Faculty of Engineering
Computer and Communications Engineering

Study Guide

2020-2021
2019-2020
2018-2019

TABLE OF CONTENT

In this document, the masculine form refers, where appropriate, to both women and men. The use of the masculine form is intended solely to facilitate the reading of the text and has no discriminatory intent.

Introduction

The Faculty of Engineering provides students with a solid engineering education based on exploration of theories and system modeling to foster development and innovation. Our programs and activities work in tandem with our adopted modern teaching and learning approaches, which provide the student with a high degree of adaptability, facilitate his professional integration, and offer him stability and perpetuity in his future accomplishments as engineer.

The Faculty of Engineering is open to the world, constantly evolving, it trains dynamic students, familiar with the most innovative approaches and cutting-edge sectors, meeting the requirements of the market while respecting the values of business and environmental standards. Our Program follows a modern pedagogy which incorporates active learning methods. Hence, the future engineers are put in a position that allows them to reflect, solve, and overcome practical problems and challenges.

I.   The mission of the Antonine University

The Antonine University (UA) is a Lebanese Catholic university committed to offering quality education, to promote inter-disciplinary and contextualized research, and to enhance the sustainable wellbeing of its local and global communities. Its graduates are proactive citizens prepared to embrace an ever-growing knowledge, improve it collaboratively, and apply it responsibly.

A.   Values

UA will achieve its vision and mission while abiding by its core values:
- Truth – UA seeks the Truth and will always apply it and communicate it with wisdom.
- Excellence – UA strives to achieve the highest standards of teaching, research, and service.
- Diversity – UA provides an inclusive community that respects differences among its members.
- Integrity – UA encourages its community to act ethically with dignity, honesty, and fairness.
- Responsibility – UA is engaged in promoting solidarity and proactive citizenship through sustainable actions.
- Beauty – UA promotes cultural awareness and engagement by encouraging creative work and valorizing the local and global cultural heritage.

II.   Presentation of the Faculty of Engineering at the Antonine University

A.   The mission of the Faculty

The Faculty of Engineering (FOE) at Antonine University (UA) is committed to offering academic programs in the field of Engineering and Technology by:

- providing professionalizing and quality programs based on a competency approach;
- placing students at the center of its mission;
- forming graduates who are qualified to meet the needs and expectancies of the local and international job markets;
- valuing research and promoting technology transfer initiatives to the service of society.
- Valuing research in the sciences of engineering;
- Serving society by making new technologies accessible.

B.   The vision of the Faculty

The Faculty of Engineering at the Antonin University aims to become a hub of excellence in its field, recognized for the quality of its training programs and its innovative research activities. It encourages innovation in partnership with national and international protagonists, thus contributing to the development of Lebanon and the region.

C. Values

- Professionalism
- Diversity
- Tutoring and support
- Excellence in teaching
- Community involvement
- Respect
- Integrity
- Communication

D. Action

1. Education

The aim of the program of study at the Faculty of Engineering is to provide students with a high level of skills in two complementary fields: Information and Communications. The students thus trained are operational in the information and communication technology (ICT) sector, in any company producing software or hardware.

These courses are crowned with an engineering degree in Computer and Coomunications or a bachelor's degree in Computer Science, whose courses are designed to meet the requirements of the market and thus ensure graduates employment opportunities.

2. Research

As per its scientific development strategic plan, the Faculty of Engineering launched in 2009 its TICKET research laboratory which, since its launch, has adopted a transversal policy integrating all its members in the design of contextualized research projects to strengthen scientific production. Many collaborative projects, carried out mainly in partnership with universities and international companies, have been one of the main factors in the development of scientific research in the Faculty of Engineering. TICKET also aims to foster technology transfer and is increasingly focusing on the development of long-term partnerships with industry and service companies.

3. Service

As for the service to the society, the Faculty is engaged:
- in the transfer of research results to the education sector and businesses
- in the organization of public scientific events (seminars, conferences)
- and in the publication of scientific works.

E.   Configuration

The Faculty of Engineering at UA consists of two departments:

(1) Department of Computer and Communications Engineering: delivering the Bachelor of Engineering in Computer and Communications Engineering (BE in CCE);

(2) Department of Computer Science: delivering the Bachelor of Science in Computer Science (BS in CS).

F.   International partners and student mobility

University	Exchange Program	Conditions
Université de Bourgogne – UB (France)	École Supérieure d'Ingénieurs de Recherche en Matériaux (ESIREM)	1. The candidate should validate 3 years at UA. 2. The candidate continues his engineering studies at ESIREM for 2 years.
	Faculté de Sciences et Techniques - Master 2 Professionnel BDIA (Artificial Intelligence)	1. The candidate should validate 4 years at UA. 2. The candidate continues his 5th year studies at UB.
Université de Franche-Comté (UFC) (France)	Master Internet Of Things (IOT)	1. The candidate should validate 4 years at UA. 2. The candidate continues his 5th year studies at UFC.
	Master Advanced Programming and Applications	It consists in validating the results of UA students in their initial track, and adding an additional module of 3 credits per semester (semesters 7, 8 and 9). Semester 10 is entirely devoted to the initiation to research project. Each student must register at the UFC for an amount of 600 Euros per year over two years (a total of 1200 Euros). The cost of the credit at UA is 160 USD (a total of 1,440 for the 9 credits).

		This Master offers the possibility of pursuing a Doctorate within a research team in the DISC department of FEMTO-ST, or any other computer Science research laboratory.
Université de Pau et des Pays de l'Adour (UPPA) (France)	Master in Computer Science	1. The candidate should validate 4 years at UA. 2. The candidate continues his 5th year studies at UPPA.
INSA de Rennes	Master Ingénierie des Systèmes complexes, parcours I-MARS	1. The candidate should validate 4 years at UA. 2. The candidate continues his 5th studies at INSA de Rennes

III. Bachelor of Engineering

A. Program of Study

1. Identification of the program

Faculty	Engineering
Cycle	Engineering (Master's level)
The disciplinary sector of studies	Information and Communications Technologies - ICT
Identification du program	Computer and Communications Engineering
Identification of related study programs	The Computer and Communications Engineering program includes the following options, each with 39 credits: 1. Telecommunications and networks 2. Systems and networks 3. Software and networks 4. Multimedia and networks The choice of the concentration is done in the beginning of the third year, after two years of a common core.
Total number of course credits to be validated at the end of the cycle	156 credits
Term	La réalisation du programme nécessite *9* semestres et 1 semestre de stage en entreprise ou *5* années d'études au minimum, le plafond étant fixé à *7* ans. The completion of the program requires 9 semesters and 1 semester of internship with a minimum of 5 years of study, the maximum is being set at 7 years.
Campus	Hadat-Baabda, Bekaa/Zahle, Mejdlaya/Zgharta
Teaching language	English

2. Program objectives

a) Program Educational objectives

The Department of Computer and Communications Engineering at Antonine University has developed a well-defined set of Program Educational Objectives (PEO) to assure the quality of our program and graduates. These objectives are broad statements that describe the professional accomplishments that a Computer and Communications Engineer should attain or achieve within few years after graduation. These objectives are designed to aid in the pursuit of our mission as being consistent with the needs and expectations of the program constituencies.

Upon completion of the CCE Program, the graduate students will be able to:

1. Advance in their careers as successful professionals in the field of Computer and communications Engineering.

2. Pursue and complete post-graduate studies or professional development.

3. Promote the engineering profession by adhering to ethical behavior, personal integrity, leadership, and civic responsibility.

3. Eligibility for the program and conditions of admission

1. Eligibility for the program

The Faculty of Engineering is committed to enrolling students with a potential to become competent engineers in the future. It applies a fair and reliable admissions process managed by the Orientation and Admissions Office of the Antonine University. Admission to the Faculty of Engineering is supervised by the Dean. An Admissions Board is responsible for processing the application files of high school student applicants. The Transfer and Equivalence Board processes the applications of candidates who have pursued studies at other higher education institutions and wish to join the Faculty of Engineering at the Antonine University.

Admission to the Faculty of Engineering is selective. The selected candidates must have a school or university record or transcript proving their eligibility and academic commitment.

2. Conditions of admission

- A Lebanese Baccalaureate, or equivalent official certificate, in Life Sciences (LS) or General Sciences (GS);
- Language proficiency:
  - English section: English B.1.1 level.
  - French section: DELF B1.1 level and English B.1.1 level.

3. Admission procedures

All applications are evaluated based on three main aspects:
- Skills in basic disciplines: Mathematics and physics;
- Language proficiency;
- The candidate's profile and motivation.

a. Admission on the basis of an entrance examination

All candidates must pass a mandatory entrance examination in:
- Mathematics
- Physics
- English language
- French Language (only for the French section students)

Candidates may be exempt from the Entrance Examination of the Antonine University if the Admissions Board approves their completion of the SAT I (Math & critical reading).

The Orientation and Admissions Office notifies the candidate of the reasoned decision to accept or reject their application and indicates the additional requirements to be met.

Rejected candidates may retake a failed exam.

b. Admission based on the students' performance

This admission procedure is designed for students in the final school year who have a good academic standing.

Early admission candidates prepare their applications with their schools and submit them to the Orientation and Admissions Office of the Antonine University.

The Admissions Board processes and evaluates the applications based on the following criteria:
- Language proficiency
- The grades obtained on scientific subjects at school: the average grade in Mathematics and Physics must be greater than or equal to 14/20, while considering a coefficient of 6 on Mathematics and 4 on Physics. The students should not have a grade lower than 12/20 on any subject;
- A letter of recommendation from the school Principal;
- Applicants coming from partner schools.

The Orientation and Admissions Office notifies the candidate of the reasoned decision to accept or reject their application and indicates the additional requirements to be met. Admitted Candidates will take the language placement tests in case they do not have a proof of language proficiency.

Candidates who are rejected from the early admission procedure must take the entrance examination.

c. Admission on the basis of qualification

This admission procedure is designed for students who have earned a "magna cum laude", or higher distinction, on completion of the Lebanese Baccalaureate or its equivalent certificate.

The candidate prepares their application and submits it to the Orientation and Admissions Office of the Antonine Univsersity.

The Admissions Board processes and evaluates the application based on the following criteria:
- Language proficiency;
- The grades obtained on the official exams of the Lebanese Baccalaureate or its equivalent certificate.

The Orientation and Admissions Office notifies the candidate of the reasoned decision to accept or reject their application and indicates the additional requirements to be met.

Candidates admitted on the basis of qualification will be exempt from the entrance examination but will take the language placement tests.

d. Admission of transfer students

This admission procedure is designed for candidates who have pursued studies at other recognized higher education institutions.

Candidates who have pursued studies at other higher education institutions are required to submit their official transcripts and corresponding course descriptions obtained from the institutions they have attended.

The Transfer and Equivalence Committee processes and evaluates the applications a based on the following criteria:
- Language proficiency;
- The grades obtained on the official exams of the Lebanese Baccalaureate or its equivalent certificate;
- The official transcript of courses completed in the previous institution;

- A letter of recommendation from a faculty member of the previous institution, if needed.

Candidates whose applications prove that they have completed the equivalent of one transferred Mathematics course and one transferred Physics course are exempt from the Mathematics and Physics entrance examinations respectively.

However, depending on the application and the language subjects completed in the previous institution, the candidate may be required to take a language placement test in to be placed accordingly in the appropriate level of language courses offered in the program.

The final decision to accept a candidate's application is issued following the candidate's individual interview with a faculty staff member designated by the Faculty of Engineering.

The Orientation and Admissions Office notifies the candidate of the reasoned decision to accept or reject their application and indicates the additional requirements to be met.

4. Student Outcomes

The program Learning Outcomes, yet articulated as Student outcomes, support the Program Educational Objectives. Attainment of these outcomes prepares graduates to enter the professional practice of engineering. The student outcomes are the following:

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

Telecommunications and Networks option

The Telecommunications and Networks option provides the student with skills that enable him to design and develop hardware architectures using micro-programmable embedded systems, to administer and analyze the operation of a telecommunications network for the assessment of the performance and implementation of the corresponding measurement means, to master the coding, processing and information transport methods in new generation systems, and to design antennas and microwave circuits.

Upon the completion of the Telecommunications and Networks option program, the student will be able to occupy the position of a specialist in signal processing and its applications, an administrator of mobile networks, an architect of micro-programmable embedded systems and a designer of antennas and microwave circuits.

Multimedia and Networks option

The Multimedia and Networks option provides the student with skills that enable him to manage projects in Networking and in the design and development of multimedia applications, in particular, with regard to the creation and processing of multimedia content, Audio-Visual production, websites, Mobile apps, image processing, computer vision, computer graphics, extended realities, animations as well as modelling and programming 2D and 3D video games.

Upon the completion of the Multimedia and Networks option program, the student will be able to fill the position of a specialist in interactive systems, network engineer, Multimedia design engineer, UX-UI designer, product developer, Multimedia project manager leading a team in liaison with animators, programmers, writers, video producers, sound engineers and artists.

Systems and Networks Option

The Systems and Networks Option provides the student with skills that enable him to administer and secure networks or computer systems, develop user-space and kernel-space modules in open-source environments, work with virtualized systems and networks, work with different database management systems, and interconnect heterogeneous systems. Using Software Defined Networking (SDN), students are able to program a network that can be centrally controlled, and implement network automation.

Upon the completion of Systems and Networks option program, the student will be able to fill a system administrator and design engineer position in interconnection solutions for complex systems, security administrator, cyber security engineer, business intelligence engineer and database administrator.

Software Engineering and Networks option

The Software Engineering and Networks option program provides the student with skills like math, science, engineering, and design. Such skills enable him to solve complex problems by designing, implementing, maintaining, testing and evaluating software solutions. Being up to date with the latest top-notch technologies, such as Artificial Intelligence (AI), Data Science, Internet of Things (IOT), Web technologies, design patterns, is crucial in this field.

Upon the completion of the program, student will acquire necessary skills to optimize his learning curve and produce quality software solutions. He will be able to work efficiently in teams and will apply all management skills in real-world scenarios. He will acquire positions like Software Developer, Software Engineer, Quality Assurance (QA), data analyst.

5. Program of Study

General Education Requirements - 22 credits - 14%				
Code	**Course**	**Cr**	**Prereq.**	**Co-req.**
WCEN102-EC10	Written Communication for Engineers	3	Level English B1.2	
COMM402-EC10	Communication Skills for Engineers	3	WCEN102- EC10 Level English B2	
SCOP202-AC00	Citizenship and Society	3		
PJMG101-EC00	Project Management	3		
ECON302-EC00	Economics for Engineers	3		
ETHI102-AC00	Ethics for Engineers	3		
LEGL302-AC00	Law for Engineers			
ENGI103-EC10	Entrepreneurship and Innovation	3	CSEN103-EC10	
SPRT302-EP00	Sports	1		
		22		

Faculty Requirements - 32 credits - 21%				
ENGI102-EC00	Introduction to Engineering	3		
PELE111-EC01	Circuits Analysis	3		PELE111-EP01
PELE111-EP01	Lab. Circuits Analysis	1		PELE111-EC01
PROG111-EC01	Programming I	3		PROG111-EP01
PROG111-EP01	Lab. Programming I	1		PROG111-EC01
MATH111-EC00	Algebra I	3		
MATH112-EC00	Algebra II	3		
MATH211-EC00	Calculus I	3		
MATH212-EC10	Calculus II	3	MATH211-EC00	

MATH213-EC10	Calculus III	3	MATH211-EC00	
MATH302-EC00	Probability and Statistics	3		
MATH403-EP20	Lab. Numerical Analysis	1	MATH211-EC00 MATH112-EC00	
ENGI101-EP00	Lab. CAD & GIS	1		
NETW101-EP00	Lab. Computers and Networks	1		
		32		

Major Requirements - 57 credits - 37%				
PELE112-EC00	Electrostatics	3		
PELE113-EC11	Electricity and Magnetism	3	PELE111-EC01	PELE113-EP01
PELE113-EP01	Lab. Electricity and Magnetism	1		PELE113-EC11
MATH402-EC00	Operations Research	3		
PROG112-EC10	Programming II	3	PROG111-EC01	
PROG113-EC10	Data Structures	3	PROG112-EC10	
PROG211-EC10	Object Oriented Programming I	3	PROG112-EC10	
SYST202-EC00	Computer Architecture	3		
SIGN103-EC10	Signals and Communication Systems	3	MATH 213-EC10	
SYST108-EC00	Proprietary Systems	3		
SYST107-EC00	Open Source Systems - UNIX	3		
DBMG105-EC00	Database Design	3		
DBMG106-EC11	Database Programming	3	DBMG105-EC00	DBMG106-EP11
DBMG106-EP01	Lab. Database Programming	1		DBMG106-EC11
NETW208-EC10	Networks Architecture	3	NETW206-EC10	
NETW205-EC00	Introduction to Networks	3		
NETW206-EC10	Routing and Switching Essentials	3	NETW205-EC00	
NETW207-EC10	Scaling and Connecting Networks	3	NETW206-EC10	
MLTM102-EC10	Web Design	3	PROG111-EC01	
ELEC101-EC11	Fundamental Electronics	3	PELE111-EC01	ELEC102-EP01
ELEC102-EP01	Lab. Fundamental Electronics	1		ELEC101-EC11
		57		

Projects and Professional Training - 6 credits				
MRCH501-ES00	Research Methodology Seminar	0	100 credits	
STAP303-EC10	Methodology and Internship report	1	60 credits Level English B1.2	
PRFE302-EI00	Final Year Project Proposal	1	PJMG101-EC00 128 credits	
PRFE303-EM10	Final Year Project	3	PRFE302-EI00	
STAP304-ES10	Engineer Internship	1	STAP303-ES10 147 credits	

		6		

Telecommunications and Networking Option - 39 credits - 25%				
ELEC211-EC11	Electronic Circuits	3	PELE111-EC01	ELEC211-EP11
ELEC211-EP11	Lab. Electronics	1		ELEC211-EC11 ELEC212-EC11
ELEC212-EC11	Digital Logic Design	3	ELEC101-EC11	ELEC211-EP11
SEMB111-EC11	Microcontroller	3	ELEC211-EC11 ELEC212-EC11	
SEMB111-EP11	Lab. Microcontroller	1		SEMB111-EC11
SEMB211-EC11	Microprocessor Design and Embedded Systems	3	SYST202-EC10 ELEC212-EC11	
SEMB211-EP11	Lab. Embedded Systems	1		SEMB211-EC11
SIGN111-EC10	Signals and Systems	3	MATH213-EC10	
SIGN113-EC11	Multimedia Signal Processing	3	SIGN111-EC10	SIGN113-EP11
SIGN113-EP11	Lab. Multimedia Signal Processing	1		SIGN113-EC11
SIGN211-EC11	Communication Systems	3	ELEC211-EC11 ELEC212-EC11	
SIGN211-EP11	Lab. Communications	1		SIGN211-EC11
TLCM111-EC11	Electromagnetics and Transmission lines	3	PELE113-EC11	
TLCM111-EP11	Lab. Electromagnetics and Transmission lines	1		TLCM111-EC11
TLCM112-EC10	Microwave Circuits	3	TLCM111-EC11	
TLCM113-EC10	Antennas and Satellites	3	TLCM111-EC11	
TLCM211-EC10	Mobile Communications Networks	3	NETW208-EC10	
		39		

Systems and Networks Option - 39 credits - 25%				
DBMG107-EC10	Database Administration	3	DBMG106-FC11	
NETW301-EC20	Network Design and Optimization	3	NETW208-EC10 PROG211-EC10	
PROG212-EC10	Object Oriented Programming II	3	PROG211-EC10	
PROG214-EC11	Artificial Intelligence	3	PROG112-EC10	PROG214-EP01
PROG214-EP01	Lab. Artificial Intelligence	1		PROG214-EC11
PROG302-EC10	Web Programming I	3	MLTM102-EC10	
PROG304-EC10	Internet Of Things and Big Data	3	PROG302-EC10	
SYST304-EC20	Information Systems Security	3	PROG302-EC10 PROG212-EC10	
SYST402-EC20	Development of Open Source Systems	3	PROG211-EC10 SYST101-EC10	

SYST403-EC10	Interconnection of Open Source Systems	3	SYST107-EC00	
SYST404-EP10	Lab. Systems Integration	1	SYST403-EC10	
SYST405-EC10	Applications on Operating Systems	3	SYST108-EC00	
SYST406-EC10	Cloud Computing and Storage	3	SYST405-EC10	
SYST505-EC21	Advanced Security	3	SYST405-EC10 SYST304-EC20	SYST505-EP10
SYST505-EP01	Lab. Security	1		SYST505-EC10
		39		

Software Engineering and Networks Option - 39 credits - 25%				
DBMG201-EC10	Multimedia Databases and Image Processing	3	PROG211-EC10	
NETW401-EP10	Lab. Network Programming	1	PROG211-EC10	
PROG212-EC10	Object Oriented Programming II	3	PROG211-EC10	
PROG213-EC10	Advanced Programming	3	PROG212-EC10	
PROG214-EC11	Artificial Intelligence	3	PROG112-EC10	PROG214-EP01
PROG214-EP01	Lab. Artificial Intelligence	1		PROG214-EC11
PROG302-EC10	Web Programming I	3	MLTM102-EC10	
PROG303-EC10	Web Programming II	3	PROG302-EC10	
PROG304-EC10	Internet Of Things and Big Data	3	PROG302-EC10	
PROG401-EC20	Mobile Development	3	PROG302-EC10 PROG211-EC10	
PROG501-EC10	Distributed Systems	3	PROG213-EC10	
SOFT101-EC20	Human Computer Interaction	3	PROG212-EC10 PROG302-EC10	
SOFT103-EP10	Lab. Software Design	1	PROG211-EC10	
SOFT201-EC10	Software Engineering and Quality Assurance	3	PROG212-EC10	
SYST304-EC20	Information Systems Security	3	PROG302-EC10 PROG212-EC10	
		39		

Multimedia and Networks Option - 39 credits - 25%				
DBMG201-EC10	Multimedia Databases and Image Processing	3	PROG211-EC10	
INFG203-EC10	Infographics	3	MLTM102-EC10	
MLTM202-EC10	3D Modeling	3		
MLTM203-EC10	Game Programming	3	MLTM202-EC10	
PROG503-EC10	Data Analysis and Visualization	3	PROG302-EC10	
MLTM302-EP10	Lab. Sound Engineering	1		
MLTM303-EP10	Lab. Audiovisual Production	1	MLTM302-EP10	
MLTM304-EP10	Lab. Editing and Special Effects	1	MLTM303-EP10	

PROG212-EC10	Object Oriented Programming II	3	PROG211-EC10	
PROG302-EC10	Web Programming I	3	MLTM102-EC10	
PROG305-EC10	Web Multimedia Technologies	3	PROG302-EC10	
PROG401-EC20	Mobile Development	3	PROG302-EC10 PROG211-EC10	
PROG501-EC10	Computer Vision and Graphics	3	MLTM202-EC10	
SOFT102-EC20	UX/UI Design	3	PROG212-EC10 PROG302-EC10	
SYST304-EC20	Information Systems Security	3	PROG302-EC10 PROG212-EC10	
		39		

Suggestion for courses distribution per semester

Semester 1
Introduction to Engineering
Circuit Analysis
Lab Circuits Analysis
Programming I
Lab. Programming I
Algebra I
Calculus I
Lab. Computers and Networks

Semester 2
Citizenship and Society
Electrostatics
Programming II
Algebra II
Calculus II
Introduction to Networks
Lab. CAD & GIS

Semester 3
Electricity and Magnetism
Lab. Electricity and Magnetism
Data Structures
Calculus III
Routing and Switching Essentials
Open Source Systems - UNIX
Web Design

Semester 4
English Writing Skills for Engineers
Sports
Object Oriented Programming I
Operations Research
Probability and Statistics
Scaling and Connecting Networks
Database Design

Semester 5
Fundamental Electronics
Lab. Fundamental Electronics
Theory of Operating Systems
Database Programming
Lab. Database Programming

Telecommunications and Networks Option
Electromagnetics and Transmission Lines
Lab. Electromagnetics and Transmission Lines
Signals and Systems

Systems and Networks Option
Object Oriented Programming II
Web Programming I

Software Engineering and Networks Option
Object Oriented Programming II
Web Programming I
Lab. Software Design

Multimedia and Networks Option
Object Oriented Programming II
Web Programming I
Lab. Sound Engineering

Semester 6
Communication Skills for Engineers
Computer Architecture
Lab. Numerical Analysis
Networks Architecture
Proprietary Systems

Methodology and Internship report

Telecommunications and Networks Option
Digital Logic Design

Systems and Networks Option
Artificial Intelligence
Lab. Artificial Intelligence

Software Engineering and Networks Option
Artificial Intelligence
Lab. Artificial Intelligence

Multimedia and Networks Option
Lab. Audiovisual Production
Infographics

Semester 7
Entrepreneurship and Innovation

Telecommunications and Networks Option
Microwave Circuits
Multimedia Signal Processing
Lab. Multimedia Signal Processing
Electronic Circuits
Lab. Electronics

Systems and Networks Option
Information Systems Security
Development of Open Source Systems
Interconnection of Open Source Systems
Database Administration

Software Engineering and Networks Option
Web Programming II
Information Systems Security
Multimedia Databases and Image Processing
Advanced Programming

Multimedia and Networks Option
Information Systems Security
UX/UI Design

| 3D Modeling |
| Multimedia Databases and Image Processing |

| **Semester 8** |
| Project Management |
| Research Methodology Seminar |

| **Telecommunications and Networks Option** |
| Antennas and Satellites |
| Communications Systems |
| Lab. Communications Systems |
| Microcontroller |
| Lab. Microcontroller |

| **Systems and Networks Option** |
| Network Design and Optimization |
| Applications on Operating Systems |
| Lab. Systems Integration |
| Internet Of Things and Big Data |

| **Software Engineering and Networks Option** |
| Mobile Development |
| Human Computer Interaction |
| Internet Of Things and Big Data |

| **Multimedia and Networks Option** |
| Web Multimedia Technologies |
| Game Programming |
| Mobile Development |

| **Semester 9** |
| Economics for Engineers |
| Law for Engineers |
| Ethics for Engineers |
| Final Year Project Proposal |

| **Telecommunications and Networks Option** |
| Mobile Communication Networks |
| Microprocessor and Embedded Systems |
| Lab. Embedded Systems |

Systems and Networks Option
Cloud Computing and Storage
Advanced Security
Lab. Security

Software Engineering and Networks Option
Lab. Network Programming
Distributed Systems
Software Engineering and Quality Assurance

Multimedia and Networks Option
Lab. Editing and Special Effects
Computer Vision and Graphics
Data Analysis and Visualization

Semester 10
Engineer Internship
Final Year Project

B.   Teaching methods

Teaching methods are manifold and varied. They are delivered in an array of forms, including:

Lectures, mainly addressed to large groups, during which students come to grips with the theoretical concepts underlying a subject matter. The teaching sessions are highly interactive, solicit the students' full participation, and stimulate their interest, thus greatly promoting the learning process.

Practicum, during which students come face to face with the real-life experimental situations. Hence, students will be able to apply the theoretical notions in a practical setting. Students will be assessed on his ability to apply and put the acquired notions into practice.

Tutorials, during which students apply the knowledge gained during the lectures to a series of exercises and case studies. Students will be assessed on their ability to apply a number of theoretical concepts to solving exercises.

Problem-based learning, in which students work in groups, discover, study and apply the elements of the subject by solving problems with the help of the resources provided to them. Students will be assessed on their ability to work in a group, to analyze a problem and to propose solutions based on their acquired knowledge.

Project-based learning, in which students wind up having a concrete product, achieved through the knowledge and skills gained from one or more courses. The project can be accomplished either individually or in small groups. Students will be assessed on their ability to manage a project, work in a group, identify needs, carry out a scientific research, propose solutions in answer to a practical challenge, and, eventually, realize a concrete project.

The aforesaid learning activities can be fully or partially adopted depending on the pedagogical nature of the course.

C.   Assessment methods for learning

The assessment of competencies and skills takes place during the semester of study. It is carried out through:
- Two-phase individual exams, including a mid-term part exam and a semester final exam. The examination schedule is communicated to students via an administrative circular.
- Learning assessment activities conducted during the course sessions, i.e. tutorials, practicums, projects, quizzes, etc.)

Each assessment represents a percentage value, whose total adds up to 100% of the final grade on the subject.

The grade distribution of a course is determined at the beginning of the semester and clearly mentioned in the syllabus.

No make-up examination, also known as a retake examination, is planned. Indeed, any absence to the assessments will not be automatically made up for.

Registration in any course depends on the validation of the prerequisite and mandatory course(s).

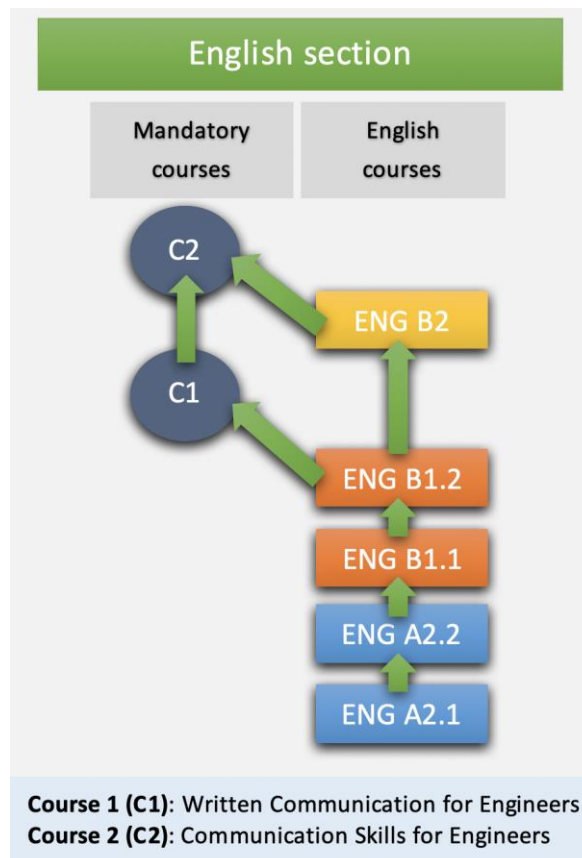| Number of validated credits	Equivalence to year
24	2nd year
60	3rd year
100	4th year
130	5th year
156	End of studies

D.   Teaching Language

During their studies, engineering students acquire skills in English Language through courses of 3 credits each. These courses are counted outside the curriculum.

Each student follows the appropriate course for his level of language proficiency; this level is evaluated following a placement upon admission to the University.

English section students are required to validate the English B2 level before graduation, which is a prerequisite for many courses (see prerequisites in section A.5).

Table : Courses offered by the Language Center

Course Name	Course Code
Remedial A2.1	REEN201-EC00
Remedial A2.2	REEN202-EC10
Remedial English B1.1	RENB101-EC10
Remedial English B1.2	RENB102-EC10
Remedial English B2	RENB200-EC10

Course 1 (C1): Written Communication for Engineers
Course 2 (C2): Communication Skills for Engineers

P.S.: All language courses must be enrolled at the Antonine University, unless the students gets a certification from a certified entity.

E. Graduation requirements

1. Eligibility for the graduation

To be eligible for a BE, students must fulfill the following requirements:
    (1) validate all credits required for the academic program courses;
    (2) validate all the academic program requirements, which do not count as units of the curriculum
    (3) validate all other admission requirements;
    (4) demonstrate ethical conduct in the university;
    (5) have honored payment of all tuition fees at the university.

IV. General provisions

A. Studies procedure

Teaching hours are usually limited to 8:30 a.m. to 8:00 p.m., having one and half hour per teaching session. The teaching locations are located on the attachement campus.

B. Calendar

The academic year is divided into three semesters (fall, spring, and summer). The fall and spring semesters are spread over 15 weeks, including assessment activities (exams). The summer semester follows an intensive regime.

C. Evaluation of teaching by students

Evaluation of teaching by students is an essential process for contributing to the improvement of teaching and learning. Students shall conduct a teaching evaluation using the Moodle platform for the enrolled courses.

D. General information and regulation of studies

General information of importance to students, as well as study regulations, is described in the document entitled *Study Regulations*, which are downloadable from the UA website.

E.   Special regulations

Class participation and the unofficial withdrawal procedure

According to the directives of the Ministry of Education and Higher Education, the attendance of students in sessions of courses taught in Lebanese universities is mandatory. Besides, article 140 of the *Organic Statute* stipulates as follows:

§ 1. Students are required to be faithful and punctual in observing the rules and schedule, under the regulations of articles 130 and 131.

§ 2. A student who arrives at the premises when the course session has already begun will no longer be allowed to take part in it.

§ 3. Students are not allowed to leave the premises of a course before the end of the session.

a)   Academic dimension

Attendance of students in study sessions is mandatory since attendance, participation, and meeting deadlines are prerequisites for successful completion of the course. In the case of absence, the student must notify the instructor by e-mail and compensate for missed learning by inquiring about the content, studying the content, and completing the required assignments.

b)   Participation

Student participation in the classroom must be active to make learning more effective. The student must have the material required by the instructor for the successful completion of the learning process.

c)   Minimum attendance rate

However, under certain conditions, a particular rate of absence is tolerated. Exceeding this limit would withdraw the student unofficially from the course. Late arrival for a lecture (more than 15 minutes) and leaving before the end of the session is considered to be an absence.

This means for all students enrolled in any course taught at the UA, a minimum attendance rate of 70 percent is expected. This results in a limit of 9 (1.5 hours) sessions for a three credits course, 6 (1.5 hours) sessions for a two credits course, and 3 (1.5-hour) sessions for a one-credit course.

An additional exemption (capped at 50%) regarding student attendance may be granted to graduate students.

In all cases, student absences should be compensated for by extra work, online support, and, where appropriate, intensive courses integrated into the programs. In the case of late semester registration, sessions missed by the delayed student will be counted as absences.

d)   Attendance recording

The instructor enters on SIS the attendance of students during the teaching sessions for each course.

e)   Warning

The student receives a warning on SIS, as well as the instructor and *advisor* concerned when given limits of cumulative or successive absences are exceeded.

For a 3-credit course, this limit is five cumulative absences and four consecutive absences.
For a 2-credit course, the limit is four cumulative absences and three consecutive absences.
For a 1-credit course, this limit is two cumulative absences.

f) Unofficial withdrawal policy

"With reference to the stipulations of Article 61 of the *Organic Statute*, which states that the Dean "shall decide in consultation with the Unit Council on student absences to submit the decision to the Secretary-General for confirmation," when a student is absent from a course more than the authorized rate, the Registrar's Office shall notify the student of his *unofficial withdrawal* from the course through the SIS. Such withdrawal shall incur the student receiving the rank of UW for that course, which will appear on the transcripts. If the sanction is communicated during the term, the student must send a reasoned request to the Registrar's Office against the decision within three days of the appeal. If it is communicated at the end of the semester, the student must send it within 24 hours. The argumentation must be based on the fact that the average of the previous evaluations is above the passing grade and on a duly documented justification of at least two absences. The Registrar's Office shall forward this request to the Dean concerned who may invalidate the unofficial withdrawal with the Registrar's Office after consultation with the instructor of the course. The Registrar's Office would then re-enroll the student in the course on the SIS, canceling one of the absences that led to the *unofficial withdrawal*. If the Dean does not respond to the request within 48 hours of receipt, the unauthorized withdrawal is *de facto* maintained.