes no prior knowledge of graphs but requires that students have "mathematical maturity" (e.g., are comfortable with proofs and abstract reasoning). Some of the topics that will be covered include

fundamentals of graphs, connectivity, matching, covering, planarity, sparsity, coloring, and network flows. *Prerequisites: CMPS 214. Annually.*

CMPS 217 Advanced Design and Analysis of Algorithms   **6 ECTS**
This course studies advanced data structures and algorithms, with an emphasis on the design of efficient algorithms. It surveys many of the techniques that apply broadly in the design of efficient algorithms, and studies their application in a wide range of domains and computational models. The goal is for the class to be broad rather than deep and to touch upon the following areas: data structures, bit tricks, string algorithms, maximum flows, linear programming, online algorithms, approximation algorithms, fixed-parameter algorithms, parallel algorithms, external-memory algorithms, computational geometry, and streaming algorithms. This is a tentative list of topics that might be covered; some material will be selected adaptively based on the background, interests, and rate of progress of the students. *Prerequisites: CMPS 215. Annually.*

CMPS 221 Computer Organization and Design   **6 ECTS**
This course covers the fundamentals of computer architecture with a focus on single- core processor design. Topics include: digital logic design, combinational and sequential logic, hardware for computer arithmetic, floating point arithmetic, assembly programming, instruction set architecture, datapath design, pipelining and pipeline hazards, memory organization, cache design, and virtual memory. *Prerequisites: CMPS 211 and a grade of at least C+ in CMPS 202. Annually.*

CMPS 224 GPU Computing   **6 ECTS**
This course covers parallel computing in the context of processors with many computational cores, with particular emphasis on data parallelism and general purpose GPU programming. The course introduces the CUDA programming model as well as the GPU architecture and memory organization. The course then covers mapping algorithms to parallel hardware and common optimizations for parallel code using numerous parallel patterns and applications case studies, such as: vector addition, matrix multiplication, convolution, stencil computation, histogram, reduction, prefix-sum, ordered merge, sorting, sparse matrix computation, graph traversal, and others. The course also covers a selection of advanced parallel programming practices. *Prerequisites: CMPS 221. Annually.*

CMPS 231 Programming Languages   **6 ECTS**
This course covers the fundamentals of programming language design and implementation. The course introduces functional programming and examines the language design principles underlying functional, imperative, and object-oriented languages. Type systems are also introduced. The course also covers the initial stages of programming language implementation, including lexing, parsing, and semantic analysis. *Prerequisite: a grade of at least C+ in CMPS 202. Annually.*

CMPS 232 Compiler Construction   **6 ECTS**
This course covers the design and implementation of optimizing compilers starting from source code representation down to machine code. Topics include intermediate representations, linkage and storage conventions, intermediate code generation for imperative and object-oriented languages with polymorphism, global dataflow analysis and the iterative dataflow algorithm, local and global optimizations, backend code generation, and register allocation. *Prerequisites: CMPS 221 and CMPS 231. Annually.*

CMPS 240 Operating Systems   **6 ECTS**
This course provides an introduction to the fundamentals of operating system function, design, and implementation. It contains a theory component illustrating the concepts and principles that underlie modern operating systems and a practice component to relate theoretical principles with operating system implementation. The course is divided   into three major parts. The first part of

the course discusses concurrency (processes, threads, scheduling, synchronization, and deadlocks). The second part of the course discusses memory management (memory management strategies and virtual memory management). The third part of the course concerns file systems, including topics such as secondary storage systems and I/O systems. If time permits, the following topics will be briefly examined: Virtualization, security, distributed synchronization, and perhaps other topics. A case study of a contemporary operating system like UNIX accompanies the course. *Prerequisite: CMPS 221. Annually.*

CMPS 241 Systems and Network Programming **6 ECTS**
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 programing 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 240. Annually.*

CMPS 242 Computer Networks **6 ECTS**
An introduction to network architectures and protocols, placing emphasis on Internet design principles and methodology. Specific topics include application layer protocols, network programming, transport protocols, circuit switching and packet switching, routing algorithms, multicast, local and wide area networks, error detection and correction, and performance evaluation. *Prerequisite: CMPS 221. Annually.*

CMPS 243 Computer and Information Security **6 ECTS**
This course introduces students to the world of information and computer security. Students will be exposed to various security vulnerabilities of computing and networking systems and learn their fundamental aspects such as cryptography, user authentication, access control principles, trusted computing & multilevel Security, database security, SQL injection attacks, malicious software, worms, malwares, viruses, denial-of-service attacks, intrusion detection and prevention systems, firewalls etc. Also, other topics related to operating system security, web security, wireless security, and Internet security are covered as time permits. The course will examine causes of security breaches and give methods to help prevent them. *Prerequisite: a grade of at least C+ in CMPS 202 and senior standing.*

CMPS 244 Database System **6 ECTS**
This course covers the fundamental concepts of database systems. Topics include data modeling using the Entity-Relationship model and the Relation model; query languages including relational algebra and SQL; File Organization and Indexing; Normalization; database programming; and noSQL databases. The course is offered in blended-format and includes a term project. *Prerequisite: a grade of at least C+ in CMPS 201 and junior standing. Annually.*

CMPS 245 Information Retrieval and Web Search **6 ECTS**
This course introduces graduate-level students to the basics of information retrieval, and the models and algorithms underlying modern search engines. Topics covered include: crawling; indexing; Boolean and vector space retrieval models; probabilistic information retrieval models; language models; top-k query processing; evaluation of information retrieval systems; relevance feedback; link analysis; latent semantic analysis; and information extraction*. Prerequisite: Senior standing. Annually.*

CMPS 246 Distributed Systems 6 ECTS

A distributed system consists of a set of nodes located at networked computers and communicate only by passing messages. This course provides techniques to abstract, design and implement efficient, scalable, and fault-tolerant distributed systems. Topics include, but not limited to, inter-process communication, distributed synchronization and consensus (e.g., paxos, blockchain), fault-tolerance, distributed file systems (e.g., HDFS), and Hadoop ecosystem. *Prerequisite: CMPS 240. Annually.*

CMPS 247 Advanced Networking Topics 6 ECTS

This course focuses on the current, advanced, and emerging topics in networking. It aims to make the students familiar with the state of the art in networking topics and enhance their skills in network programming and simulations. Lectures will cover topics that include but not limited to socket programming, multicasting, quality of service, IPv6 based networks, Voice Over IP and Internet telephony, software defined networks, network function virtualization, data centers, wireless and mobile networking architectures and technologies (MANET, LTE, 5G). Due to time limitations, some topics might be covered through student presentations. *Prerequisite: CMPS 242. Annually.*

CMPS 251 Numerical Computing 6 ECTS

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: a grade of at least C+ in CMPS 201, and MATH 201. Annually.*

CMPS 261 Machine Learning 6 ECTS

This course covers Machine Learning theory, algorithms, and applications. Machine Learning is currently at the heart of Artificial Intelligence. It enables computational systems to adaptively improve their performance with experience accumulated from the observed data. This course balances theory and practice and covers the mathematical as well as the heuristic aspects. It also covers the latest trends in Machine Learning such as deep learning. *Prerequisites: a grade of at least C+ in CMPS 201, STAT 230, and MATH 218.*

CMPS 262 Data Science 6 ECTS

This course introduces foundational elements comprising the data science pipeline. It covers techniques in data acquisition, cleaning, and preparation for machine learning, basic applied machine learning techniques spanning distance-based algorithms, rule based algorithms, and black box algorithms, basic statistics for machine learning (descriptive, inferential, and estimation statistics), basic time series analysis and forecasting techniques, data production techniques using knitr and rmarkdown, and machine learning interpretability using SHAP. The course is delivered using both the R and Python programming languages. *Prerequisites: a grade of at least C+ in CMPS 201, STAT 230.*

CMPS 263 Advanced Machine Learning 6 ECTS

This course focuses on Deep Learning and its applications. Deep Learning has revolutionized the field of Machine Learning and has turned Artificial Intelligence from a research endeavor into an actual reality. In this course, you will learn about the fundamentals of Deep learning, and how to build Deep Learning models for various real-world applications, particularly in Computer Vision and Natural Language Processing. *Prerequisites: CMPS 261.*

CMPS 270 Software Construction   6 ECTS

Software Construction provides methods, tools and techniques to develop, modify and maintain complex and efficient software systems. Topics include object-oriented design; specifications and invariants; abstract data types, testing, design patterns, concurrency; version control and event driven programming. *Prerequisite: a grade of at least C+ in CMPS 202.*

CMPS 271 Software Engineering   6 ECTS

This course introduces practical industry-standard software engineering best practices to students that have already written moderate sized software. Students are exposed to full development lifecycle methodologies, choosing the right SDLC, requirements management, software design, design patterns, testing. A group term project provides a holistic hands-on experience building an end-to-end software application using agile principles and emulating a real-world environment often for real clients with real needs. Other topics covered include working in a team, professionalism, project management, and ethics. *Prerequisite: CMPS 270. Annually.*

CMPS 272 Advanced Software Engineering   6 ECTS

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 271. Annually.*

CMPS 275 Mobile Application Development   6 ECTS

This course introduces to students the world of mobile applications development from a software engineering perspective. Students will learn the importance of a good design for a mobile application, in addition to being able to write a basic to intermediate mobile application. The course includes many software design patterns and user interface design patterns. Students will learn how to collect, store, and present data in a mobile application, in addition to using the different exciting features of a mobile such as locations, graphics, cameras, and other features. *Prerequisite: a grade of at least C+ in CMPS 202. Annually.*

CMPS 278 Web Programming and Design   6 ECTS

This course introduces the fundamentals needed to program on the Internet as well as 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 and their associated cascading style sheets, several client side and server side scripting languages (such as PHP and JavaScript, Angular, and Nodes) in addition to AJAX-enabled rich Internet applications, client-side technologies, web services, Web Servers, and multi- tiered applications using relational database systems. *Prerequisite: a grade of at least C+ in CMPS 202. Annually.*

CMPS 280 Digital Media Programming   6 ECTS

The class is an introduction to digital media programming and processing. The course explains the essential technology behind images, animations, sound, and video and illustrates 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: a grade of at least C+ in CMPS 201.*

CMPS 282 Game Programming   6 ECTS

This course introduces students to game programming using state of the art technologies. The course covers both theoretical backgrounds and implementation details of different components of

games. Topics covered will be the physical control of a game character, interactions between objects, inventory, HUD, and AI. *Prerequisite: a grade of at least C+ in CMPS 202. Annually.*

CMPS 285 Computer Graphics   **6 ECTS**

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: a grade of at least C+ in CMPS 202. Annually.*

CMPS 290 Internship   **2–6 ECTS**

Computer Science students are expected to work eight full weeks at a recognized firm, in Cyprus or abroad. Internships promote the student's personal development and professional preparation and enable them to develop competencies expected of professionals working in business, government or the broader community. *Prerequisite: Senior standing.*

CMPS 296 Computer Science Tutorial   **2–6 ECTS**

Prerequisite: Senior standing.

CMPS 297 Special Topics in Computer Science   **2–6 ECTS**

A course on selected topics which change according to the interests of instructor 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 Capstone Project   **6 ECTS**

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: senior standing.*

PROGRAM OF STUDY FOR A BACHELOR OF SCIENCE IN COMPUTER SCIENCE			
MAJOR REQUIREMENTS			
COURSE	**or**	**Course Name**	**ECTS**
CMPS 201		Introduction to Programming	6
CMPS 202		Intermediate Programming with Data Structures	6
CMPS 211		Discrete Structures	6
CMPS 214		Algorithms and Data Structures	6
CMPS 215		Theory of Computation	6
CMPS 221		Computer Organization and Design	6
CMPS 231		Programming Languages	6
CMPS 240		Operating Systems	6
CMPS 242		Computer Networks	6
CMPS 244		Database Systems	6
CMPS 261		Machine learning	6
CMPS 270		Software Construction	6

CMPS 271		Software Engineering	6
CMPS 290		Internship	6
CS ELECT. 1			6
CS ELECT. 2			6
CS ELECT. 3			6
CS ELECT. 4			6
CS ELECT. 5			6
CS ELECT. 6			6
Total Credits in CS:			**120**
REQUIRED MATH/STAT COURSES			
Math 102		Calculus II	6
Math 201		Calculus III	6
Math 218		Linear Algebra & Diff. Eq.	6
STAT 230		Prob. & Statistics	6
Total Credits:			**24**
REQUIRED TECHNICAL ELECTIVE COURSES:			
TECH ELECT 1			6
Total Credits:			**6**
GENERAL EDUCATION COURSES			
Arabic Communication Skills			6
Arabic Communication Skills			6
English Communication Skills			6
English Communication Skills			6
Citizen Science			6
Public Health			6
Understanding Our Cultures and Histories			6
Understanding Our Cultures and Histories			6
Understanding Our Cultures and Histories			6
Understanding Our Cultures and Histories			6
Understanding Our Thinking, Learning and Doing			6
Understanding Our Thinking, Learning and Doing			6
Understanding Our Values			6
Understanding Our Engagement			6
Quantitative Reasoning : Math 101			6
Total Credits:			**90**
TOTAL CREDITS NEEDED for GRADUATION			**240**

Department of Psychology

Mission Statement

The discipline of psychology is dedicated to increasing the scientific understanding of behaviour 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 Department of 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.

BS in Psychology

1. Argue that psychology is an empirical science that seamlessly connects with other social and natural sciences and that it can be clearly delineated from pseudoscience and pop psychology.
2. Demonstrate an attitude of critical thinking and objectivity with psychological knowledge, in contexts and towards authority.
3. Demonstrate research skills in research design and validity, data analysis and interpretation, data reporting, and applied ethical standards.
4. Explain substantive content in key fields of psychology including social and personality psychology, development and abnormal psychology, learning and cognition, as well as perceptual psychology and neuroscience.
5. Effectively and fluently communicate psychological content in an oral presentation format and in writing (includes use of the Style Manual of the American Psychological Association).
6. Apply psychological concepts, theories, and research findings in daily life and to solve problems.

These learning outcomes align with the European qualification framework.

PROGRAM REQUIREMENTS	ECTS
Compulsory courses	102
Elective courses (a) Courses per concentration (b) General education courses / Free electives	48 90
Undergraduate / Postgraduate assignment	240/0
Practical training	0
Total ECTS	**240**

1. Compulsory Psychology Courses (102 ECTS):

   ▪ Core Courses: (54 ETCS):

- ▪ Introduction to Psychology (201)
- ▪ History and System of Psychology (280)
- ▪ Research Design in Psychology (282)
- ▪ Statistical Analysis in Psychology (284)
- ▪ Undergraduate Seminar in Psychology (288)
- ▪ Undergraduate Research Project in Psychology (290) (24 ECTS)
  - Category 1 (24 ECTS):
    - ▪ Lifespan Developmental Psychology (210)
    - ▪ Social Psychology (212)
    - ▪ Abnormal Psychology (214)
    - ▪ Personality Psychology (216)
  - Category 2 (24 ECTS):
    - ▪ Psychology of Learning and Behavior (220)
    - ▪ Behavioral Neuroscience (222)
    - ▪ Sensation and Perception (224)
    - ▪ Cognitive Psychology (226)

2. Elective Psychology Courses (48 ECTS)

- ▪ Cognitive Neuroscience (229)
- ▪ Clinical Psychology (230)
- ▪ Positive Psychology (234)
- ▪ Political Psychology (235)
- ▪ Introduction to Cognitive Science (237)
- ▪ Psychology of Trauma (239)
- ▪ Special Topics in Psychology (240) – multiple courses across instructor specialties
  - Applied Behavioral Analysis
  - Industrial Psychology
  - Psychology of Gender
- ▪ Programming for Experimental Psychology (241)

3. Compulsory General Education Requirements (90/24 ECTS):

- ▪ Introduction to Statistics
- ▪ Introduction to Programming
- ▪ General Biology
- ▪ Introduction to Philosophy

Courses and Course Descriptions

PSYC 201 Introduction to Psychological Science   **6 ECTS**

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

PSYC 210 Lifespan Developmental Psychology   **6 ECTS**

The course provides an introduction to various aspects of human development. It teaches biological, cognitive and psychosocial aspects of human development through the lifespan. Particular attention is paid to the role of nature and nurture in human development. The emphasis is placed on empirical research and current advances in the field of study of human development. *Prerequisite PSYC 201*

PSYC 212 Social Psychology   **6 ECTS**

The aims of the course include introducing students to the field of social psychology, its key concepts and methodologies. Furthermore, students will be developing their presentation, essay writing and research skills.

The course objectives are:

1. Introduce the main theories, concepts, and issues in social psychology
2. Apply social psychological insights to contemporary social problems
3. Critically evaluate contemporary social psychological research
4. Understand the limitations of hegemonic approaches to social psychological science
5. Explore the impact of context and culture on social behavior

Prerequisite PSYC 201

PSYC 214 Abnormal Psychology   **6 ECTS**

This course will cover the major theories and controversies around the concept of abnormal behavior, its assessment and diagnosis. We will cover most of the psychological disorders seen in adulthood, their symptomatology, causal theories, risk factors and treatments. *Prerequisite PSYC 201*

PSYC 216 Personality Psychology   **6 ECTS**

This course examines contemporary personality theories, methods and applications. Classic theories of personality are discussed within the context of current evidence, with particular emphasis on trait approach, evolutionary, social, cross-cultural, and cognitive approaches to personality and individual differences. *Prerequisite PSYC 201*

PSYC 220 Psychology of Learning and Behavior   **6 ECTS**

This course investigates the principles of learning and behavior. The psychology of learning, or behavioral psychology, is not to be confused with educational psychology. This course introduces you to the psychology of learning by examining the classical and operant (instrumental) conditioning paradigms, both from an experimental and an applied perspective. *Prerequisite PSYC 201*

PSYC 222 Behavioral Neuroscience   **6 ECTS**

This course is designed to introduce the student to the field of behavioral neuroscience, its key concepts, theories and methodologies. *Prerequisite PSYC 201*

PSYC 224 Sensation and Perception   **6 ECTS**

This course introduces students to the physiology and mechanisms of human vision, hearing and smell, with an emphasis on vision and hearing. Students will learn how external stimuli (light, sound, odors), are encoded by sensory receptors and transformed into perceptual experiences. The course will cover the physiology of sensory organs, neural pathways, and perceptual phenomena from everyday life (e.g., illusions, adaptation), that illuminate how sensory input is represented in the

brain. The course will also cover methods used to measure and quantify human perception and performance (e.g., psychophysics, signal detection theory). *Prerequisite PSYC 201*

PSYC 226 Cognitive Psychology **6 ECTS**

This course introduces students to theory and research on human cognition, including perception, attention, memory, language, reasoning and problem solving. Students will learn how sensory input and complex events are represented and stored in the brain, and how this information is used in everyday behavior. *Prerequisite PSYC 201*

PSYC 229 Cognitive Neuroscience **6 ECTS**

This course is designed to give students in-depth exposure to the various developments, theories and research methods in cognitive neuroscience. The emphasis of the course is on the systems level. Each week, students are to examine the neural underpinnings of a broad class of mental processes and put them into the larger context of the psychological sciences. *Prerequisite PSYC 201*

PSYC 230 Clinical Psychology **6 ECTS**

This course will provide a comprehensive overview of the professional field of clinical psychology, including primarily, the psychologist's tasks of assessment and treatment. Various tools for diagnosis and approaches to psychotherapy will be examined. Current issues in the field including ethical dilemmas, training practices, evidence-based psychotherapy and specialties will also be reviewed. *Prerequisite PSYC 201, PSYC 214 or 215*

PSYC 234 Positive Psychology **6 ECTS**

The course aims to bring positive psychology to life for you by addressing the key theory, research and applications in this field. Positive psychology is a science of positive individual traits and subjective experiences promising to prevent pathologies and enhance humans' quality of life. The primary focus is on what makes life meaningful and worth living. Key areas that are studied are courage, wisdom, hope, creativity, future mindedness, happiness, empathy and spirituality. These form the factors that further allow humans, communities and societies to flourish. *Prerequisite PSYC 201*

PSYC 235 Political Psychology **6 ECTS**

The aims of the course include introducing students to the field of political psychology, its key concepts and methodologies. Furthermore, students will be developing their presentation, essay writing and research skills. *Prerequisite PSYC 201*

PSYC 237 Introduction to Cognitive Science **6 ECTS**

Cognitive science is the study of human and artificial intelligence, from perception and action to language, reasoning and consciousness. The field draws on diverse disciplines including psychology, linguistics, computer science, neuroscience and philosophy. These sub-disciplines share the goal of "understanding the representational and computational capacities of the mind, and their structural and functional representation in the brain" (Sloan Report, 1978). In this course, we will examine the contributions of these disciplines toward understanding various aspects of cognition and trace the development of the field from its origins to the present. *Prerequisite PSYC 201*

PSYC 239 Psychology of Trauma **6 ECTS**

This course is aimed at gaining an in-depth understanding of the impact of various types of trauma including developmental trauma, torture and imprisonment, domestic violence, war trauma, and single incident traumas such as natural disasters, accidents or sudden losses. We will discuss several theories of trauma that explain the experience cognitively, neurologically, emotionally and

physiologically. The course will also cover the socio-political considerations of trauma as well as resilience, recovery and post-traumatic growth. *Prerequisite PSYC 201*

PSYC 240 Special Topics in Psychology   **6 ECTS**
This course provides an in-depth understanding of a topic within a subdomain of psychology (e.g., Applied Behavioral Analysis, Industrial Psychology, Psychology of Religion, Sensory Plasticity and Perceptual Learning). Topics depend on instructor specialty, and course offerings vary across terms. See next syllabus (240A) for example. *Prerequisite PSYC 201*

PSYC 238 Applied Behavioral Analysis   **6 ECTS**
This course introduces students to Applied Behavior Analysis (ABA). ABA is an area in behavioral psychology concerned with applications of behavioral principles, such as reinforcement and shaping, to a wide range of socially and/or clinically important problems. Research has shown that ABA is one of the most effective treatments in autism intervention. It is also effective in educational settings, business domains (e.g., Organizational Behavior Management), and self-management and self-control matters, to name a few. This course examines these and other basic topics covered in ABA. *Prerequisite PSYC 201*

PSYC 240B Industrial & Organizational Psychology   **6 ECTS**
This course is designed to provide an overview of I/O Psychology including individual, group, and organizational issues resulting in enhanced understanding of the world of business and related career concerns. Prerequisite: PSY 201Industrial and organizational psychology is the application of psychological principles, theory, and research to the work setting. It is the scientific study of employees, workplaces, and organizations. Industrial and organizational psychologists contribute to an organization's success by improving the workplace and the performance, satisfaction, and well-being of its people. An I/O psychologist researches and identifies how employee behaviors and attitudes can be improved through hiring practices, training programs, and feedback and management systems. *Prerequisite PSYC 201*

PSYC 241 Programming for Experimental Psychology   **6 ECTS**
This course trains students to use programming software for experimental psychology (e.g., PsychoPy, Matlab), providing a core skill for research in the cognitive neurosciences. Students learn to code experiments involving the display of one or more stimulus types and one or more independent variables. The course provides a strong grounding for advanced studies in cognitive neuroscience and experimental psychology more generally. Recommended for students opting for a cognitive research topic for their final year research project. *Prerequisite PSYC 201, 282, 284*

PSYC 280 History and Systems of Psychology   **6 ECTS**
This course is designed to introduce the student to the history and philosophy of psychology. *Prerequisite PSYC 201*

PSYC 282 Research Design in Psychology   **6 ECTS**
This course is the first part of the core research requirements for undergraduates in psychology. It introduces you to the basic concepts in research methods and statistical analyses for psychological research. This course provides you with a solid foundation in the basic research methods and statistical analyses that will be needed for PSYC 284 and PSYC 290. Moreover, this course teaches you how to develop and write a proposal to conduct psychological research, consistent with the Style Manual of the American Psychological Association. *Prerequisite PSYC 201*

PSYC 284 Statistical Analysis in Psychology **6 ECTS**

This course introduces students to basic concepts in statistics and the R environment and language for statistical computing. The course enables students to (1) understand the principles of statistical theory, (2) be able to critically appraise the use of the most common statistical tests in research publications and (3) conduct and report statistical analyses on your own research data. *Prerequisite PSYC 201 PSYC 282*

PSYC 288 Undergraduate Seminar in Psychology **6 ECTS**

This course develops the ability to understand and evaluate empirical research in psychology through critical readings of research articles within one or more subdomains of psychology. The aim is to develop an understanding of research questions and methods, including study design, statistical methods and interpretation of data. Students learn to think critically about empirical work and to generate their own ideas within a testable framework. The course will develops academic writing and presentation skills, including the ability to summarize research, formulate logical arguments and critique empirical literature*. Prerequisite PSYC 201 PSYC 284*

PSYC 290 Independent Study **24 ECTS**

This course trains students to plan, conduct, and write up a full empirical study. The content is dependent on a faculty-member's research program*. Prerequisite PSYC 201 PSYC 284 PSYC 288*

Department of Philosophy, Politics, and Economics

Mission Statement

Philosophy, Politics, and Economics (PPE) is a multidisciplinary major that offers a comprehensive approach to social, economic, and political issues and challenges facing our contemporary world. The program relies on strong foundational courses in each of the three disciplines, as well as a bridging core of courses designed specifically for the major. The major in PPE provides an interdisciplinary program in the liberal arts. It also combines the rigorous tools and theories in politics and economics with normative philosophical analysis, to foster broader vision and critical understanding of our institutions, practices, and policies at local, regional, and international levels. PPE prepares students for graduate studies in various disciplines such as development studies, economics, politics, global affairs, and moral/political philosophy. It also prepares them for careers in public service, international organizations, business, academia, and others. In line with AUB's mission, the program will promote freedom of thought and, respect for diversity, enhance critical thinking, protect personal integrity, and encourage civic engagement.

Bachelor of Arts in Philosophy, Politics, and Economics

Purpose and Objectives

Philosophy, Politics, and Economics (PPE) is a multidisciplinary major that offers a comprehensive approach to social, economic and political issues and challenges facing our contemporary world. The program relies on strong foundational courses in each of the three disciplines, as well as a bridging core of courses designed specifically for the major. The major in PPE provides an interdisciplinary program in the liberal arts. It also combines the rigorous tools and theories in politics and economics with normative philosophical analysis, to foster a broader vision and critical understanding of our institutions, practices, and policies at local, regional, and international levels. PPE prepares students for graduate studies in various disciplines such as development studies, economics, politics and moral/political philosophy. It also prepares them well for careers in public service, international organizations, business, and others. In line with AUB's mission, the program will promote freedom of thought and respect for diversity, enhance critical thinking, protect personal integrity, and encourage civic engagement.

Learning Outcomes

Students who complete this program will be able to:

1. Understand basic concepts and theories in economics, politics, and normative philosophy.

2. Analyze and apply concepts and theories from philosophy, politics, and economics in addressing public concerns.

3. Critically evaluate competing positions and arguments about events, policies, and institutional arrangements.

4. Identify and critically analyze the values that inform and shape our economic and political practice and institutions.

5. Demonstrate ability to apply research tools and methods in the social sciences.

6. Communicate effectively and fluently ideas and research findings orally and in writing.

PROGRAM REQUIREMENTS	ECTS

Compulsory courses	114
Elective courses (a) Courses per concentration (b) General education courses / Free electives	18 108
Undergraduate / Postgraduate assignment	0
Practical training	0
Total ECTS	240

Sample Study Plan

Year 1	Course type	Course title	Course code
Fall Semester			
1	COMP	Ethics	PHIL 210
2	COMP	Introduction to Politics	PSPA 201
3	COMP	Survey of economics	ECON 203
4	ELECT	GE English 1	ENG 203
5	COMP	Introduction to PPE	PPE 201
6	COMP	Political philosophy	PHIL 216
Spring Semester			
7	COMP	International politics	PSPA 213
8	ELECT	GE Qualitative methods for social sciences	
9	ELECT	GE Math for social sciences	MATH 203/204
10	ELECT	GE English 2	ENG 204
Year 2	**Course type**	**Course title**	**Course code**
Fall Semester			
11	COMP	Introduction to political thought	PSPA 210
12	COMP	Intermediate microeconomics	ECON 217
13	COMP	Introduction to logic	PHIL 211
14	COMP	Economic justice	PPE 203

15	ELECT	GE Arabic 1	GE
Spring Semester			
16	COMP	Policy analysis	PSPA 260
17	COMP	Special topics in political and moral philosophy	PHIL 252
18	COMP	Intermediate macroeconomics	ECON 227
19	COMP	Conflict, peace, and justice	PPE 204
20	ELECT	GE Arabic 2	
Year 3	**Course type**	**Course title**	**Course code**
Fall Semester			
21	COMP	Political economy	PPE 205
22	COMP	Research design in PPE	PPE 202
23	ELECT	FREE	
24	ELECT	GE	
25	ELECT	GE	
Spring Semester			
26	ELECT	Ethics and public affairs	PPE 206
27	COMP	Applied economics	ECON 215
28	ELECT	FREE	
29	ELECT	GE	
30	ELECT	GE	
Year 4	**Course type**	**Course title**	**Course code**
Fall Semester			
31	ELECT	Regional topics in PPE	PPE 207
32	ELECT	Special topics in PPE	PPE 208
33	COMP	Application/dissertation	PPE 209
34	ELECT	GE	
25	ELECT	GE	
Spring Semester			
36	COMP	PPE Application/dissertation	PPE 210
37	ELECT	FREE	
38	ELECT	GE	

39	ELECT	GE	
40	ELECT	GE	

Courses

PHIL 210 Ethics **6 ECTS**

An introduction to some of the major normative ethical theories based on the study of the original writings of selected philosophers, including a section on applied ethics.

PSPA 201 Introduction to Politics **6 ECTS**

An introduction to the study of politics with emphasis on the basic concepts, ideas, and issues relating to the process of government in modern societies.

ECON 203 Survey of Economics **6 ECTS**

Elementary principles of microeconomics and macroeconomics and applications.

PPE 201 Introduction to PPE **6 ECTS**

Introduction to PPE is the first gateway course students take. It combines all PPE disciplines and should be taught by at least two faculty members from distinct disciplines. In this course students are introduced to the emergence of the social sciences from philosophy in the 19th century and how they forged their identities in the 20th century. As each discipline has established its boundaries, we bring them back together in the PPE degree. The recent re-emergent interest in the benefits of interdisciplinarity, in how the three disciplines can complement each other working in pairs or as triples, in both theoretical and applied work, will cover a significant portion of the course. The course also introduces the history of the PPE degree and the varied career paths it offers its holders.

ECON 211 Principles of Microeconomics **6 ECTS**

This course lays out the general principles of microeconomics, which include elements of supply and demand, consumer behavior, production theory, and market structures.

ECON 212 Principles of Macroeconomics **6 ECTS**

An examination of the main issues of political philosophy, such as political obligation, justice, political rights, and other issues.

PHIL 216 Political Philosophy **6 ECTS**

An examination of the main issues of political philosophy, such as political obligation, justice, political rights, and other issues.

PSPA 213 International Politics **6 ECTS**

Through a set of fundamental questions, and building upon students' knowledge of, and interest in, international relations and world politics, this course intends to accompany students in a reflection upon some of the most important international issues.

PPE 202 Research Design in PPE **6 ECTS**

Research Design is the second gateway course in PPE and is taught by one instructor from politics and one instructor from economics. It introduces PPE students to the different applied research methods and tools they are likely to encounter and employ in economics and politics. It is divided in two parts, the quantitative and the qualitative. This course is a pre-requisite for ECON 215.

PPE 203 PPE Economic Justice **6 ECTS**

This course introduces and examines different conceptions of economic justice. It looks closely at different answers that contemporary philosophers and economists give to the question: How and on

what grounds should economic benefits and burdens be distributed? The aim of the course is to deepen the students' understanding of debates, issues, and distinctions related to economic justice. It equally aims at developing and sharpening students' powers of critical thinking and analysis.

PSPA 210 Introduction to Political Thought **6 ECTS**
An introduction to the main currents of political thought in the world (Jewish, Christian-western, Islamic, Black-American, Indigenous), with a focus on theories such as liberalism, libertarianism, Marxism, anarchism, and decolonization.

ECON 217 Intermediate Microeconomics **6 ECTS**
Theory of allocation of resources; consumers' choice and classical demand theory, exchange and welfare; theory of production and cost; price and output determination under alternative market structures; game theory and applications to oligopoly. *Prerequisites: ECON 203, MATH 203/4*

PHIL 211 Introduction to Logic **6 ECTS**
An introduction to basic concepts and tools which, in addition to being of interest in themselves, also inform various philosophical discussions and are taken for granted in different areas of contemporary philosophy.

ECON 227 Intermediate Macroeconomics **6 ECTS**
A study of the aggregate approach to economics, including the determination of output, employment, 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 203, MATH 203/4*

PSPA 260 Policy Analysis **6 ECTS**
This is a course on the analysis of contemporary government and policy making. It approaches policy as a multiple hybrid space between state and society, expertise and politics, science and democracy, nature and culture, power and knowledge.

PHIL 252 Special Topics in Political and Moral Philosophy **6 ECTS**
The course focuses on a selected topic (theme or author) in the field of moral or political philosophy. Example of topics given under Phil 252 include:

- World Poverty and Human Rights
- Humanitarian Intervention
- John Rawls
- Marx
- Nationalism
- Consequentialism
- Liberalism and Communitarianism
- Islamic Political Thought

PE 204 Conflict, Peace, and Justice 6 ECTS

This course introduces and examines different phenomena of war, conflict, peace and conflict resolution from the perspective of politics and philosophy. It explores the different conceptions of violence in contemporary societies and approaches violence as a political, philosophical and epistemological issue. The aim of the course is to deepen the students' understanding of debates, issues, and distinctions related to conflict, peace and violence. It equally aims at developing and sharpening students' powers of critical thinking and analysis.

PPE 205 Political economy 6 ECTS

This course starts from the premise that a long-term view of production, power and social change is essential for understanding enduring patterns of wealth and poverty in the contemporary world. By emphasizing the historical and ecological specificity of the infrastructures of social power inherited from the agrarian past, the course tries to highlight the pitfalls of deploying models based on European example for understanding development and social change in other parts of the globe.

ECON 215 Applied Economics 6 ECTS

A comprehensive treatment of econometric techniques applied in cross-sectional and time series models. Topics include but are not limited to the estimation of bivariate and multiple regression models; validation tests; corrective methods employed when assumptions are violated; regressions with a qualitative dependent variable; Logit models; VAR; and co-integration. *Prerequisite: PPE 202*

PPE 206 Ethics and Public Affairs 6 ECTS

Ethics and public affairs engages PPE students on critical societal issues that arise in ethics, economics, politics, globalization, and the daily life of citizens. Students will discover and discuss public affairs that arise within a context of ethics, politics and economics.

PPE 207 PPE Regional Topics 6 ECTS

This course is open to disciplinary and/or interdisciplinary approaches that take the region - Middle East & Mediterranean - as the venture point both for theory production and empirical focus. Themes can include the following: human development in the region; gender in the Middle East and North Africa; humanitarian intervention and crisis in the Global South; Government in the Middle East and the Arab world; Political Islam; maritime politics; refugees, borders, and migration; etc.

PPE 208 PPE Special Topics 6 ECTS

This course is open to disciplinary and/or interdisciplinary approaches that take the faculty's own research as the core content both for teaching and empirical focus. AUB faculty will be invited to teach in a gamut of themes that touch upon PPE interdisciplinary aspects, including gender; crisis; government; inequality; solidarity; social movements; disaster; behavioral public policy; etc.

PPE 209/210 PPE Application/Dissertation 6 ECTS

This capstone sequence of courses starts in the Fall of the final year and takes two semesters to complete. Its completion entails the writing of a substantive piece of research that combines at least two disciplines. Students will work with a primary advisor from one discipline and a secondary advisor from another discipline. A thesis of about 10,000 words will be written and will form the grade.

PPE 211 Qualitative Methods for the Social Sciences 6 ECTS

The course introduces qualitative research methods commonly used in the Social-Political Sciences and Humanities. A wide range of qualitative methods will be covered in the course and students will then be able to apply these to specific disciplines.

Maroun Semaan Faculty of Engineering and Architecture

Department of Industrial Engineering Management

The Department of Industrial Engineering and Management offers an undergraduate degree program leading to a Bachelor of Science in Industrial Engineering and a graduate degree program leading the Master of Engineering Management degree.

Bachelor of Science (BS)
Major: Industrial Engineering (IE)

The Industrial Engineering Program extends over a four-year period and is offered exclusively on a daytime, on-campus basis. The program is offered in nine terms whereby eight terms are 12/13-week Fall/Spring terms given over four years, and one eight-week summer term taken during the third year of the program in which students are required to participate in a practical training program with a local, regional or international organization.

IE Program Educational Objectives

Graduates of the IE program will be able to:

- assume key roles in a range of industries that use industrial engineering, including manufacturing and service.
- effectively participate in, coordinate and manage diverse teams of engineers and analysts, especially in large-scale systems.
- pursue advanced degrees in industrial engineering and other related fields at reputable regional and international universities.
- appreciate the importance of professional ethics and actively use their knowledge and experience to the benefit of the community.

IE Program Learning Outcomes

- Upon graduation, IE students will be able to demonstrate:
- an ability to apply knowledge of mathematics, science and engineering to model, optimize and evaluate integrated systems of people, technology and information.
- an ability to design and conduct experiments, as well as to analyze and interpret data.
- an ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
- an ability to function on multidisciplinary engineering teams.
- an ability to identify, formulate and solve engineering problems and to develop integrated solutions to large-scale, sociotechnical problems through quantitative models.
- an understanding of professional and ethical responsibility.
- an ability to communicate effectively in oral and written form.
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- recognition of the need for, and ability to engage in, lifelong learning.
- knowledge of contemporary issues.

- an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

IE Program Requirements

The BS curriculum in Industrial Engineering is a four-year program (with one summers) consisting of 244 ECTS of coursework, split into 190 ECTS compulsory courses and 54 ECTS electives.

The IE curriculum is supported by four pillars:

1. basic science courses
2. general education courses
3. basic business courses and
4. general engineering fundamental courses.

The specific course requirements are as follows:

Basic Science Courses: MATH 202, MATH 218/219, MATH 251, STAT 230, PHYS 210, CHEM 201/202

General Education Requirements: 12 ECTS in English, ENGL 203 and ENGL 206; 6 credits in Arabic; 3 credits on quantitative reasoning, MATH 201; 12 ECTS in natural science including BIOL 210; 24 ECTS in the humanities including a course on Greek Studies; 12 ECTS in social sciences, ECON 211 and MNGT 215; 6 credits on ethics and community engagement including INDE 410.

Basic Business Courses: ACCT 210

Engineering Fundamentals: CIVE 210, EECE 230, MECH 421

The IE courses are distributed in three core areas:

1. Operations Research
2. Engineering Management
3. Production Systems.

IE Tentative/Typical Plan of Study

	Course Code	Course Title	ECTS
Term 1 (Fall)			
1.	EECE 230	Introduction to Programming	6
2.	CHEM 201/2	Chemistry Course	6
3.	MATH 201	Calculus and Analytic Geometry III	6
4.	CIVE 2105	Statics/Dynamics	6
5.	ENGL 203	Academic English	6
Term II (Spring)			
1.	MATH 202	Differential Equations	6
2.	MATH 218/9	Linear Algebra	6
3.	PHYS 210	Introductory Physics II	6
4.		Science Elective I	6
5.	INDE 301	Engineering Economy	6
Term III (Fall)			
1.	INDE 302	Operations Research I	6
2.	STAT 230	Introduction to Probability and Random Variables	6
3.	ECON 211	Microeconomic Theory	6
4.	ENGL 206	Technical English	6
5.	BIOL 210	Human Biology	6
Term IV (Spring)			
1.	INDE 303	Operations Research II	6
2.	INDE 320	Work Measurement and Methods Engineering	6
3.	MATH 251	Numerical Computing	6
4.	MNGT 215	Fundamentals of Management & Organizational Behavior	6
5.		Arabic Elective I	6
Term V (Fall)			
1	INDE 412	Engineering Entrepreneurship	4
2.	INDE 421	Human Factors Engineering	6
3.	INDE 504	Discrete Event Simulation	6
4.	INDE 513	Information Systems	6
		Humanities Elective I	6
		Arabic Elective II	6
Term VI (Spring)			
	INDE 402	Facilities Planning and Material Handling	6
2.	INDE 430	Statistical Quality Control	6
3.	INDE 431	Production Planning and Inventory Control	6
4.	ACCT 210	Financial Accounting	6
5.		Humanities Elective II	6
Term VII (Summer)			
	INDE 500	Approved Experience	0
Term VIII (Fall)			
	INDE 501	Final Year Project I	6
2.	INDE 410	Engineering Ethics	6
3.	INDE 411	Introduction to Project Management	6
4.		Science Elective II	6
5.		Humanities Elective III	6

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[5] New course developed jointly by ME and ECE

Term IX (Spring)			
1.	INDE 502	Final Year Project II	6
2.	INDE 535	Data Analytics for Industrial Engineering	6
3.	MECH 421	Manufacturing Processes I	6
4.		Understanding our Engagement[6]	6
5.		Humanities Elective IV	6

Courses and Course Descriptions

INDE 301   Engineering Economy   **6 ECTS**
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. *Every term.*

INDE 302   Operations Research I   **6 ECTS**
A course on operation research modeling concepts with an emphasis on linear programming; topics include: linear programming, network programming and project management. *Prerequisite: MATH 218 or Math 219, or equivalent. Annually.*

INDE 303   Operations Research II   **6 ECTS**
Another course on operation research modeling concepts with an emphasis on probability models and stochastic processes; topics include conditional probability, discrete- and continuous-time Markov chains and their application in modeling queues, inventories and production process behavior. *Prerequisite: STAT 230 or equivalent. Annually.*

INDE 320   Work Measurement and Methods Engineering   **6 ECTS**
A course on system and work design concepts; time studies; performance rating and allowances; standard and pre-determined times; work methods improvement; design of manual work, equipment, tools and work environments; line balancing; manpower determinations, job analysis and incentives; systems analysis, lean and value analysis. *Prerequisite: STAT 230 or equivalent. Annually.*

INDE 402   Facility Planning and Material Handling   **6 ECTS**
Inter-relationships between facilities, process design, systematic layout procedures, computer aided layout, location analysis models, material handling analysis and concepts, warehousing storage and retrieval systems. *Prerequisites: INDE 302 and INDE 303. Annually.*

INDE 410   Engineering Ethics   **6 ECTS**
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 term.*

INDE 411   Introduction to Project Management   **6 ECTS**
Introduction to project management for engineers. Conception, planning, scheduling, budgeting, leadership, management, tracking and completion of projects. Project management software is introduced and used. *Prerequisites: INDE 302 and INDE 303. Annually.*

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[6] New course on community engagement, part of the new GE requirement. TBA

INDE 412   Engineering Entrepreneurship   **6 ECTS**
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: INDE 301 or equivalent.*

INDE 421   Human Factors Engineering   **6 ECTS**
Designing for human performance effectiveness and productivity. Introducing human factors and
ergonomics. Design and evaluation methods. Perception: vision and hearing. Cognition. Displays and
controls. Work-space design. Biomechanics of work. Stress and workload. Safety and human error.
Human-computer interaction. *Prerequisite: INDE 320. Annually.*

INDE 430   Statistical Quality Control   **6 ECTS**
Design of quality control systems; quality methods for establishing product specifications; process
control; variables and attributes charts; acceptance sampling; operating characteristics curves;
process capabilities; QC software. *Prerequisite: STAT 230. Annually.*

INDE 431   Production Planning and Inventory Control   **6 ECTS**
Methods of production and inventory planning. Single-product replenishment systems. Inventory
management for special classes of items and products. Multiple item and multiple location
inventories. Production planning and scheduling: aggregate production planning, MRP, JIT, OPT and
short-range production scheduling. *Prerequisites: INDE 302 and 303. Annually.*

INDE 500   Approved Experience   **6 ECTS**
Practical training program with a local, regional or international organization. *Summer.*

INDE 501   Final Year Project I   **6 ECTS**
This is a capstone course where IE students utilize knowledge they acquired from different courses
to design and develop an IE-related product or service. This is the first part of the course that spans
through the final year of the student's study. *Prerequisite: Completion of third year in IE
requirements. Fall.*

INDE 502   Final Year Project II   **6 ECTS**
This is the second part of the IE capstone course. *Prerequisite: INDE 501. Spring.*

INDE 504   Discrete Event Simulation   **6 ECTS**
System definition; model formulation, Monte-Carlo method; random number generation; discrete
events; system entities and its attributes. Emphasis on analysis of systems and models of real-life
problems. Lab experience with a modern discrete-event simulation package (e.g., ARENA).
Prerequisite: INDE 303. Annually.

INDE 513   Information System   **6 ECTS**
This is a course that answers the questions: What is information? How can it best be stored? What
to call it? The course also covers the following topics: abstraction, interfaces, barriers, specification,
documentation, relational calculus and architectural abstractions, data structures for fast data
storage and retrieval, encryption, putting things on the Web, data warehousing and data mining.
Annually.

INDE 535   Data Analytics for Operations Research and Financial Engineering   **6 ECTS**
Students will learn to identify, evaluate and capture analytic opportunities that create value for an
organization. Basic descriptive analytics methods are reviewed utilizing specialized software (e.g. R)
in analyzing large data sets. Predictive analytics techniques including clustering, classification and

regression are covered in detail. Prescriptive analytics applications on utilization simulation and optimization over large data to improve business decisions are presented. *Annually.*

Master of Engineering Management (MEM)

The Master of Engineering Management (MEM) program prepares graduate students to assume the responsibilities of professional engineering management. The EM program provides students from all engineering backgrounds with the necessary leadership abilities, technical expertise, and communication skills to meet the need for both tech-savvy and business-savvy professionals. To achieve this aim, the EM curriculum combines business basics, quantitative methods, and behavioral science in a practical, problem-solving framework. Furthermore, the program is flexible and EM students can tailor their courses to suit their needs and preferences. Students can select from two areas of concentration (1) Financial and Industrial Engineering (FIE) and (2) Project and Program Management (PPM). In addition, students can elect to pursue the thesis or non-thesis option within the program.

MEM Program Educational Objectives

The educational objectives of the MEM program are as follows.

1. Assume managerial and leadership positions in technical and non-technical environments.
2. Maximize efficiency and safety in complex systems.
3. Engage in research in engineering management and closely-related fields.
4. Communicate engineering concepts effectively, both in oral and written form.
5. Engage in lifelong learning, especially, in the context to engineering and management.

MEM Program Learning Outcomes

Upon graduation, MEM graduates will be able to:

1. Describe the general theories, methods, and tools for managing (a) resources, (b) finance, (c) risk, and (d) information for enhanced decision-making in engineering and business environments.
2. Exhibit self-directed learning and critical-thinking skills.
3. Develop scientific managerial skills in fields that promote innovation, such as management of technology, financial engineering, and complex project management.
4. Develop skills that foster interdisciplinary collaboration, teamwork, and leadership, especially in different project and industrial settings.
5. Develop effective verbal and written communication skills.
6. Apply analytical (mathematical, statistical, and computer-based) tools to optimize the performance of socio-technical systems, such as infrastructure, logistics, manufacturing, construction, financial, and healthcare systems.
7. Design tools for complex systems using empirical approaches that optimize user cognitive and physical wellbeing.
8. Develop and defend a thesis topic or a research project in one of the engineering management areas.

MEM Program Requirements

The requirements for the Master of Engineering Management degree can be fulfilled by pursuing one of the two following options.

Non-Thesis Option

Under this option, a student is required to complete a total of 90 ECTS, subdivided as follows:

- Four core courses (36 ECTS)
- Two core courses from the student's area of concentration (18 ECTS)
- Two electives from the student's area of concentration (18 ECTS)
- Two free electives (18 ECTS)
- Seminar (0 credit)

Thesis Option

Under this option, a student is required to complete a total of 90 ECTS, subdivided as follows:

- Four core courses (36 ECTS)
- Two core courses from the student's area of concentration (18 ECTS)
- One elective from the student's area of concentration (9 ECTS)
- One free elective (9 ECTS)
- Thesis (18 ECTS)
- Seminar (0 credit)

EM Plan of Study According to Different Options Concentrations

MEM Plan of Study for PPM Concentration, Non-Thesis Option

A/A	Course Type	Course code	Course title	ECTS
Term 1 (Fall)				
1.	Core	ENMG 602	Introduction to Financial Engineering	9
2.	Core	ENMG 661	Strategic Management of Technology	9
3.	Elective	ENMG 635	Project Deliverance and Contracts	9
Term 2 (Spring)				
1.	Core	ENMG 603	Probability and Decision Analysis	9
2.	Core	ENMG 698L	Operations Management	9
3.	Elective	ENMG632	Project Planning, Scheduling, and Control	9
Term 3 (Summer)				
1.	Elective		Elective from PPM	9
2.	Elective		Free Elective	9
Term 4 (Fall)				
1.	Elective		Elective from PPM	9
2.	Elective		Free Elective	9

MEM Plan of Study for PPM Concentration, Thesis Option

A/A	Course Type	Course code	Course title	ECTS
Term 1 (Fall)				
1.	Core	ENMG 602	Introduction to Financial Engineering	9
2.	Core	ENMG 661	Strategic Management of Technology	9
3.	Elective	ENMG 635	Project Deliverance and Contracts	9
Term 2 (Spring)				
1.	Core	ENMG 603	Probability and Decision Analysis	9
2.	Core	ENMG 698L	Operations Management	9
3.	Elective	ENMG 632	Project Planning, Scheduling, and Control	9
Term 3 (Summer)				
1.	Elective		Elective from PPM	9
2.	Elective		Free Elective	9
Term 4 (Fall)				
1.	Core		Thesis	18

MEM Plan of Study for FIE Concentration, Non-Thesis Option

A/A	Course Type	Course code	Course title	ECTS
Term 1 (Fall)				
1.	Core	ENMG 602	Introduction to Financial Engineering	9
2.	Core	ENMG 661	Strategic Management of Technology	9
3.	Elective	ENMG 604	Deterministic Optimization Models	9
Term 2 (Spring)				
1.	Core	ENMG603	Probability and Decision Analysis	9
2.	Core	ENMG 698L	Operations Management	9
3.	Elective	ENMG 624	Financial Engineering I	9
Term 3 (Summer)				
1.	Elective		Elective from FIE	9
2.	Elective		Free Elective	9
Term 4 (Fall)				
1.	Elective		Elective from FIE	9
2.	Elective		Free Elective	9

MEM Plan of Study for FIE Concentration, Thesis Option

A/A	Course Type	Course code	Course title	ECTS
Term 1 (Fall)				
1.	Core	ENMG 602	Introduction to Financial Engineering	9
2.	Core	ENMG 661	Strategic Management of Technology	9
3.	Elective	ENMG 604	Deterministic Optimization Models	9
Term 2 (Spring)				
1.	Core	ENMG 603	Probability and Decision Analysis	9
2.	Core	ENMG 698L	Operations Management	9
3.	Elective	ENMG 624	Financial Engineering I	9
Term 3 (Summer)				
1.	Elective		Elective from FIE	9

1.	Elective		Free Elective	9
Term 4 (Fall)				
2.	Core		Thesis	18

Courses and Course Descriptions

Core Courses

ENMG 602 Introduction to Financial Engineering   **9 ECTS**

Overview of financial statements. Accounting concepts and methods. Measuring and reporting assets and equities. Financial statement models and their use for valuation. Financial feasibility and applied interest analysis. Fixed-income securities and bonds. Term structure of interest rates. Bond portfolio structuring and immunization. Capital budgeting. Dynamic cash flow management.

ENMG 603 Probability and Decision Analysis   **9 ECTS**

Framing of decision problems. Influence diagrams. Review of probability (random events and variables, probability distribution functions and so on). Decision Trees. Decision analysis view of assessment (value of information, sensitivity). Multiple attribute decision objective. Mathematical treatment of risk, tolerance and avoidance. Assessing risk using Monte Carlo simulation.

ENMG 698L Introduction to Operations and Process Management   **9 ECTS**

This course introduce students to the design and management operations in an organization for a sustainable and competitive advantage. It addresses theoretical and practical insights into service and manufacturing operations, in both the private and public sectors. Topics covered include forecasting, strategic and global operations, facility layout and location, aggregate planning, inventory management, MRP and short-term scheduling. Case studies and hands-on software tools will be used.

ENMG 661 Strategic Management of Technology   **9 ECTS**

The organization as a whole and its interaction with its environment. The corporation as it undergoes the process of a global transformation. Mergers, acquisitions, outsourcing, downsizing and privatization. Framework of analysis for the identification of central issues and problems usually faced in strategic management. Understanding the effect of present and future environments on the corporation's welfare.

Project and Program Management Area Courses

ENMG 632 Project Planning Scheduling and Control.   **9 ECTS**

Extended overview of project management. Basic planning and scheduling concepts. Project participants and roles. Project management applications and growth. Project team formation. Dealing with time. Project planning and costing. Advanced scheduling techniques. Integrated project cost-time control. Resource and procurement planning.

ENMG 633 Advanced Topics in Project Management.   **9 ECTS**

Planning and scheduling under constraints. Trade-off analysis in a project environment. Project cost control from a client's perspective. Project risk management. Managing the international project. Determinants of project success. Lessons learned in project management. Strategic planning in project management. Modern developments in project management.

ENMG 635 Project Deliverance and Contracts.   **9 ECTS**

Overview of project organizations. The design-build project delivery approach. The build-operate-transfer project delivery approach. Innovative delivery approaches, financial schemes and associated contracts. Allocation of risks in contracts. Bidding phase characteristics. Components of the proposal package. Evaluation of the commercial, financial and technical components. Contract formation and agreement closure. Project quality management.

ENMG 642 Lean Engineering Concepts.   **9 ECTS**
This course focuses on the emerging concept of lean performance in the construction industry. Topics covered include the origin of lean concepts, application to the design process, implementation in construction, contracting for lean performance and value improving practices (e.g., benchmarking, constructability and value management).

ENMG 645 Program and Portfolio Management.   **9 ECTS**
This course presents a view of managing projects from an organizational perspective. The main areas of discussion will be strategic alignment, the role of effectively managing organizational assets through an enterprise project management office, portfolio and program management. Using specific examples and a case study approach, students will explore the importance of using organizational strategies to align projects and apply practices to create portfolios of programs and projects to efficiently leverage organizational assets.

ENMG 698K Dispute Resolution on Projects.   **9 ECTS**
The course covers construction contract conditions governing claims and disputes. Focus is on claim evolvement and administration (including issues dealing with time barring, notification and substantiation) and ADR methods and amicable settlement.

Financial and Industrial Engineering Area Courses

ENMG 604 Deterministic Optimization Models   **9 ECTS**
This course is intended to be an introduction to the fundamental models, methods and applications of deterministic optimization. The focus will be on formulating and analyzing large-scale deterministic optimization models, which includes linear, integer, dynamic, and non-linear programs.

ENMG 624 Financial Engineering.   **9 ECTS**
Financial Engineering is the tailoring of cashflows over time to be as desirable as possible. This involves the scientific design of financial products which are traded in the financial markets. Examples of financial products (also known as financial instruments or securities) include bonds, stocks, futures, and options. This course aims to (i) introduce students to the investment process and financial markets; and (ii) explain how Financial Engineering is applied to structure an important class of financial securities. Specifically, the course will focus on portfolio management and valuation of financial instruments modeled as single-period random cashflows (e.g. stocks) and will introduce the student to the pricing of a basic class of financial derivative securities (forwards, futures and options) using discrete-time tools (i.e., the underlying asset prices is assumed to change at discrete time points). This study has many direct applications in the financial market and provides insights that can be extended to handle more complex financial instruments with continuous-time analysis. (These will be covered in ENMG 625 Financial Engineering II.) The course will also provide the students with a good exposure to areas such as mathematical modeling, optimization, probability, and, more generally, to finance, and operations research.

ENMG 611 Supply Chain Design and Management.   **9 ECTS**
The course is an introduction to supply chain management and its key issues, such as logistics, network configuration, inventory management, distribution strategies and strategic alliances. The

value of information in supply chains, information technology and decision support systems for supply chain management are also covered.

ENMG 616 Advanced Optimization.   **9 ECTS**

Topics covered include nonlinear, stochastic, dynamic, and nonconvex programming. Optimization in the context of big data, machine learning and prescriptive analytics are discussed. Students will develop skills in modeling complex systems using mathematical programming. Students will also have hands-on experience in using software packages for solving optimization problems.

ENMG 617 Engineering Management Statistics.   **9 ECTS**

Review of probability and probability distributions. Data description. Random samples and sampling distributions. Parameter estimation. Tests of hypotheses. Design and analysis of single-factor experiments: the analysis of variance. Design of experiments with several factors. Simple linear regression and correlation. Multi-variable regression. Nonparametric statistics.

ENMG 622 Simulation Modeling and Analysis.   **9 ECTS**

Generating discrete and continuous random variables. Discrete-event simulation. Statistical analysis of simulated data. Variance reduction techniques. Statistical validation techniques. Markov chain and Monte Carlo methods. Experience with a modern discrete-event simulation package (e.g., ARENA, SIMIO).

ENMG 623 Stochastic Models and Applications.   **9 ECTS**

Review of probability and random variables. Poisson process, renewal theory, queueing models, reliability theory, Markov chains, Brownian motion, random walks and Martingale, stochastic order relations.

ENMG 625 Financial Engineering II.   **9 ECTS**

Derivative securities: forwards, futures and swaps; models of asset dynamics; options theory; interest rate derivatives. General cash flow streams: optimal portfolio growth, general investment evaluation.

ENMG 698M Fundamentals of Data Science.   **9 ECTS**

This course provides an introduction to applied data analysis, with an emphasis on providing a conceptual framework for thinking about data from both statistical and machine learning perspectives. Topics covered are based on statistics (frequentist, Bayesian) and machine learning, and include binary classification, regression, bootstrapping, causal inference and experimental design, and multiple hypothesis testing. Data-driven problem sets and a project are also included.

Suliman S. Olayan School of Business (OSB)

Department of Business Intelligence and Management

Mission Statement

Enable world-class business research, learning, and knowledge transfer from our authoritative anchor point within the MENA region.

Bachelor of Business Administration

Purpose and Objectives

The Bachelor of Business Administration (BBA) program is for university entrants focused on translating their thinking and interests 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.

Students will be able to build their business mind by having a holistic understanding of the economic, social, cultural, and global environments through combining the business learning with that of humanities, arts and sciences. In addition, they will be able to build their analytical skills, practical techniques and theories, along with acquiring soft skills such as leadership, decision making and ethical reasoning in order to achieve greater goals.

Learning Outcomes

Knowledge

On successful completion of this program the graduate will be able to:

- Acquire the core of essential business professional knowledge and competence
- Recognize appropriate analytical-quantitative and organizational-behavioral approaches
- Understand, explain and apply principles of ethical behavior in managerial decision-making situations
- Identify organizational leadership approaches
- Identify attributes of effective and efficient teams
- Understand the principles of effective and efficient business communication
- Identify key globalization factors and their impact on business competitiveness

Competence & Skill

On successful completion of this program the graduate will be able to:

- Describe and implement appropriate analytical-quantitative and organizational-behavioral approaches
- Explain and practice principles of ethical behavior in managerial decision-making situations
- Define organizational leadership approaches

- Define attributes of effective and efficient teams and apply teamwork principles in a team exercise situation
- Explain and implement the principles of effective and efficient business communication
- Define key globalization factors

Responsibility and Autonomy

On successful completion of this program the graduate will be able to:

- Apply the core of essential business professional knowledge and competence to a familiar situation
- Apply the appropriate analytical-quantitative and organizational-behavioral approaches to managerial decision-making situations
- Apply principles of ethical behavior in managerial decision-making situations
- Apply a leadership approach to an organizational situation
- Apply teamwork principles in a team exercise situation
- Apply the principles of effective and efficient business communication
- Show the impact of key globalization factors on business competitiveness

The Bachelor of Business Administration in Management is a 4-year program for a total of 240 ECTS.

The program consists of:
- Compulsory Core Business Courses -CB-96 ECTS
- Compulsory Business Concentration Courses-BC- 30 ECTS
- Elective Courses –114 ECTS
  - Free business Electives (FB) | 12 ECTS
  - Free Electives (FE) | 12 ECTS (could be business or non-business courses)
  - General Education Courses (GE) | 90 ECTS

Sample Study Plan

Year 1 Semester 1:
1. -CB -ACCT 210 -Financial Accounting
2. -CB -ACCT 210L -Financial Accounting Lab
3. -CB -BUSS 210 -Introduction to Business
4. -GE -ENGL 203 -Academic English
5. -GE -MATH 203 -Math for Social Sciences I
6. -GE –ARAB 203 -Arabic Communication Skills I

Year 1 Semester 2:
7-CB -DCSN 200 -Operations Management
8-CB -BUSS 239 -Business Communication Skills Workshop
9-GE - ECON 212 -Element.Macroeconomics Theory
10-GE -ENGL 204 -Advanced Academic English
11-GE -MATH 204 -Math for Social Sciences II
12-GE –ARAB 204 -Arabic Communication Skills II

Year 2 Semester 3:
13-CB -INFO 200 -Foundations of Information Systems

14-CB -MNGT 215 -Fundamentals of Management and Organizational Behavior
15-GE - ECON 211 -Elementary Microeconomics Theory
16-GE -CMPS 208 -Computing for Business
17-GE -Humanities -Humanities Elective

Year 2 Semester 4:
18-CB -BUSS 200 -Business Data Analysis
19-CB -BUSS 200L -Business Data Analysis Lab
20-CB -FINA 210 -Business Finance
21-CB -FINA 210L -Business Finance Lab
22-CB -MKTG 210 -Principles of Marketing
23-GE -Civic Engagement

Year 3 Semester 5:
24-CB -ACCT 215 -Management Accounting
25-CB -BUSS 215 -Business Ethics
26-BC -MNGT 250N -Leadership Development
27-CB -BUSS 240 -Strategic Career Planning Workshop
28-FE -Free Elective -Free Elective
29-GE -Humanities -Humanities Elective

Year 3 Semester 6:
30-CB -ENTM 220 -Entrepreneurship and Business Planning
31-CB -ENTM 220L -Entrepreneurship and Business Planning Lab
32-CB -DCSN 216 -Business Analytics Using Data Mining
33-BC -MKTG 227 -Digital Marketing Strategies
34-BE -Business Elective -Free Business Elective
35-CB -BUSS 245 -Internship/Practicum

Year 4 Semester 7:
36-CB -BUSS 249 -Strategic Management
37-BC -MNGT 250P -Innovation Management
38-BE -Business Elective -Free Business Elective
39-CB -Humanities -Humanities Elective
40- GE -Natural Science -Natural Science Elective

Year 4 Semester 8:
41-CB -BUSS 211 -Business Law
42-BC -BUSS 250 -Management Consulting
43-BC -MNGT 250Z -Seminar in Strategic Management
44-FE -Free Elective -Free Elective
45-GE -Humanities -Humanities Elective

Courses and Course Descriptions

ACCT 210 Financial Accounting **6 ECTS**
Financial Accounting is an introductory core business course. It introduces students to the language
of business and its use as a tool for the decision-making process. Students learn the underlying
principles of externally reported financial information governed by the IFRS. They learn the
accounting cycle that enables them to prepare and analyze the financial statements. Students will be
required to use this knowledge in other business courses that require them to make decisions based
on reported financial information such as finance and management courses in that it provides them

with the ability to understand the underlying economics of the financial statements and their implications. (Co-requisite ACCT 210L)

ACCT 210L Financial Accounting Lab   **3 ECTS**

The Lab presents a comprehensive project which complements an introductory financial accounting course from both a technical and conceptual perspective. It demonstrates the underlying accounting standards and principles customized to student suggested business events. The use of Excel (Appendix) shows students the interdependence of accounting cycle steps from a technical standpoint. A fictitious illustration is used to introduce business and accounting concepts and application. Students use their imagination and general knowledge to start-up a small service organization. They demonstrate their knowledge in preparing and using accounting information. (Co-requisite ACCT 210)

BUSS 210 Introduction to Business   **6 ECTS**

This course introduces students to the many facets of private enterprise systems and of the businesses that operates within its framework. Moreover, it will focus on the overview of the forces within the business environment i.e. globalization, economics, government, and society.

This course is a key core course within the School of Business. Students use this course to learn more about the business landscape, by focusing on business systems, key functional areas within the firm such as marketing, operations, accounting, finance, management, and human resources.

BUSS 239 Business Communication Skills Workshop   **0 ECTS**

A 12.5-hour workshop designed to develop students' business communication. As a core competency, oral communication is emphasized in every meeting. In addition, students will understand the principles and value of effective business communication. They should demonstrate effective communication skills through individual presentations, group activities, small debates, and impromptu speech. Moreover, students should be able to discuss some business cases and general topics, work in teams on small projects, master body language, manage business meetings, and deliver project presentations using PowerPoint and visual aid. Finally, they should also provide constructive feedback and objectively evaluate each other through different activities and games.

DCSN 200 Operations Management   **6 ECTS**

The course is an introduction to contemporary operational management issues and techniques. The focus of the course is on the tradeoffs in various decision areas and how operational strategies are aligned to the organization strategy. A strong emphasis is placed on the development and use of the quantitative models to assist in decision making. By the end of the course, students will have a solid understanding of the key role Operations Management plays in competitive advantage. Students should expect to become familiar with various operations processes and systems. Further, they will acquire some of the skills necessary to critically analyze a firm's performance from an operation point of view.

INFO 200 Foundations of Information Systems   **6 ECTS**

This course introduces information systems that raise productivity, create customer value and sustain competitive advantage. It 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. (Co-requisite INFO 200L)

MNGT 215 Fundamentals of Management and Organizational Behavior   **6 ECTS**

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.

In addition to introducing theories, concepts and tools that are needed to manage various organizations of different vocations (private, public, for profit, NGO, governmental and others), this course involves the practical aspects of leadership and management. This allows students to gain a fuller understanding of the discipline of management and organizational behavior, and prepare for their role as future managers and leaders.

BUSS 200 Business Data Analysis **6 ECTS**
Business Data Analysis introduces the basic statistical methods that are commonly used for managerial decision-making. Emphasis is on applying methods and interpreting results. Extensive use of statistical software. The course first reviews the descriptive statistics and basic concepts of probability distributions, in particular the normal distribution. Then the course studies topics on inferential statistics such as confidence intervals, hypothesis testing, one-way analysis of variance and correlation analysis. The course finally covers simple linear regression and introduces students to multiple linear regression and time series forecasting. (Prerequisites: MATH 204 and CMPS 208; Co-requisite BUSS 200L)

BUSS 200L Business Data Analysis Lab **3 ECTS**
This is a lab course in which students practice the concepts covered in BUSS 200, Business Data Analysis, which introduces the basic statistical methods that are commonly used for managerial decision-making. The course first reviews the descriptive statistics and basic concepts of probability distributions, in particular the normal distribution. Then the course studies topics on inferential statistics such as confidence intervals, hypothesis testing, one-way analysis of variance and correlation analysis. The course finally covers simple linear regression and introduces students to multiple linear regression and time series forecasting. (Co-requisite BUSS 200)

FINA 210 Business Finance **6 ECTS**
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; Co-requisite: FINA 210L)

FINA 210L Business Finance Lab **3 ECTS**
This lab complements the introductory finance course from an applied perspective. The course is designed for students to apply the core concepts such as time value of money, discounted cash flow analysis, capital budgeting and estimating the cost of capital. Students will use a software package, such as excel, to address, from a practical perspective, the decisions that financial managers face. (Co-requisite: FINA 210)

MKTG 210 Principles of Marketing **6 ECTS**
This course is designed to introduce the basic concepts and practices of modern marketing as they are applied in a variety of settings: in product and service companies, in consumer and business markets, and in small and large businesses.

This course follows a practical approach and students are required to apply theoretical concepts in a group Marketing Plan Project which includes both a written component and an in-class presentation (utilizing PowerPoint slides). It is expected that this approach will allow students to understand each marketing concept as well as have the ability to apply these concepts to issues that occur daily in the business world.

ACCT 215 Management Accounting   **6 ECTS**
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. Management Accounting emphasizes the application of accounting information to solving problems in all major functional areas of an organization with a view of improving overall performance and profitability. (Prerequisites: ACCT 210)

MNGT 250N Leadership Development: Enhancing Interpersonal Skills in Organizations   **6 ECTS**
This course is designed to instruct beyond traditional management and business hard skills and towards experiential dissection of the foundations of better interpersonal skills. In fact, the aim of this course is to provide each participant with an opportunity to better understand how understanding him- or herself (intrapersonal effectiveness) relates to interpersonal and managerial effectiveness. The premise of the course is that successful managers must first have an understanding of self and how the self interacts with others to facilitate organizational success. Topics covered include: self-disclosure and trust, stress and time management, conveying verbal messages, listening, diversity, ethical decision making, and negotiation, and facilitation. The course strikes a balance between theory and application providing both conceptual and applied material appropriate for use in real-life personal, academic, and professional situations. (Prerequisites: MNGT 215 and ENGL 204)

BUSS 215 Business Ethics   **6 ECTS**
This is an introductory course that provides students with an overview of business ethics at the individual, organizational, and societal levels. 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 the local Lebanese context. Ultimately, the course is designed not only to 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. The course is also designed to systematically improve the student's writing and presentation skills. (Prerequisites: MNGT 215)

BUSS 240 Strategic Career Planning Workshop   **0 ECTS**
A 12.5-hour workshop designed to guide students on how to plan and develop their careers in all types of industries and work scopes. The workshop will also provide students with some specific guidelines on how to assess their interests, skills, value satisfiers, and lifestyles. It will also help students to search for a job, study and analyze job vacancies, write their resume, and cover letter as well as get well prepared for a job interview.

BUSS 245 Internship/Practicum   **3 ECTS**
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.

All BBA students must successfully complete the internship requirement (BUSS 245). Normally, the internship takes place at the end of the third year. All students applying for the internship program must have completed FINA 210, MNGT 215, MKTG 210, INFO 200, and BUSS 240.

Normally, internships are assigned and/or allocated by the internship and placement officer. However, students may solicit their own internships.

Other internship requirements are as follows:

- The internship is normally two months in duration
- The student must comply with the policy of the host company regarding working hours
- The work week must not be less than 5 working days
- The student will be supervised by a faculty member 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

(Prerequisites: FINA 210, INFO 200, MKTG 210, MNGT 215, BUSS 240)

ENTM 220 Entrepreneurship and Business Planning   **6 ECTS**
In this course students will experience entrepreneurship firsthand by coming up with an entrepreneurial endeavor that they will pitch to expert jury at the end of the course after applying the design thinking and lean start-up methodologies. First, students will define a problem that they would like to solve using the design thinking process and then brainstorm multiple solutions and select the best using a sound selection mechanism. Using the lean startup methodology, they will come up with a business plan for this business in parallel to creating a prototype and financial projections for the first three years. This experience is culminated with creating a pitch deck and pitching the entrepreneurial initiative in front of expert external jury. The course helps students to understand and experience the mindset of an entrepreneur by providing them with several cases and examples that are both international and regional in addition to exposure to real entrepreneurs through guest speaking and mentorship sessions. (Co-requisite: ENTM 220L)

ENTM 220L Entrepreneurship and Business Planning Lab   **3 ECTS**
This lab complements the Entrepreneurship and Business Planning course by developing the practical part through a pitch deck and pitching the entrepreneurial initiative in front of expert external jury. The course helps students to understand and experience the mindset of an entrepreneur. (Co-requisite: ENTM 220)

MKTG 227 Digital Marketing Strategy   **6 ECTS**
This course delivers the frameworks and tools needed to design and implement a successful digital marketing strategy that achieves the business objectives. Topics covered include Social Media and web analytics, influencer marketing, online campaigning, and online customer relationship marketing. The course molds together marketing, analytics, and strategy in the context of social media in a collaborative learning approach that engages students through case studies, guest speakers, hands-on social media tool usage, and an individual final project. (Prerequisites: MKTG 210 and ENGL 204)

DCSN 216 Business Analytics Using Data Mining   **6 ECTS**
Today business analytics is helping organizations in every industry to use information for business advantage. It is helping them meet objectives like competitive differentiation, growth, and cost management by making choices about what markets to pursue, how to configure and price

offerings, and how to make operations more effective and efficient. Nowadays, companies are immersed in massive amounts of data. They are more and more challenged with how to convert these data into actionable business insights. This course introduces applied data mining techniques including data processing and a set of data analytics tools related to predictive modeling such as classification and regression trees, logistic regression, artificial neural networks, and other techniques. Students will learn how to use these tools to provide practical solutions to problems faced by today's businesses. They will gain knowledge on how to improve decision making by adopting data analytics approach. The course is designed for advanced undergraduate students and features the use of data mining software. Case studies and practical examples will be extensively presented throughout the course. (Prerequisite: BUSS 200)

ACCT 230 Introduction to External Auditing **6 ECTS**
Modern auditing adopts a risk-based approach. To this end, besides elaborating on the relationship (and distinction) between auditing and accounting, this course capitalizes on the students' professional competences (acquired from other functional areas such as Finance, Management, Management Information Systems, and Financial / Intermediate Accounting among others) that allow them to: Conduct an audit in compliance with US GAAS/ PCAOB; Understand the importance of the auditor's professional business knowledge. Conduct substantive tests. Conduct tests of controls. Understanding the steps involved in planning & executing the audit engagement. (Prerequisite: ACCT 210)

ACCT 231 Fraud Examination & Internal Auditing **6 ECTS**
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. (Prerequisite: ACCT 215)

DCSN 217 Total Quality Management for Business Excellence **6 ECTS**
This course focuses on the concepts related to quality in all aspects of enterprise operations with special emphasis on the customer. Total Quality Management (TQM) is a comprehensive and fundamental rule or belief for leading and operating an organization, aimed at continually improving performance over the long term by focusing on customers while addressing the needs of all stakeholders. It is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. The bottom line of TQM is results: increased productivity, efficiency, customer satisfaction/delight, and world-class performance. This course will present the various TQM frameworks, concepts, and quality improvement tools necessary for implementing the quality culture that characterizes world-class organizations of the 21st century. The course will revolve around the core values and the criteria for performance excellence embodied in the Malcolm Baldrige National Quality Award, the highest award for performance excellence in U.S. organizations and which is increasingly being adopted worldwide as the operational definition of a world-class enterprise. We will, therefore, explore the key actions necessary for transforming business and not-for-profit organizations into world-class organizations that deliver ever-improving value to their customers, clients, and constituents. (Prerequisite: DCSN 200)

DCSN 212 Introduction to Project Management **6 ECTS**
This course explores technical and managerial challenges of project management in general. The topics addressed in this course range from project selection techniques, project planning, budgeting, risk analysis, resource management to project monitoring and termination. The goal is to understand

how project management decisions are reached, what tradeoffs are made, and how outcomes depend on the underlying situation. Decision analysis tools such as linear/non-linear programming and spread sheet simulation are utilized. Software packages used are Microsoft Project, Risk Solver/Crystal Ball and Excel Solver. (Prerequisites: DCSN 200 and BUSS 200)

ACCT 250R Financial Statement Analysis   6 ECTS
A course that covers the relevance and process of accounting and financial analyses within the broader theme of business analysis. The focus is on informational role of accounting, the quality of reporting, the analysis of financing, investing, and operating activities, as well as of different aspects of an entity's financial performance and financial position – all towards the ultimate purpose of informed decision-making. (Prerequisite: ACCT 210)

BUSS 249 Strategic Management   6 ECTS
Strategic Management is the senior capstone course for all business administration majors. What this means is that it is an integrative, big-picture course.

In this course, students acquire the tools to apply business fundamental knowledge acquired in previous foundation courses to strategy formulation, implementation, and evaluation/control approaches. Students are required to use this new knowledge, as well as knowledge acquired from other functional area courses such as human resources, marketing, accounting, finance, operations and information technology, to identify current problems and chart the future direction of different businesses and industries. In sum, through this course, the student culminates his/her undergraduate curriculum through the application of core functional foundation concepts in an integrative way to various business situations. (Prerequisites: ACCT 215, FINA 210, MNGT 215, MKTG 210, BUSS200, BUSS215, INFO 200, and DCSN 200)

BUSS 211 Business Law   6 ECTS
The main objective of the course is to help students understand the legal aspects of common American, European, and international business activities and the formation and functioning of commercial entities. This is accomplished through lectures, in-class discussion, and reading and analysis of court cases using the American case law method of legal education. Business law is an essential course for all business students. It provides future managers with the knowledge of various terms of law and basic legal rights and responsibilities. It also provides critical thinking skills and the ability to understand how individuals interact within the legal system, the laws, concepts and rules which dictate the behavior in such interactions, and awareness of the rules that regulate and protect commercial activity. In this course students will also apply concepts from other functional areas of management practice such as human resource management, marketing, accounting and finance to solve legal problems.

BUSS 250 Management Consulting   6 ECTS
A course that exposes students to the basics of management consulting industry. Emphasis will be placed on understanding of the industry context, specific activities of the consulting process and learning the necessary analytical and interpersonal skills required for successful performance of consultant's duties. At the end of the course, the students will be able to view problems from the perspective of practicing experts in the field, apply course theories and principles to provide consulting services to actual clients and prepare solutions to case studies utilizing acquired technical expertise and experience. (Prerequisites: MNGT 215 and ENGL 204)

ENTM 235 Family Business: Issues and Solutions   6 ECTS
This course focuses on family businesses: their importance, structure, governance, management, challenges; issues and solutions relating to succession, inheritance, business continuity, family vs.

non family management, and rivalry between siblings, cousins, or across generations. (Prerequisite: MNGT 215)

ENTM 240 Social Entrepreneurship **6 ECTS**

A social enterprise is a hybrid organization that applies commercial strategies and uses market mechanisms to solve social issues. This course provides a foundation for students to understand social entrepreneurship. It reviews various schools of thought and perspectives on social entrepreneurship's role in tackling social issues, while covering concrete tools for students to begin to engage communities, identify a problem, and develop an innovative solution. (Prerequisite: MNGT 215)

FINA 215 Financial Markets and Institutions **6 ECTS**

This course offers students a broad understanding of how financial markets work. As any other market, financial markets are centered on a certain good (money) and are subject to the forces of supply (lenders) and demand (borrowers) that determine equilibrium price (interest rate). However, unlike other markets, various products can be derived from money, like loans, bonds, equity, mortgages, foreign exchange and financial derivatives. This feature makes the study of financial markets very dynamic.

The course explores the determinants of interest rates and their impact on asset pricing. The material covered include securities markets and their embedded risks, fintech and digital currencies and their disruptive impact on financial markets and institutions. It also covers the working of financial institutions including Commercial Banks, Investment Banks, Mutual Funds, Pension Funds and Insurance companies. Although financial institutions vary in their financial intermediation activities, they all face common risks. The course sheds light on how to measure and manage such risks (Prerequisite: FINA 210)

FINA 222 Valuation Methods **6 ECTS**

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. (Prerequisite: FINA 210)

INFO 225 Enterprise Systems Design and Implementation **6 ECTS**

This course provides students a deeper understanding of business processes and enterprise systems. Different cross-functional business processes are covered, with an emphasis on how they interact to successfully deliver the business functions of an enterprise. The concepts in the course are reinforced using Enterprise Resource Planning (ERP) applications. The course also covers how enterprise data can be used to derive business insights and analytics. The following topical areas are emphasized in the course: business processes and enterprise systems, process integration, systems implementation, and enterprise systems for business analytics. (Prerequisite: INFO 200)

MKTG 225 Strategic Brand Management **6 ECTS**

This course deals with brands—why they are important, what they represent to consumers, and what firms should do to manage them properly. As many business executives correctly recognize, perhaps one of the most valuable assets a firm owns are the brands it has invested in and developed over time. Although competitors can often duplicate manufacturing processes and factory designs, it's not so easy to reproduce strongly held beliefs and attitudes established in the minds of consumers. In this course, students learn the importance of Building, Managing, and measuring the

performance of a brand through its equity. The main concepts covered are unique to this course with a main focus on building, managing, measuring and communicating strong brands by developing an Integrated Marketing Communication strategy. (Prerequisites: MKTG210 and ENGL 204)

MKTG 231 Customer Experience Design   **6 ECTS**
Customer experience is a term that extends beyond traditional definitions of marketing, customer service, customer satisfaction and loyalty. It refers to the sum of all interactions the customer has with a company's brand. Successful companies like Apple, Starbucks, Netflix etc. strive to create holistic experiences for customers that include emotive, sensory, identity value to create strong and enduring customer-brand bonds, which are difficult for competitors to copy or break. (Prerequisites: MKTG210 & ENGL 204)

MNGT 220 Human Resources Management   **6 ECTS**
A course that deals with understanding and managing human capital as a major strategic asset, macro and micro manpower planning, skill surveying, management learning, de-learning and relearning, results-driven performance in the age of virtual organizations and telecommuting, and knowledge workers in a rapidly changing corporate context within a knowledge global economy. (Prerequisites: MNGT 215 and ENGL 204)

MNGT 250S Gender, Work, and Inclusive Human Resource Systems   **6 ECTS**
This course raises awareness and deepens understanding of the significant role of gender and diversity in contemporary work organizations. It offers multiple perspectives to analyze issues of gender and diversity at the levels of identity, organizational practices and society. The course provides students with conceptual and practical tools to critically examine social and organizational practices of exclusion and inclusion. The course further develops students' reflective skills in detecting how they, and the organizations they are participating in are doing gender and diversity. Moreover, students learn how they can act as change agents in making exclusionary practices visible and creating inclusive workplaces. During the course students will also develop their writing, group working as well as presentation skills. (Prerequisites: MNGT 215 and ENGL 204)

MNGT 250T Training and Development   **6 ECTS**
This course introduces students to the theories, application, and skills development aspects of Training & Development. Students will learn how to assess, design, develop, implement, & evaluate a training program. In this regard, concepts of training, including total needs assessment, Employees'/trainees' learning motivations, learning & transfer theories as well as evaluation methods will be covered. This course also aims to give an understanding of how 'Training & Development' is integrated into the overall organizational strategy. From an application point of view, students will design, develop, & evaluate their own training programs. Finally, students will develop training skills through conducting training sessions. (Prerequisites: MNGT 215 and ENGL 204)

MNGT 250Z Seminar in Strategic Management   **6 ECTS**
Strategic Management is the senior capstone course for all business administration majors. What this means is that it is an integrative, big-picture course.

In this course, students acquire the tools to apply business fundamental knowledge acquired in previous foundation courses to strategy formulation, implementation, and evaluation/control approaches. Students are required to use this new knowledge, as well as knowledge acquired from other functional area courses such as human resources, marketing, accounting, finance, operations

and information technology, to identify current problems and chart the future direction of different businesses and industries. (Prerequisites: BUSS 249 and ENGL 204)

Master of Science in Business Analytics (MSBA)

Purpose and Objectives

The Master's in Business Analytics program (MSBA) prepares students with knowledge, tools, and skills to analyze big data, to make effective business decisions, improve performance, create shared value, and enable the digital transformation from basic to smart organizations. Graduates of the program will learn the various data analytics processes from managing, modelling, analyzing, visualizing, and recommending solutions to challenges in various domains, including supply chain and operations, project management, marketing, human resources, and finance.

Program Objectives

- Data Identify technological frameworks for collecting, preparing, processing, analyzing, and delivering data.
- Skills Develop advanced analytical modeling and problem-solving skills to best address challenges in various industries.
- Reporting techniques Learn reporting techniques with emphasis on visual display of big data and analytical results.
- Communications Learn how to effectively communicate analytical and complex results to different audiences.
- Management skills Develop core management skills relevant to business analytics projects, including designing, planning, implementing, leading teams and managing conflicts.

Learning Outcomes

Knowledge
On successful completion of this program the graduate will be able to:

- Identify technological frameworks for collecting, preparing, processing, analyzing, and delivering data.
- recognize the challenges of implementing business analytics solutions, including strategic alignment, planning, project management, team leadership, conflict resolution, negotiation, and convincing techniques.

Competence & Skill
On successful completion of this program the graduate will be able to :

- Clean data.
- Analyze data.
- Effectively communicate complex analytical results and insights to a mixed audience.
- Exhibit advanced analytical modeling and problem-solving skills to best address challenges in various industries.
- Exhibit core management skills relevant to business analytics projects, including designing, planning, implementing, leading teams and managing conflicts.

Responsibility and Autonomy
On successful completion of this program the graduate will be able to:

- Apply advanced analytical models and software tools to address various types of business analytics problems.
- Recommend appropriate analytics solutions to business problems, including defining business requirements, relevant data, needed information technology, competitive edge, and value added proposition to the business.
- Apply reporting techniques with emphasis on visual display of big data and analytical results.

Study Plan

For successful completion of the MSBA, students must complete all components of the program, which carry a total of 90 ECTS over 3 semesters. The program consists of:

- 6 Compulsory (Core)
- 3 electives + Applicative Thesis (also called Capstone) or 2 electives + Research Thesis

Semester 1:
- Core 1 - MSBA300 - Business Understanding in Analytics - 9 ECTS
- Core 2 - MSBA305 - Data Processing Framework - 9 ECTS
- Core 3 - MSBA310 - Applied Statistical Analysis – 9 ECTS
  Core 4 - MSBA320 - Optimization and Simulation - 9 ECTS
Semester 2:
- Core 5 - MSBA315 - Data Visualization and Communication - 9 ECTS
- Core 6 - MSBA325 - Predictive Analytics and Machine Learning - 9 ECTS
- Elective 1 - 9 credits
- Elective 2 – 9 credits
Semester 3:
- Elective 3 - 9 credits
- Capstone Project - 9 credits
  OR
Research Thesis - 18 credits

Courses and Course Descriptions

DCSN 310 Operations Management   **9 ECTS**
This course gives an overview of the strategic and tactical decisions involved in operating a production or service system for sustainable competitive advantage. Emphasis is on the core concepts of capacity, variability and quality. Topics include: evaluating process capacity; estimating and reducing labor costs; batching and flow interruptions; waiting-time problems and throughput losses; quality management, statistical process control and six-sigma capability; and lean operations. Links among operations, finance and strategic success are explored.

MSBA 300 Business Understanding in Analytics   **9 ECTS**
This course will focus on the business understanding and problem framing. This includes analysis of previous findings; identifying stakeholders' challenges and organization eco-system; understanding innovation essentials and components of analytics framework to compete on analytics; developing a data strategy for defining key performance metrics, data quality checks,, benchmarking indices; and data sources; introducing big data concepts and technological infrastructure for processing information; discussing innovative business models, appropriate analytical tools and necessary leadership role to implement analytics initiatives and prioritize them for budgeting; efficient

resource allocation, effective creation of shared values and sustainable performance growth in a business domain.

First, the course will establish that business analytics is a distinct but related to analytics in general and that the distinction is the focus of the overall course as well as the whole MSBA program. Second, this courses will familiarize the students with key notions in business, e.g., strategy, operations, and marketing vis-à-vis business analytics. Third, the students will be introduced to a framework of how to devise analytics solutions to business problems. Fourth, the course will demonstrate how analytics can be applied and improve business situations through specific industry and company cases.

MSBA 305 Data Processing Framework **9 ECTS**
The course focuses on the technology processing of data prior to performing data analytics to extract actionable intelligent insights. It covers data preparation, integration and processing using open-source software tools such as Python, Hadoop and Spark based platforms. Topics include identification of the datasets of interest; preparing the data; building data models using SQL and NoSQL databases and performing operations to explore large and complex datasets. It also explores big data and how and when to integrate big data platforms within an enterprise information system. Through guided hands-on tutorials, students will become familiar with data processing techniques using different frameworks. (Prerequisite: MSBA Bootcamp)

MSBA 310 Applied Statistical Analysis **9 ECTS**
This course is designed to familiarize students with various applied statistical methods and tests. It will enable students to gain statistical knowledge and skills needed to solve business problems. In addition to the overview of hypothesis testing methods and exploratory data analysis (EDA), the course covers in-depth a wide range of parametric and non-parametric regression models such as multiple linear regression with interaction terms, multicollinearity diagnostics, variable selection, logistic regression, and classification and regression trees (CART). Students will already have received an early hands-on training as part of the pre-requisite boot camp on using the statistical tools and packages required for this course such as R/R-Studio, Python, Excel, and SPSS.

MSBA 315 Predictive Analytics & Machine Learning **9 ECTS**
Students in this course will learn about supervised and unsupervised training methods. The focus is on identifying relationships that cannot be found by basic statistics and used for example in customer satisfaction, branding, machine failure, resource allocation, fraud detection, and fraudulent activities. Techniques include Nearest Neighbors, Naive Bayes, deep learning, text mining, clustering, association rules, regularization and dimensionality reduction. The bias/variance trade-off and model selection is a focal point of the course and will be illustrated from multiple angles. Students will acquire hands-on experience on all techniques taught.

MSBA 317 Forecasting Analytics **9 ECTS**
Time series forecasting is essential for every organization that deals with quantifiable data. It is widely used in retail stores, international financial organizations, energy companies, banks and lending institutions, and in many other industries. Forecasting analytics enable managers and policy makers to better make informed decisions. This course is a hands-on introduction to quantitative forecasting of time series. Students will learn the most popular forecasting techniques used in practice. The course covers topics such as pre-processing, characterization, and visualizing time series, model performance evaluation, smoothing methods, time series regression models, Box-Jenkins models, autoregressive integrated moving average (ARIMA) models, models with binary outcome, and neural networks for time series (if time permits). (Prerequisite: MSBA 310)

MSBA 320 Optimization & Simulation   **9 ECTS**

This course is an introduction to quantitative models for managerial decisions making in a complex and dynamic business environment. Students learn to develop linear, discrete, non-linear, and multi-criteria optimization models, perform sensitivity analysis, develop constraint programming models, analyze decisions under uncertainty, and conduct scenario analysis using simulation. The course introduces students to some advanced software tools used in optimization and simulation.

MSBA 325 Data Visualization & Communication   **9 ECTS**

This course introduces students to the latest data visualization techniques and tools to visualize data using dashboards, scorecards, and other formats. Students will learn presentation techniques with emphasis placed on the data story, the visual display of data and smart reporting of results. Students will acquire hands-on skills to create effective presentations leveraging latest technology and software such as Tableau, QlikView, or IBM Insights. Other covered topics include web analytics and communication.

MSBA 360 Social Media Analytics   **9 ECTS**

This course addresses the move towards social media to build intellectual capital, communicate with society, exchange knowledge among a global workforce, and provide the public face of business for marketing and corporate communications. The course explores the role of social media technologies (e.g., Twitter) in shaping societal and business trends, and emphasizes analyzing social media data in terms of reach, engagement, influencers, etc. using Python and open source tools. The course also explores social networks in the important of information propagation in social media. (Prerequisites: Bootcamp Python, MSBA 305, MSBA 310)

MSBA 370 Data-Driven Digital Marketing   **9 ECTS**

Digital marketing in the era of fast-browsing, redundancy of choices and lack of time has quickly evolved into a challenging science of perception, with data as its core driver. This course covers the key concepts and strategies of data-driven digital marketing and growth hacking with real-world applications and case studies. The aim is to demystify the role of data in providing critical marketing insights that can pave and shape marketing strategies. Students will examine the various techniques for search engine optimization and will learn how to implement and manage search-advertising campaigns. They will also learn how to effectively engage with customers across a diverse range of social media platforms and experience the best practices for creating and delivering effective e-mail and mobile marketing campaigns. The course utilizes relevant theory, empirical analysis, and practical examples to develop the key learning points. (Prerequisites: MSBA 000 Bootcamp: Knowledge of R and Python, MSBA 305, MSBA 310)

MSBA 385 Healthcare Analytics   **9 ECTS**

The rise of preventive care, health technology and telemedicine has generated massive amounts of multidimensional health data. The magnitude and complexity of these data are overwhelming for healthcare providers and stakeholders to analyze and extract meaningful knowledge to make informed decisions. Moreover, the COVID 19 pandemic has unveiled profound weaknesses in the healthcare systems of most countries. Global investments in private health systems and private healthcare solutions have witnessed a 6% increase in Q2 2020 and are predicted to increase significantly in the future.

The expected digital transformation will not be possible without data and analytics.

In this course, you will be equipped with the knowledge to work in the healthcare field or with a healthcare client as analyst or consultant. You will be introduced to the pillars of healthcare systems and the main health concepts and measures. You will learn about healthcare data types and sources,

how to formulate data queries, how to use geospatial information systems to map health data and how analytics is applied in the healthcare field. Finally, you will dive into the economic evaluation and financial impact of health-related interventions and programs. (Prerequisite: MSBA 315)