

AMERICAN UNIVERSITY OF BEIRUT

CATALOGUE 1973-74



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AMERICAN UNIVERSITY OF BEIRUT

1973-1974 CATALOGUE

*Address all correspondence regarding admission to The Registrar,
American University of Beirut, Beirut, Lebanon.*

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CALENDAR 1973-1974

NOTE: It is very important for all students to register on the regular registration dates in order to obtain the maximum benefit from classes. Students are urged to register on time.

Students accepted to Orientation Program, Freshman and Sophomore classes of the Faculty of Arts and Sciences, and to First Year of the Schools of Medicine, Pharmacy, Nursing and Public Health and Faculties of Engineering and Architecture and Agricultural Sciences, who do not register during the specified preliminary registration period will lose their places.

FIRST AND SECOND SEMESTERS

Faculties of Arts and Sciences, Agricultural Sciences, Engineering and Architecture; Schools of Public Health, Nursing and Pharmacy

Applications

March 31, 1973 (Sat.)	Last day for submitting applications for undergraduate study.
May 1, 1973 (Tues.)	Last day for submitting applications for graduate study.

Registration

Sept. 24, 1973 (Mon.) 8:15 a.m.	First semester preliminary registration begins.
Oct. 1, 1973 (Mon.) 5:00 p.m.	First semester preliminary registration ends.
Sept. 27, 1973 (Thurs.) 8:15 a.m.	First semester final registration begins.
Oct. 3, 1973 (Wed.) 5:00 p.m.	First semester final registration ends.
Jan. 28-31, 1974	Second semester registration for students attending the University during the first semester:
Jan. 28 (Mon.) 8:15 a.m.	Graduate, all Faculties.
Jan. 29 (Tues.) 8:15 a.m.	Arts and Sciences Senior and Junior; X-Ray Program.
Jan. 30 (Wed.) 8:15 a.m.	Arts and Sciences Sophomore, Freshman, Special, Orientation Program; Agricultural Sciences.
Jan. 31 (Thurs.) 8:15 a.m.	Pharmacy, Nursing; Public Health; Engineering and Architecture.

Semester and Examination Dates

Oct. 4, 1973 (Thurs.) 8:00 a.m.	First semester classes begin.
Jan. 24, 1974 (Thurs.) 10:00 p.m.	First semester classes end.
Jan. 25-Jan. 31, 1974	Reading period before first semester examinations.
Feb. 1, 1974 (Fri.) 8:00 a.m.	First semester examinations begin.
Feb. 7, 1974 (Thurs.) 10:00 p.m.	First semester examinations end.
Feb. 11, 1974 (Mon.) 8:00 a.m.	Second semester classes begin.
June 1, 1974 (Sat.) 1:00 p.m.	Second semester classes end.
June 3-8, 1974	Reading period before second semester examinations.
June 10, 1974 (Mon.) 8:00 a.m.	Second semester examinations begin.
June 18, 1974 (Tues.) 10:00 p.m.	Second semester examinations end.

School of Medicine

Applications

March 31, 1973 (Sat.)	Last day for submitting applications for undergraduate study.
May 1, 1973 (Tues.)	Last day for submitting applications for graduate study.

Registration

First Semester

Same as other Faculties	Medicine I, Graduate and Special.
Sept. 14, 1973 (Fri.) 9:00 a.m.	Medicine II.
Aug. 31, 1973 (Fri.) 9:00 a.m.	Medicine III.
June 14, 1973 (Thurs.) 9:00 a.m.	Medicine IV and V.

Second Semester

Jan. 31, 1974 (Thurs.)	All classes except Medicine V.
------------------------	--------------------------------

Semester and Examination Dates

Same as other Faculties

Sept. 15, 1973 (Sat.) 8:00 a.m.	Medicine I, Graduate and Special.
Jan. 9, 1974 (Wed.) 10:00 p.m.	Medicine II first semester classes begin.
Jan. 10, 1974 (Thurs.) 8:00 a.m.	Medicine II first semester classes end.
Jan. 18, 1974 (Fri.) 10:00 p.m.	Medicine II first semester examinations begin.
Jan. 26, 1974 (Sat.) 8:00 a.m.	Medicine II first semester examinations end.
May 25, 1974 (Sat.) 1:00 p.m.	Medicine II second semester classes begin.
May 27, 1974 (Mon.) 8:00 a.m.	Medicine II second semester classes end.
June 1, 1974 (Sat.) 1:00 p.m.	Medicine II second semester examinations begin.
June 13, 1974 (approximately)	Medicine II second semester examinations end.
Sept. 1, 1973 (Sat.) 8:00 a.m.	Medicine II National Board Part I Examinations.
May 31, 1974 (Fri.) 10:00 p.m.	Medicine III classes begin.
June 3, 1974 (Mon.) 8:00 a.m.	Medicine III classes end.
June 8, 1974 (Sat.) 1:00 p.m.	Medicine III final examinations begin.
June 15, 1973 (Fri.) 1:00 a.m.	Medicine III final examination end.
June 14, 1974 (Fri.) 10:00 p.m.	Medicine IV and V classes begin.
	Medicine IV and V classes end.

AUB Special, English Entrance and Full Entrance Examinations

Sept. 24, 1973 (Mon.) 8:00 a.m.	Make-up course examinations of the year 1972-1973.
8:30 a.m.	
10:30 a.m.	
Jan. 7, 1974 (Mon.) 8:30 a.m.	English 201 exemption examination.
March 4, 1974 (Mon.) 8:30 a.m.	Arabic 201 exemption examination.
May 7, 1974 (Tues.) 8:30 a.m.	Full entrance examinations begin.
July 8, 1974 (Mon.) 8:00 a.m.	Full entrance examinations begin.
	Full entrance examinations begin.

AUB Graduation Exercises

June 23 (Sun.) 7:00 p.m.	Baccalaureate Service.
June 24 (Mon.) 6:30 p.m.	Commencement.

SUMMER SESSION

All Faculties

Registration

June 12 (Wed.) 8:15 a.m.	Agricultural Sciences; Engineering and Architecture; Pharmacy, Practical Experience.
June 27 & 28 (Thurs., Fri.) 8:15 a.m.	Arts and Sciences; Medicine Graduate and Special; Pharmacy Graduate and Special; Nursing; Public Health.

Class and Examination Dates

June 24 (Mon.) 8:00 a.m.	Classes begin for Agricultural Sciences; Engineering and Architecture; Pharmacy, Practical Experience.
July 1 (Mon.) 8:00 a.m.	Classes begin for Arts and Sciences; Medicine, Graduate and Special; Pharmacy, Graduate and Special; Nursing; Public Health.
Aug. 19-24	Reading period and examinations for Arts and Sciences.
Aug. 24 (Sat.) 1:00 p.m.	Summer session ends, except for Pharmacy, Practical Experience and Medicine.
Sept. 14 (Sat.) 1:00 p.m.	Summer session ends for Pharmacy, Practical Experience.

ACADEMIC YEAR

The academic year in the School of Arts and Sciences is 32 weeks excluding vacations; the summer session of 8 weeks is optional. The academic year in the School of Medicine is 32 weeks in first year, 34 weeks in second year, ten months in third year and eleven months in fourth and fifth years. In the other Faculties and Schools the academic year includes two semesters of 32 weeks, and a summer session as follows: in the Faculties of Agricultural Sciences and Engineering and Architecture, 9 weeks; in the Schools of Nursing and Public Health, 8 weeks; in the School of Pharmacy, 12 weeks (Practical Experience) or 8 weeks (Graduate Study and Special Students).

UNIVERSITY HOLIDAYS, VACATIONS, ETC.

1973

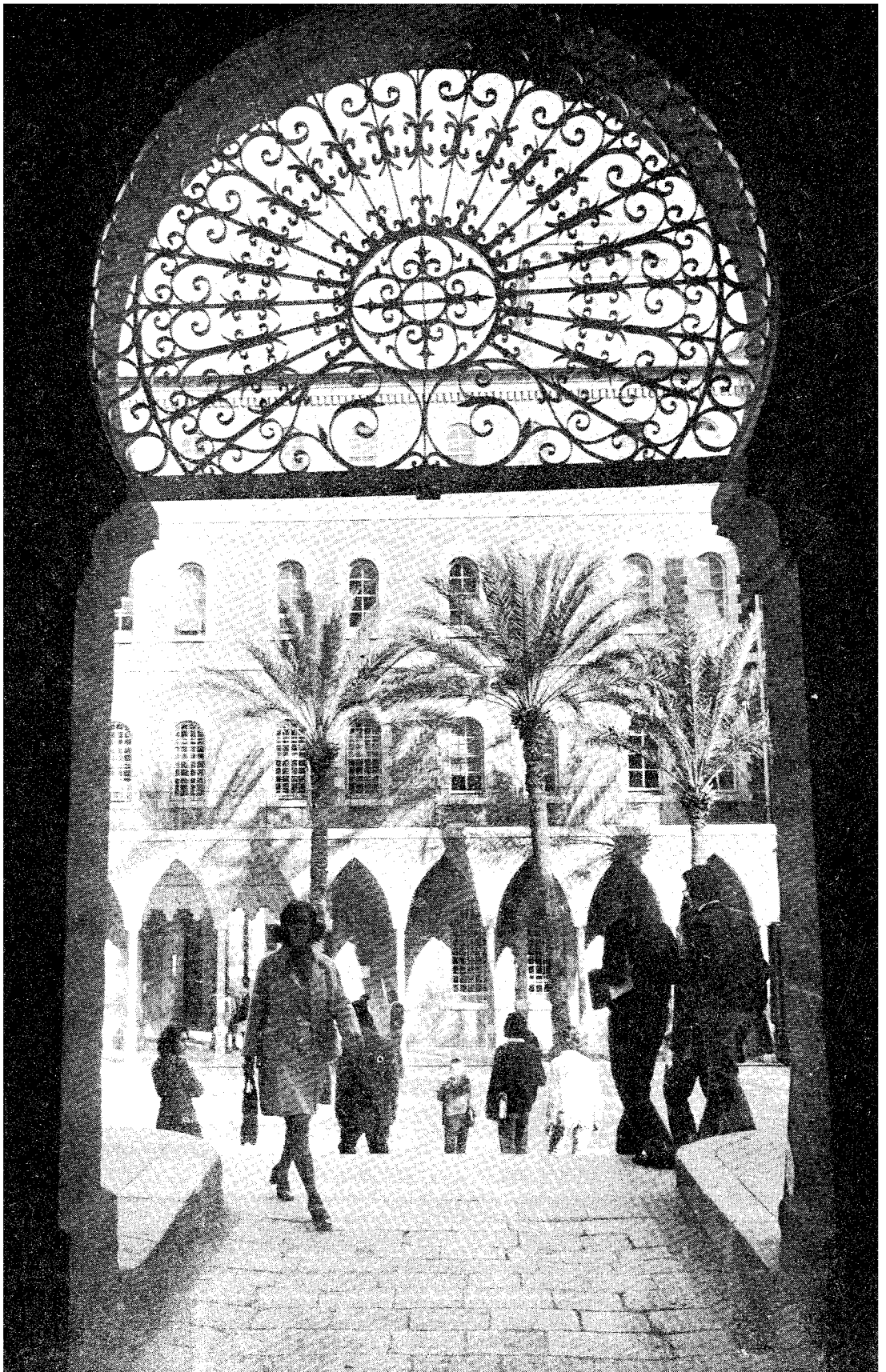
- Oct. 28, 29 (Sun., Mon.) Id al-Fitr, holiday.
- Nov. 22 (Thurs.) Lebanese National Day, holiday.
- * Dec. 3 (Mon.) Founder's Day. *Not a University holiday.*
- Dec. 22 (Sat.) 1:00 p.m. Christmas vacation begins.

1974

- Jan. 2 (Wed.) 10:00 p.m. Christmas vacation ends.
- Jan. 4, 5 (Fri., Sat.) al-Adha, holiday.
- Jan. 6 (Sun.) Armenian Christmas. Armenians are allowed excused absences. No examinations or quizzes will be scheduled on this day.
- Jan. 25 (Fri.) Moslem New Year, holiday.
- Feb. 3 (Sun.) Ashoura, holiday.
- Feb. 9 (Sat.) St. Marun's Day. Maronites are allowed excused absences. No examinations or quizzes will be scheduled on this day.
- March 22 (Fri.) Arab League Day, holiday.
- April 5 (Fri.) Prophet's Birthday, holiday.
- April 11 (Thurs.) 10:00 p.m. Easter vacation begins.
- April 22 (Mon.) 10:00 p.m. Easter vacation ends.
- May 1 (Wed.) Labor Day, holiday.
- May 6 (Mon.) Martyrs' Day, holiday.

* The University, which was known up to November 18, 1920, as the Syrian Protestant College, opened its first class on December 3, 1866. Classes will be held on Founder's Day as it is not a holiday.

◦ Id al-Fitr, al-Adha, Moslem New Year, Prophet's Birthday, and Ashoura are determined after seeing the moon and because of that the actual dates may not coincide with the dates in this calendar. The holiday will be the first two days of the feast as declared for Id al-Fitr and al-Adha, and the first day for the Prophet's Birthday and Ashoura. If Id al-Fitr and Ashoura fall on Sundays, then Monday and Tuesday, October 29 and 30 and Monday, February 4, will be holidays.



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UNIVERSITY ADMINISTRATION 1972-1973

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Ardag Meghdessian, Dip.Sup.Bibi., *Serials Librarian.*
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Nawal Naamani, M.A., *Reference Librarian.*
Mildred A. Corsette, B.S., *Chief Documents Librarian.*
Lucy Yusuf, M.L.S., *Chief Circulation Librarian.*
Lilian J. Vitaie, M.S., *Science and Agriculture Librarian.*
Catharina Kingma, Dip.Lib., *Engineering and Architecture Librarian.*
Leila Hanhan, M.L.S., *Acting Medical Librarian.*
Labeeba Abu Alwan, B.A., *Research Assistant, Arab Documentary Project.*

University Museum

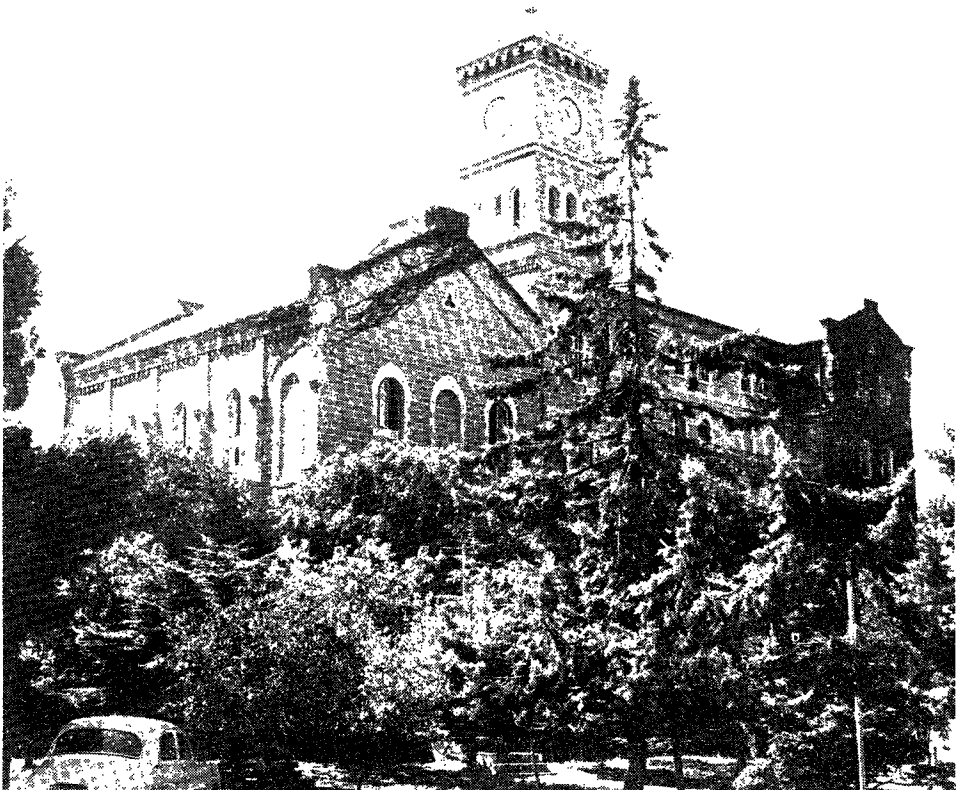
Dimitri C. Baramki, Ph.D., *Curator of Museums.*

University Observatory

Frans Bruin, Ph.D., *Director.*

University Chapel

Robert C. Walker, Jr., B.D., M.A., *University Chaplain.*



College Hall, oldest building on campus

INTRODUCTION

Foreword

The American University of Beirut (AUB) is a private, non-sectarian institution of higher learning, founded in 1866, which functions under a charter from the State of New York. It is administered by a private autonomous Board of Trustees.

The University has four Faculties: the Faculty of Arts and Sciences; the Faculties of Medical Sciences; the Faculty of Engineering and Architecture; and the Faculty of Agricultural Sciences. Degrees are granted under authority of the Board of Regents of the State University of New York. The institution is co-educational and women are admitted to all schools. The language of instruction is English.

The University presents a program in international education which is unique among the universities of the world. The students, numbering 4,386 in the first semester of 1972-73, come from 68 countries. Over 80% of the students are from the Arab countries of the Middle East and North Africa. 63% of the faculty are from the Middle East, 16% from the United States and Canada, and 21% from other countries. The cosmopolitan campus and classrooms of AUB provide a living laboratory where students of many lands meet during the most formative period in their lives to learn how to work together in a spirit of mutual understanding. The educational philosophy of AUB is similar to that of an American university, but its program is adapted to the particular needs and educational demands of the Middle East.

Statement of Policy

The purpose of the American University of Beirut, as an institution of higher learning, is to share in the education of the youth of the Middle East, in the service of its peoples, and in the advancement of knowledge.

The University emphasizes scholarship which enables students to think for themselves. It stresses high academic standards and high principles of character. It aims to produce men and women who not only are technically competent in their professional fields but who also have breadth of vision, a sense of civic and moral responsibility, and devotion to the fundamental values of human life. In its service to students, the University strives to realize the ideal of its motto: "That they may have life and have it more abundantly."

The University stands for high academic standards. Its diplomas are recognized internationally; and in order that they may continue to be so recognized, they must be based upon satisfactory completion of the full requirements set forth in the University catalogue.

The University has been dedicated since its foundation, and continues to be dedicated, to the cultivation of high ethical, moral, and spiritual values.

The University believes in and encourages freedom of thought and expression. It expects, however, that this freedom be enjoyed in a spirit of integrity and with a full sense of responsibility.

The University believes that every member of its community—students, faculty, staff, administration—has the right to individual self-expression; it has not taken, and will never take, any action to infringe the proper exercise of this right. It must

insist, however, that inherent in this right is an obligation: the obligation of everyone to give his colleagues the same right. Each has the right of peaceful dissent, but no one has the right to prevent those who disagree with him from pursuing their proper activities.

All members of the University—students, faculty, staff, administration—are expected to conduct themselves in accordance with the spirit of this declaration of policy, the regulations of the University, and the Laws of the Republic of Lebanon, whose hospitality gives the institution the privilege of carrying out its educational activities within the framework of academic freedom.

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 in order to found a college of higher learning which would include medical training. It was felt that this college should have an American character, should be administered independent from the Mission, and should be maintained by its own funds. Dr. Bliss sailed for United States in the summer of 1862 to solicit funds for the new enterprise. By August, 1864, he had raised \$100,000 there, but because of inflation during the Civil War it was decided he should raise a sterling fund in England in order to start the operations of the college, leaving the dollar fund to appreciate in value. After collecting £ Stg. 4,000 in England, he sailed for Beirut in March, 1866.

Already, on April 24, 1863, the State of New York had granted a charter for the new school, 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 by the Honorable William E. Dodge, Sr., then Treasurer of the Board of Trustees, on December 7, 1871, at a ceremony during which 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 colour, 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 (now the School of Public Health) were completed and occupied in 1873. The bell in the tower of College Hall pealed for the first time on March 14, 1874.

The School of Medicine opened its first class in 1867, the Preparatory School and the School of Pharmacy in 1871, the School of Commerce (later incorporated into the Faculty of Arts and Sciences) in 1900, the School of Nursing and the Hospital in 1905, the Faculty of Engineering and Architecture in 1951, the Faculty of Agricultural Sciences in 1952, and the School of Public Health in 1954. A School of Dentistry existed between 1910 and 1940.

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

AUB has had seven presidents. The founder, Dr. Daniel Bliss, remained in charge from 1866 until 1902 when he resigned after thirty-six years of service. His son, Dr. Howard S. Bliss, was president from 1902 until his death in 1920. For three years Dean Edward F. Nickoley served as acting president until Dr. Bayard Dodge was appointed president in 1923. Dr. Dodge resigned from active service in 1948 and was elected president emeritus by the Board of Trustees in January, 1949. Dr. Stephen B.L. Penrose, Jr., assumed the presidency in September, 1948, and continued until his sudden death on December 9, 1954. Dr. Costi K. Zurayk, appointed vice president in 1947, served as acting president from December 9, 1954, until July 1, 1957. Dr. J. Paul Leonard served as president from July 1, 1957, until January 1, 1961. Dr. Norman Burns assumed the presidency in September, 1961, and served through July, 1965. Dr. Samuel B. Kirkwood then served as acting president from August, 1965, until his appointment as president on November 20, 1965. Marquand House, completed and occupied in 1879, has been the residence of all presidents of the University.

At the end of June, 1972, the total number of degrees granted by the University was 17,253, and the number of diplomas and certificates was over 13,000.

AUB, as a private institution, depends upon several sources of financial support. Tuition, income from endowment, and contributions from individuals, industry, and business in the United States and the Middle East provide partial funding. Grants from foundations and governments, especially the education programs of the United States Agency for International Development, have supplied a major share in recent years. The University is now engaged in a planned campaign for long-term financing. Information concerning fund raising efforts may be obtained from the Office of Development, American University of Beirut, Beirut, Lebanon.

Location and Climate

The University is situated in Beirut, Lebanon, the crossroads of the Middle East. The Campus rises to a dominant position overlooking the Mediterranean Sea and the beautiful St. George's Bay, against a background of the snow-capped Lebanon mountains to the east. The campus of seventy acres has over fifty buildings, including the academic buildings, two halls for student activities, two men's and three women's dormitories, faculty apartments, and the Medical Center.

Lebanon enjoys a semi-tropical climate, and for eight months of the year light clothes may be worn. The winter rainy season from November to March, however, is damp and cold at times. Although many Beirut buildings are centrally heated, warm clothing is recommended for the winter months. The average annual rainfall of 34 inches comes chiefly in the winter when the temperature may drop below 50 °F. Except for this rainy season, the weather of Beirut is delightful. The campus abounds in luxuriant flowers and trees, which make it one of the most beautiful in the world.

ACADEMIC SERVICES

The University Library System consists of the Central Jafet Memorial Library, the Medical Library, the Science and Agriculture Library, the Engineering and Architecture Library and the Farm Library. The Library at first occupied rooms in College Hall; in 1925 the medical books were moved to the present Medical Library in Van Dyck Hall. The construction of the Jafet Library was made possible by a generous donation from the family of the Lebanese-Brazilian industrialist Nami Jafet; it was opened in 1951. By this time the University possessed some 80,000 volumes—53,000 in the Jafet Library, 21,000 in the Medical Library, and the rest in International College (which became independent in 1960) and the then separate Nickoley social science collection.

Since then the growth of the University's research and graduate programs has necessitated rapid expansion. The Engineering Library was opened in 1953 and transferred under the new title of Engineering and Architecture Library to larger premises in 1971. The Agriculture Technical Reference Room (merged in 1962 in the Science and Agriculture Library which was in turn enlarged in 1969) and the Farm Library were opened in 1958. The Jafet Library was much altered and enlarged in 1959-60 and the Science and Agriculture Library was opened in 1962. Forming part of the Medical Center, a new Medical Library is due to be completed in 1973. Preliminary studies have been undertaken for a new General Library building and redevelopment of the Jafet Library at some time in the future.

The University's collections at June 30, 1972, comprised 362,500 volumes, 4,950 current periodicals, 2,200 manuscripts and large holdings of United Nations and government documents. Of these, the Medical Library held over 61,000 volumes and 1,020 current periodicals, forming probably the best collection in its field in the Middle East. The reference and general collections, mainly housed in the Jafet Library, are especially rich in material concerning the Arab world, and include over 45,000 volumes and 700 periodicals (current or ceased publication) in the Arabic language. Reference and loan services are provided in all Libraries, and lists of Eastern language and Medical acquisitions are issued regularly. The photoduplication service provides readers with photocopies at low cost. A special area in the Jafet Library is devoted to the history and archives of AUB.

Library orientation courses are given regularly to sophomore students in the Faculty of Arts and Sciences and B.S. students in the School of Nursing, and to other groups on request.

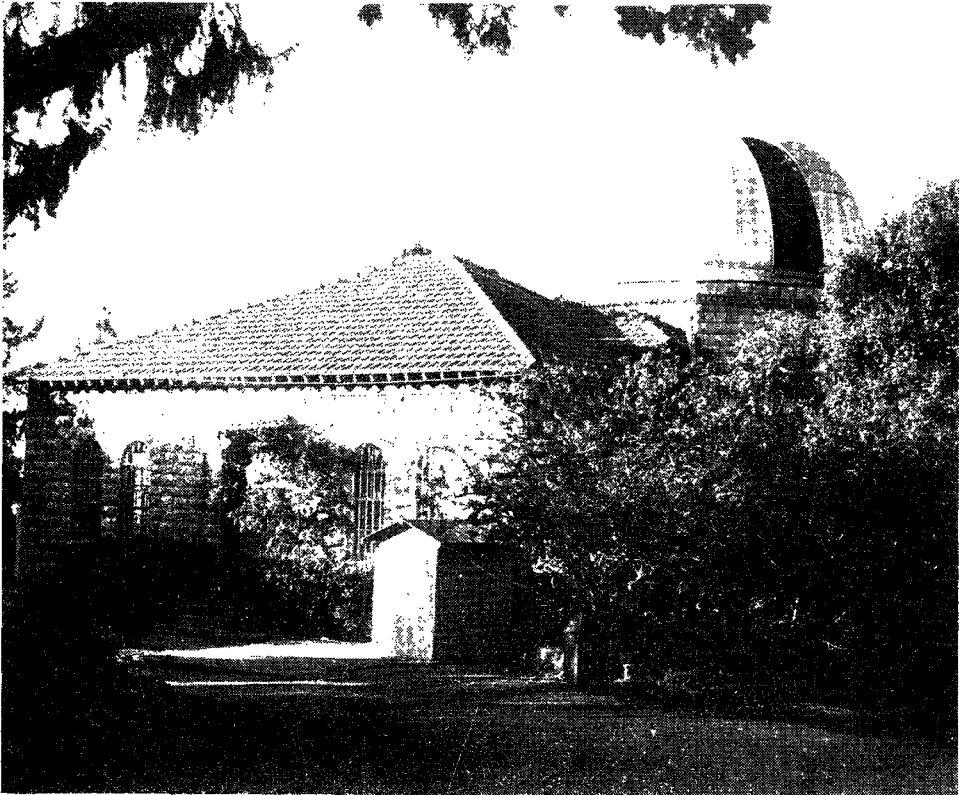
The University Museum, in Post Hall, brings together distinctively Near Eastern archaeological collections, which are arranged with a view to their educational use for students and scholars in the archaeology of the Near East. The geological collection is displayed in the same building.

The University Observatory, founded in 1874, is equipped with a Brashear 12-inch equatorial refractor telescope and a transit instrument. The Observatory has served as a meteorological station since its founding, and publishes its data each month.

The University Computer Center, which began operation in 1964, is equipped with a full range of punched card machines as well as three computer systems; an IBM-1401, an IBM-1620 and an IBM-1130 (for hospital patient accounting). This equipment and a trained supporting staff are available for academic, research and administrative data processing.

The Office of Tests and Measurements is in charge of examinations concerned with entrance, aptitude or placement. Representatives of this Office, in addition to their work of test creation, refinement and administration for AUB, serve as consultants to several educational and commercial institutions in the Middle East in the development and administration of their own testing programs. The Office makes extensive use of the Computer Center.

The Teaching Hospital, containing 420 beds, was opened in 1969, with capacity to care for more than 18,000 inpatients and to treat over 150,000 patients in its clinics and emergency facilities each year. A medical staff of 150 highly qualified physicians in most of the recognized specialties, assisted by 700 professional and auxiliary personnel and aided by latest scientific equipment, provides a broad spectrum of medical care. The Hospital is accredited every two years by the Joint Commission on Accreditation of Hospitals.



University of Beirut

ADMISSIONS

Admissions Policy

I. GENERAL STATEMENT

The American University of Beirut is a private institution with limited facilities. Its emphasis is on quality education. For these reasons the University is unable to admit every candidate who applies, even though he may have fulfilled the minimum requirements for admission. Certain measures for selecting the most promising from among the candidates who apply are thus deemed necessary.

In order to attract the maximum number of qualified applicants from among whom it may select its students, the University adopts a positive approach in implementing its admissions policy. Thus through various measures the University seeks to inform the largest possible number of potential applicants about the various programs which are offered. Furthermore, constant endeavors are made to increase funds available for scholarship aid in order to encourage needy young men and women who are exceptionally well-qualified to study in the University.

Instruction is conducted through the medium of the English language. For this reason, command of the English language, both oral and written, is fundamental to the student's ability to study here successfully.

According to the charter which governs the operations of the University and to its regulations, no student may pursue his education here through correspondence or by merely passing the University examinations. Regular attendance at classes, lectures, laboratory sessions and seminars is essential to qualify the student for any degree granted by the University.

Although AUB is a private institution, it has been founded to serve the youth of the Middle East, primarily the youth of Lebanon and the Arab World. The University assumes that its graduates will return to their native lands to serve their people. It is important therefore that degrees granted by the University be recognized by the countries from which our students come. Accordingly the University seeks to operate in full harmony with the systems of education in the Middle East. Its admissions policy is thus based fundamentally on the recognition of official government secondary certificates; the aim being to encourage as many of our students as possible to complete their countries' systems of secondary education before entering AUB.

The University is co-educational. Men and women are admitted to all its Schools and Faculties on equal basis.

II. MAJOR CRITERIA FOR ADMISSION

Eligibility for admission to the University is determined on the basis of two major criteria:

A. *Approved Academic Record.* As a relatively small private institution, with a growing emphasis on graduate study and quality education, this University seeks to admit students with a high scholastic record and intellectual potential. These qualities are ascertained by a careful examination of every applicant's academic record over a minimum period of three years, his results or rank on the official secondary certificate examinations, and testimonials written by his teachers or principal.

B. *Evidence of Good Health and Sound Moral Character.* Before being admitted, a candidate is required to submit to and pass a thorough medical examination. In addition, special consideration is accorded to those candidates who, during their pre-university careers, give evidence of a sound moral character, interest in community affairs, and potential positive, constructive leadership.

III. OTHER CRITERIA FOR ADMISSION

A. *Geographic.* A major purpose of the University is to provide quality education for the youth of the Middle East. While the University attracts students from about seventy countries, its policy is to give priority to applicants from Lebanon, the Arab World and other countries of the Middle East.

B. *Alumni.* It is the policy of the University to maintain strong and continuing relations with its alumni. Thus it considers the attendance of the children of its alumni an important element for ensuring the maintenance of these relations.

IV. HARDSHIP AND OTHER SPECIAL CASES

Due to unusual or unforeseen circumstances, a limited number of candidates may not meet the strict requirements for entering the University. Promising applicants who, during the last six years prior to the completion of their secondary education, have been obliged to study under diverse educational systems, may not be required to submit those official certificates which are ordinarily required for entrance to the University. The appropriate Admissions Committee may consider their admission on the basis of other criteria such as school records, entrance examinations and other types of tests. A similar treatment may be accorded to candidates with physical disabilities such as deafness, blindness or muteness, who have completed the equivalent of 12 years of schooling.

V. QUALIFYING CERTIFICATES

Unlike many other universities, the American University of Beirut, because of its position and location, recognizes a number of different certificates of secondary education as fulfilling, in part, its minimum requirements for admission. In adhering to this policy, the University aims to select from amongst the holders of these certificates those candidates who are capable of benefiting most from university education and who can contribute most to their field of study and to their respective communities.

A detailed statement listing the various certificates which the University recognizes, and the conditions of such recognition, is found in the following pages under the heading Requirements for Admission.

VI. CANDIDATE'S FOLDER

For purposes of admission and selection, a special folder for every candidate is assembled by and kept in the Admissions Section of the Registrar's Office. This folder must include:

- (a) an application;
- (b) a copy of the certificate or diploma required for admission;
- (c) a report on the applicant's grades over at least the last three years of schooling;
- (d) evaluation by his principal, and if possible by two of his teachers;

- (e) results of the University English entrance examination, or its equivalent, together with any other test scores which may be required;
- (f) a photocopy of the identity card or passport;
- (g) one passport size photograph.

VII. NAMES OF STUDENTS

The names of all students will be recorded in the University books as they appear on the identity cards of students from Lebanon and Syria and as they appear on the passports of students from outside Lebanon and Syria. The names of Arabic-speaking students are recorded in Latin characters in accordance with the University transliteration system. Students, however, may have their names spelled according to their own desire on certificates and diplomas. No student will be allowed to register without first presenting his identity card or passport.

VIII. THE UNIVERSITY AND SYSTEMS OF EDUCATION IN THE MIDDLE EAST

As an institution of higher learning serving in the Middle East, the University must be responsive to educational developments which are taking place in this area, particularly in the field of secondary education. Towards this end the University maintains contacts with Ministries of Education and with private schools and, on occasion, sends some of its personnel to visit schools and discuss educational problems with government education officials and principals of private schools.

Specifically the University has adopted the following measures in its attempt to maintain closer relations with systems of education:

- (a) the University maintains an up-to-date file of educational legislation of the various governments of the area, as well as programs of private institutions from which our students are drawn;
- (b) officials of the University are prepared to provide academic counseling and other information, either through interview or by correspondence, to anyone who is interested regarding the University, its programs and regulations;
- (c) through the encouragement of occasional visits and exchange of views between the professors and staff of the University and the members of the faculties and staff of other colleges and universities of the area, AUB aims at strengthening its relations with these institutions. The aim here is three-fold: (1) to facilitate the evaluation of records of students desiring admission to advanced standing at this University; (2) to aid in the complex problems of equating or recognizing degrees; (3) to cooperate with fellow institutions in raising the general level of higher education in the area;
- (d) the University publishes an annual Catalogue and a number of other pamphlets giving information about the University to prospective students, parents, institutions, government agencies and other organizations. Distribution of such publications is the responsibility of the Admissions Section of the Registrar's Office;
- (e) in view of the importance of an adequate knowledge of English for success at this University, it is the responsibility of the Admissions Section of the Registrar's Office and the Office of Tests and Measurements to publicize this fact and suggest practical methods for improving the standards of English teaching, particularly in those schools from which the majority of our students is drawn.

IX. SELECTION OF APPLICANTS AND ADMINISTRATION OF ADMISSIONS POLICY

The selection of applicants for admission to any Faculty of the University is made by the Admissions Committee of that Faculty and the Admissions Section of the Registrar's Office. The Admissions Section of the Registrar's Office is also responsible for the administration of the admissions policy, and all correspondence regarding admission is centered in this Section.

As of the second semester of the academic year 1972-1973, admission to any Faculty by transfer from another Faculty should go through the Admissions Committee of the Faculty concerned. Henceforth it will not be possible, for example, for a student in the School of Nursing or the Faculty of Engineering and Architecture to transfer into Arts and Sciences unless the transfer is approved by the Admissions Committee of the Faculty of Arts and Sciences.

The successful application of this policy depends upon the cooperative efforts of all those University officials who are concerned with admission. The selection of candidates with high academic qualifications with potential for positive, constructive leadership and with a sense of commitment for the service of their respective communities, is not an easy task. It is however fundamental to the fulfillment of the mission of the University.

Requirements for Admission

I. APPLICATION FOR ADMISSION

New students interested in applying for undergraduate work must make formal application before March 31. The Admissions Section of the Registrar's Office will send the necessary application forms, which must be returned with official records of the student's previous education, a certificate of good conduct from his school, a photocopy of his identity card or passport, one identification photograph, and an Application Fee of L.Leb.25 or the equivalent in other currencies. *This fee is not refundable.* Applicants will be notified, in writing, during the month of April of the decisions of the Admissions Committee.

Former students of this University who are in good standing, who had interrupted their studies for one semester or more and who wish to resume their work are required to notify the Registrar's Office in writing of their intent not less than two weeks before the beginning of registration.

Applications for admission to graduate work should be submitted to the Admissions Section of the Registrar's Office not later than May 1 for students who wish to begin graduate work in summer or October; and not later than December 31 for students who wish to begin their studies during the second semester.

Candidates who are not regular students at AUB and who intend to join the Summer Session only must submit applications by June 10. Currently registered students need not submit application forms, but are required to submit schedule cards. If a currently registered student submits a schedule card but fails to enroll in the Summer Session, a charge of L.Leb.25 will be deducted from his standing deposit with the University.

II. GENERAL REQUIREMENTS

The following requirements are in all cases the *minimum* requirements demanded

by the University, and their fulfillment by a candidate does not automatically ensure his selection. Candidates are finally selected, up to the limits of available space, from the most promising of all eligible applicants.

A. Secondary Certificates

The University, utilizing its experience of the performance of holders of various secondary certificates, recognizes some secondary school certificates for eligibility for admission, and may require holders of these certificates to pass the English entrance examination and/or other examinations.

Some systems of education grant two or more types of certificate (such as literary, scientific, etc.). Holders of literary certificates are eligible to enter the Arts program, or to concentrate in the Arts or Social Science fields. A holder of a literary certificate may also be eligible to enter the Science program or concentrate in one of the Science fields or Mathematics, if he passes the University entrance examination in Mathematics and Science. Holders of scientific and mathematics certificates may enter either the Sciences or Arts program, or they may concentrate in one of the following fields: Arts, Social Science, Science, or Mathematics.

Some systems of education do not in their secondary certificates distinguish between literary, scientific or other types of certificate, but indicate the subject or subjects passed. Holders of such certificates are required to submit evidence that they have passed in a specified number of subjects in order to qualify for admission. If the certificate shows that the candidate has passed in fewer subjects than the number specified, it will not be recognized by the University for admission. Nevertheless, if the certificate shows that the candidate has passed in the specified number of subjects, but that these lack one, and only one, of those subjects which are *required*, then the candidate may make up the deficiency by passing the entrance examination of the University in the missing subject.

If the University requires a certificate to show passes with credit standard, a certificate which does not meet this standard will not be considered.

B. Advanced Status

Candidates may receive credit for all courses completed in accredited institutions with a grade of 70 or above or its equivalent, and which are required for a degree from this University, provided these candidates had met the entrance requirements of this University before they were admitted to such institutions. Candidates who believe that their previous academic training entitles them to advanced status may present their case in writing to the Registrar, together with an official transcript of their record.

Students who believe that they have reached a level of competence in the subject matter equal to that of a required course, may (if they secure the approval of the relevant Department and pass an examination in the field) substitute another course for the required course.

C. Admission of Lebanese Students

Lebanese applicants may be admitted only by presenting the Lebanese Baccalaureate, Part II, or its equivalent as recognized by the Lebanese Government. Non-Lebanese applicants may be admitted by presenting any one of the Secondary School Certificates recognized by this University.

D. Change of Nationality

Candidates admitted to the University as non-Lebanese will not be permitted to change their nationality to Lebanese on the records of the University unless they fulfilled the requirements for admission of Lebanese students at the time of entrance to the University.

E. Applicants from Outside the Area

Applicants who are not citizens of the area which AUB serves, and whose families reside outside this area, are not normally considered for admission to the Freshman or Sophomore class.

F. English Examination

Candidates must demonstrate a level of English proficiency consistent with the demands of a program carried on almost exclusively in the English language. This may be done in any one of the following four ways:

(1) by passing the English entrance examination of this University. This examination is given in most countries of the area, and several times per year at the University. The Office of Tests and Measurements, American University of Beirut, Beirut, Lebanon, will provide information on the local and foreign testing schedules and will send, upon request, a booklet on syllabi of examinations with sample questions. The score in this examination will determine whether a candidate may proceed at once to a normal credit program; whether he needs one or more semesters of special help in English along with his regular courses; whether he needs a year of concentrated non-credit English preparation in the University Orientation program; or whether he must improve his English elsewhere before re-applying for admission;

(2) by achieving a satisfactory score on the TOEFL (Test of English as a Foreign Language). This test is given in most countries of the world, in October, January, March and June. TOEFL, Educational Testing Service, Princeton, N.J. 08540, U.S.A. will provide full information and application forms upon request. The application must specify that results should be sent to the American University of Beirut;

(3) by submitting evidence of recent satisfactory completion of two or more years of full-time study in residence in a recognized secondary school, college or university in the United States, Canada, the United Kingdom and Irish Republic, Australia or New Zealand, where English is the language of instruction;

(4) by transferring from Beirut College for Women, Beirut, Lebanon; Haigazian College, Beirut, Lebanon; Bir Zeit College, Bir Zeit, Jordan; American University, Cairo, Egypt; College of Petroleum and Minerals, Dhahran, Saudi Arabia; and similarly recognized institutions in the area which use English as the language of instruction, *provided that the English entrance examination of this University or its equivalent was passed at the time of entrance to such recognized institutions.*

A student who is exempted from the English examination requirement under items 3 or 4 above, and whose performance indicates to his advisor or department a possible need for remedial English, will be referred to the Office of Tests and Measurements for appropriate action and recommendation.

G. Arabic Examination

A candidate whose native language is Arabic must pass an examination in the Arabic language, unless he holds an approved government certificate issued by an Arab country. Scores achieved in this examination will determine whether a candidate may proceed at once to a normal credit program; whether he needs a non-credit remedial Arabic course (Arabic 43) for one or two semesters; or whether he must improve his Arabic elsewhere before re-applying for admission. The passing score is 500.

H. Commercial, Agricultural and Vocational Secondary Certificates

These certificates are not recognized for admission to this University. If, however, such certificates are recognized by the government of the applicant or in the country where the applicant studies as equivalent to the official secondary school certificate, their holders will be eligible for admission on passing the full entrance examinations for admission to this University.

III. ADMISSION TO THE FRESHMAN CLASS AND FIRST YEAR B.S. DEGREE PROGRAM OF THE SCHOOL OF NURSING

Admission to the Freshman class of the School of Arts and Sciences and to the first year of the Degree Program in Nursing leading to the B.S. degree is possible by one of the following three methods:

A. Official Secondary Certificate of the Applicant's Country or its Equivalent as recognized by his country and approved by this University.

Holders of the official secondary school certificate issued by the country of an applicant, or its equivalent, as recognized by his country and approved by this University, are eligible for admission provided that they pass the University entrance examination in English (or its equivalent) or such other examinations as may be required by this University. *Lebanese candidates may be admitted only on presentation of certificates listed in B below that are recognized by the Lebanese Government as equivalent to the Lebanese Baccalaureate, Part II.*

B. Official Certificates Approved by this University

Non-Lebanese applicants who hold the official secondary certificate of their respective countries, or who hold any one of the following certificates of secondary education, are eligible for admission to the Freshman class provided that they pass the University entrance examination in English (or its equivalent) or any other examination that may be required by this University. Holders of any of these certificates may enter the Sophomore Class, First Year Engineering and Architecture, First Year Pharmacy, First Year Agriculture, First Year Public Health and Second Year of the Nursing Degree program *if they pass the full entrance examinations to the Sophomore Class*. Arabic-speaking candidates who hold any one of the certificates marked with an asterisk (*) are required to pass the entrance examination in Arabic.

Bahrain Secondary Certificate.

* *Cyprus Gymnasium Certificate.*

Egyptian Secondary Certificate.

* *Ethiopian Secondary Certificate.* For admission to the Arts program the cer-

tificate should indicate that the candidate has passed in at least the following five subjects:

- English;
- Second Language;
- History *or* Geography;
- Mathematics *or* General Science *or* Biology *or* Chemistry *or* Physics;
- One Elective.

For admission to either the Science or the Arts program the certificate should indicate that the candidate has passed in at least the following five subjects:

- English;
- Second Language;
- Mathematics;
- Two subjects from Biology, Chemistry, Physics.

* *General Certificate of Education (University of London G.C.E. and Oxford-Cambridge G.C.E.)*. The certificate should indicate that the candidate has passed in at least five required subjects, three at ordinary and two at advanced level. For admission to the Arts program the following are required:

Advanced Level: At least two from the following subjects:

- Economics;
- English Literature;
- Geography;
- History;
- Pure Mathematics;
- Biology;
- Chemistry;
- Physics.

Ordinary Level: At least the following subjects if not passed at Advanced Level:

- English Language;
- Second Language;
- History *or* Geography;
- Pure Mathematics *or* General Science *or* Biology *or* Botany *or* Chemistry *or* Chemistry-with-Physics *or* Physics.

For admission to either the Science or the Arts program the following are required:

Advanced Level: At least the following subjects:

- Pure Mathematics;
- Biology *or* Chemistry *or* Physics.

Ordinary Level: At least the following subjects if not passed at Advanced Level:

- English Language;
- Second Language;

one subject from Biology, Chemistry, Physics.

Candidates who have passed in the required subjects at Ordinary Level and in two subjects at Advanced Level, but who lack one of the subjects which are required at Advanced Level, are allowed to take the University entrance examination in the subject in which they are deficient.

Candidates who have passed in the required subjects at Ordinary Level and in two subjects at Advanced Level, both of which are not the subjects which are required at Advanced Level, must pass the full entrance examinations of the University.

* *French Baccalaureate*.

* *Greek Gymnasium Certificate.*

* *International Baccalaureate.* The certificate should indicate that the candidate has passed in at least six subjects.

For admission to the Arts program the following are required:

Higher Level: At least three from the following subjects:

Economics;

English Literature;

Geography;

History;

Mathematics;

Biology;

Chemistry;

Physics.

Subsidiary Level: At least the following subjects if not passed at Higher Level:

English;

Second Language;

History *or* Geography;

Mathematics *or* Biology *or* Chemistry *or* Physics.

For admission to either the Science or the Arts program the following are required:

Higher Level: At least the following subjects:

Mathematics;

Biology *or* Chemistry *or* Physics;

One Elective.

Subsidiary Level: At least the following subjects if not passed at Higher Level:

English;

Second Language;

Mathematics;

one subject from Biology, Chemistry, Physics.

Iraq Secondary Certificate.

* *Iranian Secondary (Sixth Class) Certificate.*

Jordanian Secondary Certificate.

Kuwait Secondary Certificate.

Libyan Secondary Certificate.

Moroccan Baccalaureate.

* *Oxford-Cambridge Higher School Certificate.* A candidate for admission must fulfill the following conditions:

(1) The Oxford-Cambridge School Certificate must show credit standard in the same subjects which are required at Ordinary Level in the General Certificate of Education as listed on page 22.

(2) The Higher School Certificate must show that the candidate has passed in the same subjects which are required at Advanced Level in the General Certificate of Education as listed on page 22.

* *Pakistan Higher Secondary Certificate.* For admission to the Arts program the certificate should indicate that the candidate has passed in at least the following five subjects:

English;

Second Language;
History *or* Geography;
Mathematics *or* General Science *or* Biology *or* Chemistry *or* Physics;
One Elective.

For admission to either the Science or the Arts program the certificate should indicate that the candidate has passed in at least the following five subjects:

English;
Second Language;
Mathematics;
two subjects from Biology, Chemistry, Physics.

Qatar Secondary Certificate.

Saudi Secondary Certificate.

Sudan Secondary Certificate. For admission to the Arts program the certificate should indicate credit in at least the following five subjects:

English;
Arabic;
History *or* Geography;
Mathematics *or* General Science *or* Biology *or* Chemistry *or* Physics;
One Elective.

For admission to either the Science or the Arts program the certificate should indicate credit in at least the following five subjects:

English;
Arabic;
Mathematics;
two subjects from Biology, Chemistry, Physics.

Syrian Baccalaureate.

Tunisian Baccalaureate.

Other Official National Secondary Certificates that Admit to University Work in the Country of Issue.

C. Secondary Certificates which Qualify their Holders for Admission to National Universities, and are Awarded in Countries which do not have Official Secondary Certificates.

U.S.A. applicants who hold diplomas from high schools in the United States which are accredited by an official U.S.A. accrediting agency, and applicants who hold certificates from their countries where there is no official secondary certificate and the school certificates which they hold meet the requirements for admission to the universities in their own countries, are eligible for admission provided they pass the full entrance examinations to the Freshman Class or attain satisfactory scores on the American College Testing Program Tests or on the College Entrance Examinations Board Tests listed below. Non-Lebanese candidates who hold these certificates after having completed six years of study in these countries may also be eligible for admission on the same basis.

The high school diploma from the United States should cover sixteen units. A unit is defined as a minimum of 120 clock-hours of instruction, or not less than one-sixth of a full year's work. For Freshman Arts the following units are required: four of English; two of a second language; two of Mathematics; two of Science

(from General Science, Biology, Chemistry, Physics); two of Social Sciences (one of which must be History); four Electives. For Freshman Sciences the units required are: four of English; two of a second language; three of Mathematics (including trigonometry of the right triangle); three of Science (from General Science, Biology, Chemistry, Physics); two of Social Sciences (one of which must be History); two Electives. The units required for Science are also acceptable for admission to Freshman Arts.

In order to be eligible to enter the University, holders of the above certificates must pass the University entrance examinations in the following subjects: English; Arabic (required of Arabic-speaking students; others must present evidence of the successful completion of two years of a language other than English); Mathematics; Science; Social Science.

Holders of the above certificates may be also eligible to enter the University by attaining satisfactory scores on the American College Testing Program Tests (ACT), or on the College Entrance Examinations Board Tests (CEEB) in the following subjects: Scholastic Aptitude Tests; Mathematics (Level 1); Biology or Chemistry or Physics; One Elective.

Applicants may be eligible to enter Freshman Arts or Freshman Science, depending upon the program which they have followed in their schools and the results of the entrance examinations of this University, or the College Entrance Examinations Board Tests, or the American College Testing Program Tests.

Information about the entrance examinations of the University, their syllabi, dates and places of administration may be obtained from the Office of Tests and Measurements at this University.

The College Entrance Examination Board (CEEB) gives its tests at regular intervals throughout the year in various centers. The Office of Tests and Measurements of this University administers the CEEB test in this area. Full information about applications, fees, deadlines and schedules can be obtained from the College Entrance Examination Board, Princeton, New Jersey 08540, U.S.A. Candidates must arrange for the CEEB tests to be taken in time for the result to reach this University by March 31, the deadline for applications.

IV. ADMISSION TO SOPHOMORE CLASS; FIRST YEAR AGRICULTURE, ENGINEERING AND ARCHITECTURE, PHARMACY, PUBLIC HEALTH; SECOND YEAR B.S. PROGRAM IN NURSING

Admission to the above-mentioned classes may be possible by one of the following methods:

A. Lebanese Baccalaureate, Part II

All candidates seeking admission to the University on the basis of the Lebanese Baccalaureate, Part II, must pass the entrance examination in English. *Lebanese candidates may be admitted only by presenting the Lebanese Baccalaureate, Part II, or its equivalent as recognized by the Lebanese Government. Most of the official certificates that are recognized by the Lebanese Government as equivalent to the Lebanese Baccalaureate, Part II, are recognized by the University for admission to the Freshman class or to the Sophomore class by full entrance examinations.*

The Lebanese Baccalaureate, Part II (Philosophy) entitles its holders to admission

to the Arts program and the program in Business Administration of the Faculty of Arts and Sciences. Candidates who seek admission to Science programs in the Faculty of Arts and Sciences, the Faculty of Agricultural Sciences, or the Schools of Pharmacy and Public Health on the basis of the Lebanese Baccalaureate, Part II (Philosophy) must pass the entrance examinations in Mathematics and Chemistry. Candidates who seek admission to the School of Nursing must pass the entrance examinations in Mathematics and Biology.

The Lebanese Baccalaureate, Part II (Experimental Science) entitles its holders to enter all the programs of the Faculty of Arts and Sciences, the Faculty of Agricultural Sciences, and the Schools of Nursing, Pharmacy and Public Health; and to First Year Architecture in the Faculty of Engineering and Architecture.

The Lebanese Baccalaureate, Part II (Mathematics) entitles its holders to enter all the programs of the School of Arts and Sciences, the Faculties of Agricultural Sciences and Engineering and Architecture, and the Schools of Nursing, Pharmacy and Public Health.

Candidates who are admitted to the Sophomore Arts program or the program in Business Administration on the basis of the Lebanese Baccalaureate, Part II (Experimental Science or Mathematics) are required to take 6 credits of History or pass the History entrance examination to Sophomore. Those who choose Freshman History courses will not receive credits towards their Bachelor's degree.

B. Transfer from Accredited Institutions of Higher Learning or Recognized Junior Colleges

Applicants who hold certificates or diplomas from one of these institutions are eligible for admission subject to the following conditions:

- (1) that they have completed a class equivalent in standard to the Freshman Class of the Faculty of Arts and Sciences of this University and have taken the courses which are required in the Freshman Class of this University;
- (2) that prior to their admission to the institution from which they are transferring they had met the requirements for admission to the Freshman Class of this University;
- (3) that they pass the English entrance examination, if they had not passed it prior to their admission to the institution from which they wish to transfer to this University;
- (4) that they pass the Arabic entrance examination, if they are Arabic-speaking students.

C. Transfer from one Faculty to Another at AUB

Admission to any Faculty by transfer from another should go through the Admissions Committee of the Faculty concerned. Henceforth it will not be possible, for example, for a student in the School of Nursing or the Faculty of Engineering and Architecture to transfer into the Faculty of Arts and Sciences unless the transfer is approved by the Admissions Committee of the Faculty of Arts and Sciences.

D. Entrance Examinations

Holders of official certificates recognized by the University for admission to the Freshman Class listed under III B above, pages 21-24, may enter the Sophomore

Class, First Year Engineering and Architecture, Pharmacy, Agriculture, Public Health and Second Year of the Nursing Degree program by passing the full entrance examinations. Applicants who hold certificates which are approved by the University for admission to the Freshman Class, and have completed one year of post secondary education in non-accredited institutions (provided they had fulfilled the entrance requirements to the Freshman Class of this University prior to their admission to these institutions), may be admitted after passing the full entrance examinations. Decision regarding the admissibility of a candidate will be based upon his previous record and upon the results of the entrance examinations.

Examinations in the following subjects are required of candidates seeking admission to the Arts program and the program in Business Administration of the Faculty of Arts and Sciences: English; Arabic or Elective (Arabic is required of Arabic-speaking students); History; Biology or Chemistry or Physics.

Applicants seeking admission to the Science program of the Faculty of Arts and Sciences, the Faculties of Agricultural Sciences and Engineering and Architecture, and the Schools of Pharmacy, Nursing (Degree program), and Public Health, are required to pass the entrance examinations in the following subjects: English; Arabic or Elective (Arabic is required of Arabic-speaking students); Mathematics; Biology or Chemistry or Physics (Chemistry is required for Agriculture, Pharmacy, Public Health, and Chemistry; Biology is required for Nursing; Physics is required for Physics major; Physics and Chemistry are required for Engineering and Architecture).

Information about the entrance examinations of the University, their syllabi, dates and places of administration may be obtained from the Office of Tests and Measurements of this University.

V. ADMISSION TO ADVANCED STANDING

Candidates from recognized institutions of higher education and from recognized Junior Colleges may be admitted to advanced standing at this University subject to the following conditions:

- (1) such candidates should have fulfilled the admission requirements of this University prior to their admission to the institution from which they are transferring;
- (2) such candidates should have passed the English entrance examination to this University before admission to the institution from which they are transferring;
- (3) Arabic-speaking candidates must pass the Arabic entrance examination.

Following is the University policy regarding transfer to advanced standing of students from certain recognized or accredited institutions in the area.

A. From Institutions of Higher Education in Lebanon

Candidates from institutions of higher education in Lebanon will be considered on the following basis:

- (1) Candidates who are admitted to the Sophomore Class of an institution of higher education in Lebanon with the Lebanese Baccalaureate, Part II, or an equivalent certificate recognized by AUB for admission to the Sophomore Class, may be eligible to receive transfer credit for work completed beginning with the Sophomore Class;

(2) Candidates who are admitted to the Freshman Class of an institution of higher education in Lebanon with a certificate recognized by AUB for admission to the Freshman Class, may be eligible to receive transfer credit for work completed beginning with the Freshman Class;

(3) Candidates who are admitted to an institution of higher education in Lebanon without a certificate recognized for admission to AUB, but hold a Sophomore Diploma recognized by the Lebanese Government as equivalent to the Lebanese Baccalaureate, Part II, may be eligible to receive transfer credit beginning with the Sophomore Class, for work done after the Sophomore Diploma. The Sophomore Diploma for such candidates will be considered for admission to the Sophomore Class of AUB;

(4) Candidates who are admitted to the Sophomore Class of an institution of higher education in Lebanon with the Lebanese Baccalaureate, Part II, or an equivalent certificate (other than the Sophomore Diploma) recognized by AUB for admission to the Sophomore Class, plus a Bachelor's degree, may be eligible for admission to graduate work and may be able to complete the requirements for a Master's degree in a minimum period of one year;

(5) Candidates who are admitted to the Freshman Class of an institution of higher education in Lebanon with a certificate recognized by AUB for admission to the Freshman Class, plus a Bachelor's degree, may be eligible for admission to graduate work and may be able to complete the requirements for a Master's degree in a minimum period of one year;

(6) Candidates who are admitted to an institution of higher education in Lebanon without a certificate recognized for admission to AUB, but hold a Sophomore Diploma recognized by the Lebanese Government as equivalent to the Lebanese Baccalaureate, Part II, plus a Bachelor's degree, may be eligible for admission to graduate work, but will be required to complete a minimum of 33 credit hours in graduate credit courses and a thesis before qualifying for the Master's degree;

(7) Candidates who are admitted to an institution of higher education in Lebanon without a certificate recognized for admission to AUB and do not hold a Sophomore Diploma recognized by the Lebanese Government as equivalent to the Lebanese Baccalaureate, Part II, will not be eligible for transfer credits for admission to graduate work in this University.

B. From Bir Zeit College, Bir Zeit, Jordan

Bir Zeit College is an accredited Junior College. Candidates who complete the regular Freshman program may transfer to the Sophomore Class at this University, and candidates who complete the regular Sophomore program may transfer to the Junior Class at this University: provided the following conditions are met: (1) their grades are satisfactory, (2) they had met the entrance requirements of this University at the time they were admitted to this College, (3) they pass the AUB English entrance examination.

VI. ADMISSION TO THE SCHOOL OF MEDICINE

To be eligible for admission to the School of Medicine a student must have completed the legal premedical educational requirements of AUB, must have passed a proficiency examination in the use of the English Language, and must have completed the Junior year in the School of Arts and Sciences of this Uni-

versity or its equivalent including the following courses: Biology 201 and 202 General Biology (8 credits), Biology 232 Development (4 credits), Biology 243 Genetics (3 credits); Chemistry 101 General Chemistry (4 credits) or Chemistry 201 Chemical Principles I (3 credits), Chemistry 202 Chemical Principles II (5 credits), Chemistry 203 Introductory Experimental Chemistry (2 credits), Chemistry 209 Organic Laboratory (2 credits), Chemistry 211 and 212 Organic Chemistry I and II (6 credits); 11 credits of English; 9 credits of Arabic (required of Arabic-speaking students); Mathematics 101 Introductory College Mathematics or equivalent (3 credits), Mathematics 102 Calculus and Analytical Geometry I (4 credits); Physics 103, 204 and 205 General Physics I, II and III (12 credits); Psychology 201 General Psychology (3 credits); Sociology 201 Introduction to Sociology (3 credits); Cultural Studies 201 and 202 Ancient, Medieval and Renaissance Culture (6 credits), Cultural Studies 203 and 204 Modern and Contemporary Culture (6 credits); and the Library Orientation Course (0 credit: see section Sophomores under Department of English).

VII. ADMISSION TO THE DIPLOMA PROGRAM IN NURSING

To be eligible for admission to the three-year Diploma Program in Nursing, a student must be at least 17 years old, must have successfully completed the sixth year of secondary education, and passed the AUB entrance examinations in English and Science at a level determined by the School. Lebanese students are also required to meet the Lebanese Government requirements for admission to Nursing. The Lebanese Baccalaureate, Part I, is a Government requirement for admission from October, 1973. Students are urged to study the scientific rather than the literary program of studies in their secondary school program. Preference will be given to applicants with good character and references, a strong science background, and high academic achievement.

VIII. ADMISSION TO NON-DEGREE AND OTHER PROGRAMS

Some Faculties and Schools offer non-degree and special programs for which admission requirements differ from the admission requirements of the degree programs. For information about the admission requirements of these programs, refer to the appropriate Faculty or School chapter of this catalogue, and to the chapter at the end entitled Division of Extension and Special Programs.

IX. ADMISSION TO GRADUATE WORK

To be eligible for admission to graduate work, a student must hold a university degree and must have a minimum acceptable average in the field of his intended graduate work or related fields. All applicants must pass the English entrance examination.

For complete detailed information regarding admission to graduate work, see the section on Admission under Graduate Study at the end of this catalogue.

STUDENT LIFE

STATEMENT OF POLICY FOR STUDENTS

In associating himself with this University, an action which is purely voluntary, the student must accept that by freedom of choice he imposes upon himself the standards, the rules and the conditions established by the legally constituted authority of the University. Thus, any student may withdraw from the University whenever he considers the obligations assumed upon enrollment inconsistent with his expectations. Coexistent with this principle must be the acceptance of the right of the University, upon evidence of the student's inability to abide by its regulations, to insist upon his withdrawal and/or refuse his readmission.

OFFICE OF STUDENT AFFAIRS

Through its Office of Student Affairs the University directs, guides, and encourages a number of activities and services to complement the academic work of the student and to provide an enriching cultural, physical, social and morally uplifting environment. This is accomplished through the following.

The Student Council

There has been established through the Senate of the University a committee of students, elected by the general body of students to provide proper representation of all students, to support their rights and actions, and to ensure their freedom of expression. This committee, known as the Student Council, has also the responsibility of coordinating and supervising all organized student activities, publications, and societies on campus. A very close relationship exists between the Student Council and the Office of Student Affairs. Negotiations between the University and the Student Council are arranged generally through the Office of Student Affairs.

Counseling for Students

A University counseling service is available to help students with their personal problems, whether they stem from inadequate finances, interpersonal maladjustments, or academic failures. Students may consult the Dean of Students, the Dean of Women, the Psychological Counselor, or the Academic Advisor.

Religious Interests

The University cooperates with various off-campus student centers that concern themselves with the student's religious life. Such groups as the University Christian Center, the Newman Club, the Orthodox Youth Center, and the Islamic Center of Beirut are available.

A Sunday morning chapel service is held on campus in the University Chapel, open on a voluntary basis to students and staff of all denominations.

Athletics and Recreation

A complete program of athletics in the form of individual and competitive games is given strong support. The program for men includes football, basketball, volleyball, softball, track, tennis, judo, karate and a number of other recreational interests. Swimming is available to all, since the University is so conveniently situated on the shores of the Mediterranean. Athletics facilities include: two fields for football

and softball, two outdoor basketball and volleyball courts, one indoor court for all games, a 400 meter track, six tennis courts, and our own swimming beach. All students are expected to learn to swim. For courses in Physical Education, see under Faculty of Arts and Sciences (Regular Freshman Program) (page 53) and School of Nursing (Diploma and B.S. Programs) (pages 168, 169).

STUDENT HOUSING

Residence on Campus

There are seven buildings of the dormitory type, capable of accommodating over 1000 students. Two are six and eight story modern type dormitories for men, with a capacity of 600. The other five are more moderate sized buildings, accommodating about 450 women. All have the latest in conveniences, such as heating, hot water, showers, and the commonly expected furniture and bedding. Reception lounges and recreation areas are also available. The men's dormitories are situated in the southwestern corner of the campus, the women's dormitories in the northeastern corner. The system of accommodation is that of two students sharing a room, with some exceptions.

On-campus accommodations include sheets, blankets, and towels. Linens are changed weekly, rooms are cleaned daily. Toilets and shower rooms serve about 10 persons in each section.

Head residents and counselors are always available to attend to any irregularities or reasonable needs of occupants.

Compulsory On-Campus Living

The University, declaring its interest in the student and the University itself, reserves the right to require that certain levels of students live in University-sponsored residences. Therefore, the University issues the following conditions by which a student may determine whether or not he is required to live on campus, once he is accepted for enrollment.

- (1) All University Orientation Program (UOP) students whose parents are not permanent residents of Beirut and its immediate suburbs, are required to live on campus.
- (2) All Freshmen students whose parents are not permanent residents of Beirut and its immediate suburbs, are required to live on campus.
- (3) All Sophomore students who have not been residents of the University dormitories in the previous year, and whose parents are not permanent residents of Beirut and its immediate suburbs, are required to live on campus.
- (4) All other students who are under a sponsorship program or agreement between the University and their parents or guardians, whereby on-campus living is compulsory, are required to live on campus.

Exceptions to the above rules may be obtained only through the Office of Student Affairs.

Optional On-Campus Living

Students who are not required to live on campus but still have the desire, may do so by submitting the proper application forms in time.

Arrangements for On-Campus Housing

All arrangements for living in University-sponsored dormitories are made through the Office of Student Affairs.

New Students are sent application forms at the same time that they receive word of provisional acceptance in the University. The application form will give all necessary information.

Old Students may make reservations for the following year by completion of the necessary forms at the Office of Student Affairs.

No student should assume that housing arrangements have been made for him without some action or knowledge on his part.

FOOD SERVICE

The University operates a modern cafeteria style food service on the campus. Students have the option of using the food service facilities of AUB or eating elsewhere, but most students find it desirable to eat at AUB because of low prices and good quality wholesome food. The estimated cost of three daily meals is between L.Leb.6 and L.Leb.7.

The University also operates snack facilities where students and their guests can obtain a variety of hot and cold food and refreshments.

MEDICAL CARE

The University Health Service (UHS), at the Gulbenkian Infirmary on campus, provides medical care to members of the University Community at large who hold HIP (Hospital Insurance Plan) memberships. Therefore every individual concerned should familiarize himself with the regulations of HIP which are presented in a separate pamphlet.

Patients are seen daily at the Health Service by appointment made at the reception desk in advance, either by calling in person or by telephone during regular hours 8 a.m.-12 noon and 2-5 p.m. A physician is available daily to receive patients on "walk in basis"; these patients must have problems of an *urgent* nature, otherwise they will be given a return appointment for a later time.

The major specialties of General and Internal Medicine, including Psychiatry, and Pediatrics, together with Obstetrics and Gynecology, are represented on the staff of UHS. Patients are channeled accordingly, and they usually have a choice of one of at least three physicians.

In case of *emergency* the patient should report directly to the Emergency Unit at the Medical Center or to the nearest emergency service or physician. In such cases of medical emergency when prior consent of the student or his legal representative or parent cannot be obtained, treatment and/or surgery will be performed, if in the opinion of the attending physician(s) such treatment or surgery cannot be delayed. The present Infirmary has available eighteen beds for in-patients. Those who are too sick and require special care are admitted to the Hospital by the UHS physicians. The schedule of office hours and names of attending physicians at all times together with their telephone numbers and specialties, are printed out monthly and distributed to the Departments concerned on campus, the Medical Center and Emergency Unit. Extra copies are made available at the Health Service upon request. In order to safeguard the total group, all new students are asked to complete the Entrance Medical Form sent to them with the acceptance letter prior to registration. They are also given a tuberculin skin test while registering. Old students are re-

quested to inform the UHS physician, early in the first semester, of any important change that may have occurred in their medical condition.

FINANCIAL AID TO STUDENTS

University Assistance

Opportunities for financial assistance to needy and qualified students are available in the form of scholarship grants, scholarship loans, work grants-in-aid, graduate assistantships, student employment and emergency loans. Except for emergency loans all such assistance is available only by application and under certain regulations. For a complete listing of University scholarship awards and prizes, see below. Following is a brief description of each type of assistance.

Scholarship Grants – These are outright grants of assistance to students based on need and academic achievement. The amounts awarded may vary from a small part of the tuition to full support for tuition, room, board and books. The source of the scholarship and the student's qualifications will be the final determining factor.

Scholarship Loans – These are loans issued to students on the basis of need, academic achievement and qualification. The amounts allowed depend on the rules of the Loan Fund. A formal contract is drawn up between the student and the University, with an agreement as to the dates of repayment. The loans are designated only for the necessary educational expenses of the individual student, and not for any other needs.

Work Grants-in-Aid – These are scholarship awards to students on the basis of need, academic achievement and qualification. However, the award is allowed only with the understanding that the student must work a certain number of hours during the entire semester. He will be credited with the entire amount of the award only after he has completed the full number of hours. Otherwise he will be credited only with a portion thereof.

Graduate Assistantships – For students on the graduate level there are fellowships which cover tuition costs and partial living expenses. In return for this the student is expected to work a specified number of hours weekly for an academic Department. Students are usually selected on the basis of a high academic record and their value to the Department.

Student Employment – Many opportunities are available for student employment. Any student may apply, but selection depends on the student's need, ability to do the job, and sufficient time for work. It operates on a first-come-first-served basis.

Emergency Loans – These are small loans to assist students who are suddenly faced with serious hardship due to unforeseen circumstances, such as loss of money, theft, accidents, etc. The money is provided through the Dean's Loan Fund in the Office of Student Affairs. No application is necessary, but approval must be obtained from the Dean of Students.

Applications – Applications for scholarship grants, scholarship loans, work grants-in-aid, and student employment may be secured from the Office of Student Affairs. Applications for graduate assistantships may be obtained from the Department or the Faculty to which the student is applying. All scholarship applications must be filed during the month of March for assistance during the following academic year.

Assistance from Organizations outside the University

These are several large organizations that provide assistance to AUB students. Among them are:

The Alumni Association Loan Fund – This provides scholarship loans to students of the University. Application should be made to the Alumni Association Office in Beirut.

The Gulbenkian Foundation – This also provides substantial assistance in the form of scholarship grants or scholarship loans. Applications should be directed to the nearest Gulbenkian office, or to the main office in Lisbon, Portugal.

The Lebanese Government – The Ministry of Education has been providing scholarship grants to AUB Lebanese students. Applications should be made through the Office of Student Affairs.

The Agency for International Development (AID) of the United States Government – This has been providing full scholarships to qualified students to attend AUB. Countries currently included are Abu-Dhabi, Afghanistan, Bahrain, Cyprus, Dubai, Iran, Jordan, Lebanon, Nepal, Pakistan, and Turkey. Candidates are selected by the AID Training Office in their respective countries.

Bursaries – A number of students enroll at AUB as bursary students; their university fees are paid by a sponsoring agency: government, international organization, educational institution, philanthropic foundation, or business firm. Candidates are selected by the sponsoring agency.

LIST OF UNIVERSITY SCHOLARSHIPS AND LOANS

FUND	DESIGNATED FOR
Scholarship Grants	
Abqaiq Women's Group Scholarship	Nursing student
Alumni Association of North America	Any qualified student
American Aid for Arab Refugees	Palestinian orphan
American Women's Club, Lebanon	Lebanese Arts and Sciences Sophomore student
	Lebanese First Year Nursing student
Nadim Andraos Memorial Scholarship	Needy Lebanese student
Anonymous Agriculture Scholarship	Agriculture student
Arakelian Scholarship Fund	Any needy and qualified student
Armenian General Benevolent Union	Armenian student
Antoine Albert Assi Memorial	Lebanese student in Business Administration
Bliss Memorial Scholarship Fund	Any needy and qualified student
Daniel Bliss Fund	Any needy and qualified student
Mrs. Daniel Bliss Fund	Any needy and qualified student
Chase-Manhattan Bank Scholarship	Needy Lebanese student in Business Administration or Economics
Hana Said Chouljy Scholarship Fund	Syrian Orthodox students from Aleppo in financial need
Clapp-Constance Scholarship	Chemistry student

FUND

Class of 1941 Silver Jubilee Fund
 Community Church of Beirut
 Craft Scholarship
 Dhahran Women's Group
 Douma Society of the U.S.A.
 Harold Morton Esty Memorial Fund
 Nabih Faris Scholarship Fund

J.M. Fawaz Fund
 David A. Fuleihan Scholarship

Gaza Fund
 Iskandar N. Ghantus Memorial Scholarship
 Griffin Scholarship
 Calouste Gulbenkian Foundation

Antun Halaby Memorial Scholarship
 Fund
 Heller Scholarship
 Lynn M. Hilton Foundation
 Stanley E. Kerr Scholarship Fund
 Ahmad al-Khalidy Scholarship Fund

Marie al-Khoury Scholarship Fund
 Muhyiddine Kronfol Memorial
 Scholarship
 Farah Maloof Medical Scholarship
 Faris S. Maloof Memorial Scholarship
 Michel Najim Maloof Scholarship

George Mardinly Scholarship

Medical School Scholarship (Latimer)
 Middle East Feed Co. Scholarship
 Stephen A. Miller Scholarship Fund
 John Miskoff Scholarship
 Father Denis Mooney, O.F.M.,
 Memorial Scholarship
 Salim Musalli Pasha Scholarship Fund

E.F. Nickoley Nursing Scholarship
 Howard W. Page Engineering
 Scholarship Fund
 Palestine Students Aid Fund
 Francis Asbury Palmer Fund

DESIGNATED FOR

Any needy and qualified student
 Nursing students
 Arab student in Fine Arts
 Students in Nursing
 Qualified student from Douma
 Baha'i students
 Graduate students in History or
 Middle Eastern Studies
 Needy Lebanese student
 Needy students from the Fuleihan
 family
 Palestinian students
 Engineering student from al-Koura
 Palestinian Arts and Sciences student
 One scholarship in each of the follow-
 ing fields: Arts and Sciences, Edu-
 cation, Engineering and/or Agricul-
 ture; Graduate student in Arts and
 Sciences, Engineering and/or Agri-
 culture

Students in Pharmacy
 Needy student in Engineering
 Palestinian refugees from Jordan
 Medical students
 Palestinian students in Arts and
 Sciences
 Fine Arts students

Needy Lebanese Medical student
 Medical student
 Arab student
 Lebanese student in Arts and Sciences
 —preferably from Maloof family
 Middle Eastern students of Assyrian
 origin
 Medical student
 Lebanese student in Animal Production
 Most outstanding Freshman student
 Any needy student

Lebanese Catholic student
 Any needy and qualified Medical
 students
 Student in School of Nursing

Students in Engineering
 Palestinian students
 Needy students in Arts and Sciences

FUND

Ralph M. Parsons Scholarship
 Pilgrim Scholarship Fund
 Procter and Gamble Scholarship

Propeller Club of Beirut Scholarship
 Hazimeh S. Rasi Scholarship
 Mrs. J.C. Rea Scholarship Fund
 Thomas Righter Scholarship
 Fred E. Rizk Educational Foundation
 Scholarship

Dorothy H. Rogers Scholarship
 Michel A. Saad Scholarship
 Mrs. Subhi M. Sadi Scholarship
 Fuad es-Said Scholarship Fund

Asma Sayyour Scholarship Fund
 Shaheen Bros. Scholarship Fund

Dr. Fuad Shatara
 Selma Shaheen Nursing Scholarship
 Dr. Michael A. Shahid Scholarship
 Shehadeh A. Shehadeh Scholarship

Jabir Shibli Scholarship Fund
 Squibb Middle East Scholarship
 Khalil Thabet Scholarship
 Vale-Asche Foundation Scholarship
 Dr. Samuel E. White (Waheed)
 Scholarship
 Habib Yared Scholarship Fund

Khaled al-Yashruti Memorial
 Scholarship
 Julie Ziadeh Scholarship Fund
 Constantine Zurayk Scholarship

Scholarship Loans

Armenian Women’s Educational Club
 Alfredo (Freddy) Fuad Atala Foundation
 Maria Aziz Loan Fund
 Dr. William Carslaw Memorial Loan Fund

Mary Crawford Loan Fund
 Cruikshank Fund
 Ramzi Fawzi Daouk Memorial Loan
 Fund

DESIGNATED FOR

Any needy student
 Any needy and qualified students
 Outstanding Senior Arab student in
 Business Administration
 Nursing student
 Any needy and qualified student
 Any needy and qualified students
 Nursing student from Ramallah

Student from Saudi Arabia
 Middle Eastern student
 Lebanese student in Civil Engineering
 Fellowship for future teacher
 Students from Makassed Schools in
 Beirut

Greek Orthodox women students
 Students from the city district of
 Ramallah

Students from Ramallah
 Nursing student

Arts and Sciences Arab student
 Student in Agriculture, Chemistry,
 Engineering, Graduate Center for
 Middle Eastern Studies or Medicine
 —preferably a woman student

Lebanese students from Bteghrine
 Medical or Pharmacy student
 Lebanese student in Arts and Sciences
 Woman student

Lebanese students in Arts and Sciences,
 Engineering or Medicine
 Needy students from Rachaya or the
 Beka’a

Medical student studying neurological
 diseases

Any needy and qualified students
 Students excelling in social studies

Nursing students
 Needy Lebanese students
 Students from Jezzine
 Syrian Senior student in Business
 Administration or Economics
 Nursing students
 Nursing students
 Students in Civil Engineering

FUND	DESIGNATED FOR
Dean's Loan Fund for Agricultural Students	Agriculture students
Dean's Loan Fund for Engineering Students	Engineering and Architecture students
Dhahran Women's Group Fund	Nursing students
Dikranian Loan Fund	Nursing students
Dr. Harry G. Dorman Memorial Loan Fund	Medical students from the Middle East
Donabedian Fund	Armenian students in Nursing
Helen Lewis Goodyear Memorial Fund	Nursing students
Joseph Haddad Loan Fund	Any needy and qualified students
John F. Kennedy Memorial Fund	Non-Western Graduate students
George M. Mardikian Loan Fund	Needy Armenian students
Mathematics Fund	Mathematics students
Zein Mayassi Loan Fund	Palestinian students in Engineering
Loan Fund for the Education of Middle East Arab Nurses	Nursing students
Medical Faculties Alumni Fund	Medical students
Medical School Scholarship Fund	General
Medical Students Society	Medical students
John Miskoff Loan Fund	Needy students from the Middle East
F.K. Mitri Loan and Scholarship Fund	Any needy and qualified Lebanese students
Elizabeth Moser Student Nurses Fund	Nursing students
Karim W. Nasser Educational Loan Fund	Any needy and qualified students
Nursing Scholarship Fund	General
Palestine Student Aid Loan Fund	Palestinian students
Pharmaceutical Society Loan Fund	Pharmacy students
Anna Amina Saadi Fund	Women students
Hasib Sabbagh Student Loan Fund	Engineering students
Nikula Shaheen Student Loan Fund	Any needy and qualified students
Student Nurses Fund—Alumni Branch	Nursing students
U.S. Omen	Senior students
Jane E. Van Zandt Loan Fund	Nursing students
Emergency Loans	
Dean's Loan Fund	Any student
Dean's Loan Fund for Agricultural students	Agriculture students
Dean's Loan Fund for Engineering students	Engineering and Architecture students
Engineering Students Society Loan Fund	Engineering and Architecture students
Hart Fund	Nursing students
Papazian Fund	Nursing students
Skidmore College Fund	Nursing students
Student Aid Fund—C.W.L.	Any student

LIST OF UNIVERSITY PRIZES AND AWARDS

Murad al-Akl Literary Awards: First prize \$50 and second prize \$30 awarded on the basis of an essay, speech or debate contest to the two best contributions on the subject, "How I can serve my fellow man".

Antoine Assi Award: L.L.1000 awarded to the best student in the fields of painting, graphics, sculpture or crafts.

Anwar Challah Prize: L.L.500 awarded to the Senior Arts and Sciences student of Syrian nationality who, in the judgment of the President of the University, has proved to be an outstanding student.

Philip Chidiac Prize: \$71 awarded to students in the School of Medicine.

Mary Crawford Award: L.L.100 awarded to the Senior student in the School of Nursing who meets the criteria for selection as "Miss Nightingale".

Edgcombe Memorial Prize: L.L.100 awarded to the outstanding student in Third Year Agriculture.

Philip K. Hitti Prize: Awarded in books to the Senior student in the Faculty of Arts and Sciences who, in the judgment of the President of the University, the Dean of the Faculty, and the chairman of the Department concerned, exemplifies in his academic career the scholarly spirit of the University at its best.

Mrs. Robert J. Lewis Memorial Award: For the best paper written during the current year on Neuro-Science.

Franklin Thomas Moore-Ethel Jessup Memorial Prize: Established by the children and friends of Dr. and Mrs. Franklin T. Moore; awarded to the Senior Medical student who has shown the highest proficiency in Obstetrics and Gynecology, or lacking such, in any Department, who has shown in his personal life a dedication to humanity, a zeal for truth, and a belief in God.

Penrose Award: Non-cash honorary awards made on the basis of scholarship, character, leadership and contribution to University life to the outstanding graduate of each Faculty. The awards are in honor of the late Dr. Stephen Penrose, President of AUB from September 1948 until his sudden death on December 9, 1954.

Saba & Co. Award: Annual cash award to the Senior student with the highest average in accounting.

Sigma Xi Master's Thesis Excellence Awards: Three annual cash awards to those students in all Faculties judged to have written the three best theses for the M.S. degree.

FEES AND EXPENSES

The American University of Beirut is a non-profit institution. The tuition fee and other charges which each student pays represent approximately 15% of the total cost of the student's education. The remaining 85% is provided by income from the University Endowment Fund, gifts and grants from foundations and corporations interested in the higher education of the youth of the Middle East, and gifts from alumni and friends of the University throughout the world. The charge to students is kept at the lowest possible minimum consistent with high quality instruction and adequate facilities and equipment.

Universities everywhere are facing financial problems because of the rising costs of higher education. THE UNIVERSITY RESERVES THE RIGHT TO CHANGE ANY OR ALL FEES AT ANY TIME WITHOUT PRIOR NOTICE. Such changes

will be applicable to students currently registered in the University as well as to new students.

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

All fees are quoted in Lebanese pounds. U.S.\$1.00 is approximately equivalent to L.Leb.2.80 and £ Stg.1.00 to L.Leb.7.05.

Administrative Fee. An administrative fee of L.Leb.450 per year per student is charged to sponsors of bursary students. This fee is based upon the special services rendered to this group of students by the University on behalf of the sponsoring government, agency or corporation.

Deposit. A general deposit of L.Leb.100 is required initially of every student enrolling in AUB. This deposit is held until the student graduates or discontinues his course of study, at which time the deposit, less any indebtedness, will be returned.

Entrance Examination Fees. The fee for each separate examination is L.Leb.15, and this fee is entirely separate from the University Applications Fee of L.Leb.25 which is paid to the Office of the Registrar at the time of application. Examination fees are paid to the Office of Tests and Measurements at the time the candidate arranges to take entrance examinations. Examination fees should be paid not later than one week before the examination date. A penalty fee of L.Leb.10 per examination is required when late examination fees are accepted, but it is not always possible to accept late examination applications.

Food Service Costs. The cost of food per semester for students using the University's self-service cafeteria and restaurant facilities ranges from L.Leb.390 to L.Leb.570, depending upon the individual student's needs. Nursing Diploma students receive meal tickets for the noon meal.

Hospitalization Insurance Fees. The Hospitalization Insurance Plan fee for students is separate from the tuition fee. All students are required to enroll in the Hospitalization Insurance Plan. The fee for 12 months beginning in October is L.Leb.52; for one semester and one summer session beginning in February, L.Leb.39; and for one summer session, L.Leb.26. A married student will have the option of including his spouse and children at additional fees as outlined in the Regulations for the Hospitalization Insurance Plan. The Hospitalization Insurance Plan Fee for Nursing Diploma students is paid by the University.

Residence Fees. The residence fee depends upon the type of room the candidate desires. For men students it is normally L.Leb.470 per semester. For women students it is L.Leb.470 or 522.50 per semester. Nursing Diploma students receive free laundry of uniforms and the privilege of living in University housing during their senior year.

Tuition Fees. The following tables give tuition fees for each semester and for the summer session, by Faculties and Schools. These fees cover tuition, and the formal service and graduation fees. *They do not cover* fees for special services, books, supplies, athletic equipment, bedding, board or room.

Manner of Payment. All bank checks and money orders should be made payable to the American University of Beirut and sent directly to the Comptroller. Any funds

received in excess of previously listed charges for a student will be paid by the University to the student according to instructions received from parents. Spending money and valuables should be deposited with the Comptroller.

Withdrawals. In the event a student withdraws before classes begin—75% tuition refund.

In the event a student withdraws for justifiable reasons after his registration, the following refund schedule will be applied, per semester or term:

Withdrawal during first week—50% of tuition.

Withdrawal during second week—25% of tuition.

No refund of semester or term fees will be made for withdrawals after the second week. The unused portion of the food charge will be refunded. No refund will be made of the room charge or fees for special services rendered to students.

Incidental Expenses. Our estimate of incidental expenses for books, stationery, supplies and laundry ranges from L.Leb.400 to L.Leb.800 per academic year, depending upon the course for which the student registers. Expenses for travel, clothing and spending money are left for parents to calculate.

FACULTY OF ARTS AND SCIENCES			
	Tuition Fees in Lebanese Pounds		
	First Semester	Second Semester	Summer Session
Undergraduate and Special Students			
12 or more credits per semester	910	910	—
6 to 11 credits per semester or summer session	635	635	635
5 or less credits per semester or summer session	400	400	400
University Orientation Program	1,500	1,500	810
Auditors—per credit hour	50	50	50
Graduate Students			
Per course credit hour ¹	88	88	88
Resident fee for AUB students registered for thesis only ¹	110	110	110
Resident fee for non-AUB students registered for thesis only ²	530	530	530
All fees for each semester and for the summer session are payable on the day of registration.			

1. The fees for graduate study are for course work only. The rate is the same for undergraduate courses also. No charge is made for thesis work which is taken concurrently with course work. A resident fee of L.Leb.110 per semester or term is charged to AUB graduate students who register as students for the thesis or project only and who continue to utilize the University facilities while completing the thesis or project requirements.
2. The resident fee of L.Leb.530 per semester or term is charged to non-AUB students working at this University on theses at other universities.

FACULTIES OF MEDICAL SCIENCES			
	Tuition Fees in Lebanese Pounds		
	First Semester	Second Semester	Summer Session
School of Medicine			
First, Second, Third and Fourth Years	1,415	1,415	—
Fifth Year ¹	—	—	55
Special Students	990.50	990.50	—
School of Pharmacy			
All classes	1,000	1,000	—
Supervision fee for practical experience ²	55	55	55
School of Public Health —all programs			
Full Time	1,415	1,415	—
Part-Time—per credit hour	110	110	110
School of Nursing			
Diploma Program ³ : First Year	150	150	—
Second and Third Years	75	75	—
B.S. Program: all classes ⁴	1,000	1,000	—
Post Basic Program	1,000	1,000	—
Graduate Students			
Per course credit hour ⁵	110	110	110
Resident fee for AUB students registered for thesis only ⁵	110	110	110
Resident fee for non-AUB students registered for thesis only ⁶	660	660	660
<p>The registration fee of L.Leb.55 charged to the students of fifth year Medicine must be paid at the end of June. For fourth year Medicine the fees are payable on the day of registration in June and in February, for third year on the day of registration at the end of August and in February, for second year in September and in February, and for first year in October and in February.</p>			

1. Because fees in the School of Medicine have been collected during the first four years, the students of fifth year will be charged only a registration fee of L.Leb.55.
2. Students who do not complete the academic and summer practical experience requirements for graduation within the prescribed four academic years will be required to pay a supervision fee of L.Leb.55 per each three-month period of practical experience work.
3. All Nursing Diploma students pledge before admission their obligation to accept one year of employment at the AUB Hospital after graduation. A student living in University housing and receiving board for one year during the first two years is obligated for an additional year of employment at the Hospital.
4. Part-time B.S. in Nursing students may be accepted on a pre-arranged pro-rata basis per semester.
5. The fees for graduate study are for course work only. The rate is the same for undergraduate courses also. No charge is made for thesis work which is taken concurrently with course work. A resident fee of L.Leb.110 per semester or term is charged to AUB graduate students who register as students for the thesis only and who continue to utilize the University's facilities while completing the thesis or project requirements.
6. The resident fee of L.Leb.660 per semester or term is charged to non-AUB students working at this University on theses at other universities.

FACULTY OF ENGINEERING AND ARCHITECTURE			
	Tuition Fees in Lebanese Pounds		
	First Semester	Second Semester	Summer Session
Undergraduate and Special Students			
12 or more credits per semester	1,050	1,050	—
6 to 11 credits per semester or summer session	730	730	730
5 or less credits per semester or summer session	465	465	465
Graduate Students			
Per course credit hour ¹	110	110	110
Resident fee for AUB students registered for thesis only ¹	110	110	110
Resident fee for non-AUB students registered for thesis only ²	660	660	660
The fees for each semester and for the summer session are payable on the day of registration.			

FACULTY OF AGRICULTURAL SCIENCES			
	Tuition Fees in Lebanese Pounds		
	First Semester	Second Semester	Summer Session
Undergraduate and Special Students			
12 or more credits per semester	1,415	1,415	—
6 to 11 credits per semester	980	980	—
5 or less credits per semester	615	615	—
Technical Vocational Training	1,415	1,415	—
Graduate Students			
Per course credit hour ¹	110	110	110
Resident fee for AUB students registered for thesis only ¹	110	110	110
Resident fee for non-AUB students registered for thesis only ²	660	660	660
The fees for each semester and for the summer session for undergraduate and special students are payable on the day of registration in October and in February. The fees of graduate students for each semester and for the summer session are payable on the day of registration.			

1. The fees for graduate study are for course work only. The rate is the same for undergraduate courses also. No charge is made for thesis work which is taken concurrently with course work. A resident fee of L.Leb.110 per semester or term is charged to AUB graduate students who register as students for the thesis only and who continue to utilize the University's facilities while completing the thesis or project requirements.
2. The resident fee of L.Leb.660 per semester or term is charged to non-AUB students working at this University on theses at other universities.

FACULTY OF ARTS AND SCIENCES



FACULTY OF ARTS AND SCIENCES

Faculty List 1972-1973

Edwin Terry Prothro, Ph.D.; *Professor of Psychology, Dean.*

John Munro, Ph.D.; *Professor of English, Associate Dean.*

Pierre Mourad, Ph.D.; *Associate Professor of Physics, Assistant Dean.*

Michel Shamma'a, M.A.; *Academic Advisor.*

Edmund Shahla; *Executive Officer.*

Fuad S. Haddad, Ph.D.; *Associate Professor of Education, Registrar.*

PROFESSORS EMERITI

Frayha, Anis, Ph.D., University of Chicago; *Semitic Studies.*

Himadeh, Said, M.A., Columbia University; *Economics.*

Jabbur, Jibrail, Ph.D., Princeton University; *Arabic.*

Katul, Jibrail, B.A., AUB; *Education.*

Kurani, Habib, Ph.D., Columbia University; *Education.*

al-Makdisi, Anis, M.A., AUB; *Arabic.*

Mirhij, John, Ph.D., University of California; *Biology.*

Scaife, Christopher, M.A., University of Oxford; *English.*

Shahla, George, M.A., University of London; *Education.*

West, William, Ph.D., Princeton University; *Chemistry.*

Yazigi, Kamal, Ph.D., University of Chicago; *Arabic.*

PROFESSORS

* Abbas, Ihsan, Ph.D., University of Cairo; *Arabic.*

* Abdul Karim, Aziz, Ph.D., Purdue University; *Chemistry.*

* Babikian, Levon, Ph.D., University of Wisconsin; *Biology.*

* Baramki, Dimitri, Ph.D., University of London; *History and Archaeology*
(Curator of Museums).

* Beydoun, Ziad, D.Phil., University of Oxford; *Geology.*

* Blackstone, Bernard, Litt.D., University of Cambridge; *English.*

* Bruin, Frans, Ph.D., University of Amsterdam; *Physics* (Director of Observatory).

* Butros, Joseph, Ph.D., Emory University; *Biology.*

* Carswell, John, A.R.C.A., Royal College of Arts, London; *Fine and Performing Arts.*

Colt, John, M.S., University of Wisconsin; *Fine and Performing Arts* (Visiting).

* Cook, Daniel, Ph.D., University of California; *English and Linguistics.*

* Crow, Ralph, Ph.D., University of Michigan; *Political Studies and Public Ad-*
ministration.

* Diab, Lutfy, Ph.D., University of Oklahoma; *Psychology.*

* Diad, Muhammad,** D.Sc., Netherlands School of Economics; *Economics.*

* Fakhry, Majid, Ph.D., University of Edinburgh; *Philosophy.*

* Frick, Arthur,** M.S., University of Wisconsin; *Fine and Performing Arts.*

* Ghul, Mahmud, Ph.D., University of London; *Arabic.*

* Gordon, David, Ph.D., Princeton University; *History and Archaeology.*

* Hanania, Farid,** LL.B., University of Cambridge; *Barrister-at-Law; Political*
Studies and Law.

* Hanania, George,** Ph.D., University of Cambridge; *Chemistry.*

* On Tenure Appointment.

** On Furlough or Leave.

- * Hawi, Khalil, Ph.D., University of Cambridge; *Arabic*.
- * Heineken, Frederick, Ph.D., University of Amsterdam; *Physics*.
- * Hijab, Wasfi, Ph.D., University of Florida; *Mathematics*.
- * Ibish, Yusuf, Ph.D., Harvard University; *Political Studies and Public Administration*.
- * Issidores, Costas, Ph.D., University of Iowa; *Chemistry*.
- * Karam, Antoine, Dr.-ès-Lettres, University of Paris; *Arabic*.
- * Kennedy, Edward, Ph.D., Lehigh University; *Mathematics*.
- * Khalidi, Walid, B.Litt., University of Oxford; *Political Studies and Public Administration*.
Malik, Charles, Ph.D., Harvard University; LL.D., Litt.D., L.H.D., Phil.Dr. (Freiburg); *Philosophy* (Distinguished Professor).
- * Melikian, Levon, Ph.D., Columbia University; *Psychology*.
- * Munro, John, Ph.D., Washington University, St. Louis; *English*.
- * Muwafi, Amin, Ph.D., University of Florida; *Mathematics*.
- * Najm, Muhammad, Ph.D., University of Cairo; *Arabic*.
- Nelson, L. Warren, Ed.D., Columbia University; *Education* (Visiting).
- * Prothro, E. Terry, Ph.D., Louisiana State University; *Psychology*.
- Rogers, Allen, Ph.D., University of Utah; *Geology*.
- * Salem, Elie, Ph.D., Johns Hopkins University; *Political Studies and Public Administration*.
- * Salibi, Kamal, Ph.D., University of London; *History and Archaeology*.
- * Sarkis, Adib, Ph.D., Ohio State University; *Chemistry*.
- * Sayegh, Yusif, Ph.D., Johns Hopkins University; *Economics*.
- * Thabet, Samir, Ph.D., University of London; *Chemistry*.
- * Yff, Peter, Ph.D., University of Illinois; *Mathematics*.
- * Yorkey, Richard,** Ed.D., University of Michigan; *Education and Linguistics*.
- * Zahlan, Antoine, Ph.D., Syracuse University; *Physics*.
- * Zayid, Mahmud, Ph.D., Yale University; *History and Archaeology*.
- * Zeine, Zeine, Ph.D., University of London; *History and Archaeology*.
- * Ziadeh, Nicola, Ph.D., University of London; *History and Archaeology*.
- * Zurayk, Costi, Ph.D., Princeton University; Litt.D., University of Michigan; *History and Archaeology* (Distinguished Professor).

ASSOCIATE PROFESSORS

- Ali, Jamil, B.S., University of London; *Mathematics*.
- Anderson, Jack, Ph.D., Iowa State University; *Mathematics* (Visiting).
- * Arnita, Salvador, M.I.C.S., London; *Fine and Performing Arts*.
- * Ashour, Isam, D.Sc., Netherlands School of Economics; *Business Administration*.
- * Awad, Elias, Ph.D., University of Washington; *Chemistry*.
- * Bashshur, Munir, Ph.D., University of Chicago; *Education*.
- Basson, Philip, Ph.D., University of Missouri; *Biology*.
- * Batatu, John,** Ph.D., Harvard University; *Political Studies and Public Administration*.
- Bitar, Khalil, Ph.D., Yale University; *Physics*.
- Boecker, Eberhard, Ph.D., University of Southampton; *European Languages and Literature*.

* On Tenure Appointment.

** On Furlough or Leave.

Bratton, Neil, Ph.D., Georgetown University; *English and Linguistics*.
 Burrows, Robert,** Ph.D., Princeton University; *Political Studies and Public Administration*.

- * Bushrui, Suheil, Ph.D., University of Southampton; *English*.
- * Cajoleas, Louis, Columbia University; *Education*.
- Deeb, Samir, Ph.D., University of Illinois; *Biology*.
- Eid, Nimr, Ph.D., University of Texas; *Business Administration*.
- * Ghattas, Emile, Ph.D., Columbia University; *Business Administration*.
- Haddad, Fuad S., Ph.D., University of Chicago; *Education*.
- Haddad, Wadi, Ph.D., University of Wisconsin; *Education*.
- * Haddadin, Makhluaf, Ph.D., University of Colorado; *Chemistry*.
- * Hamdan, Muhammad, Ph.D., University of Sydney; *Mathematics*.
- * Hanna, Azmi,** Ph.D., University of Erlangen; *Mathematics*.
- Hayden, Jack, Ph.D., Northwestern University; *Business Administration* (Visiting).
- Heymans, Peter, Ph.D., University of London; *Mathematics*.
- Hulings, Neil, Ph.D., Florida State University; *Biology*.
- * Iskandar, Adnan, Ph.D., American University, Washington; *Political Studies and Public Administration*.
- * Khalaf, Nadim, Ph.D., Princeton University; *Economics*.
- * Khalaf, Samir,** Ph.D., Princeton University; *Sociology and Anthropology*.
- * Khuri, Fuad, Ph.D., University of Oregon; *Sociology and Anthropology*.
- Kouymjian, Dickran, Ph.D., Columbia University; *History and Archaeology and Religious Studies*.
- Makarim, Sami, Ph.D., University of Michigan; *Arabic*.
- Makdisi, Samir, Ph.D., Columbia University; *Economics* (Visiting).
- * Makinson, David, D.Phil., University of Oxford; *Philosophy*.
- Maleh, Ghassan, Ph.D., University of Birmingham; *English* (Visiting).
- * Mavromatis, Harry, Ph.D., Princeton University; *Physics*.
- * McClain, John, Ph.D., Princeton University; *Physics*.
- Mikdashi, Zuhayr, D.Phil., University of Oxford; *Business Administration*.
- * Mourad, Pierre, Ph.D., University of Paris; *Physics*.
- Naimy, Nadeem, Ph.D., University of Cambridge; *Arabic*.
- * Olmsted, John, Ph.D., University of California; *Chemistry*.
- * Regier, Mary,** Ph.D., University of California; *Mathematics*.
- Roy, Delwin, Ph.D., Purdue University; *Economics* (Visiting).
- Schilcher, Karl,** Dr.Phil., University of Vienna; *Physics*.
- Shukla, Uma, Ph.D., University of Lucknow; *Mathematics*.
- * Slade, Landry, Ph.D., University of Virginia; *Chemistry*.
- * Tarazi, Fuad, Ph.D., University of Cairo; *Arabic*.
- * Tayim, Hassan, Ph.D., University of Illinois; *Chemistry*.
- * Ward, William, Ph.D., Brandeis University; *History and Archaeology*.
- Zarour, George, Ph.D., University of Wisconsin; *Education*.

SENIOR LECTURERS

Antippa, Faizeh, M.A., AUB; *Education*.
 Bashir, Iskandar,** D.P.A., Syracuse University; *Political Studies and Public Administration*.

* On Tenure Appointment.
 ** On Furlough or Leave.

Dodd, Peter, Ph.D., Harvard University; *Sociology and Anthropology*.
 Fraga, Robert, Ph.D., University of British Columbia; *Mathematics*.
 Goedicke, Thomas, D.Sc., University of North Carolina; *Geology*.
 Harcourt, Hugh, Ph.D., University of Edinburgh; *Cultural Studies*.
 Jafri, Sayed, Ph.D., University of London; *Religious Studies*.
 Khairallah, George,** Ph.D., Columbia University; *English and European Languages and Literature*.
 Praninskas, Jean, Ph.D., University of Illinois; *English and Linguistics*.
 Ryffel, Heinrich, Dr.Phil., University of Bern; *Cultural Studies*.
 Yaqub, Fawzi, Ph.D., Purdue University; *Mathematics*.

ASSISTANT PROFESSORS

Abu-Absi, Samir, Ph.D., Indiana University; *Education and Linguistics*.
 Alsleben, Brigitte, Ph.D., University of Göttingen; *European Languages and Literature (Visiting)*.
 Aly, Hamdy, Ph.D., University of Illinois; *Business Administration*.
 Avolizi, Robert, Ph.D., Syracuse University; *Biology*.
 Basson, Priscilla, Ph.D., Cornell University; *Sociology and Anthropology*.
 Billeh, Victor, Ph.D., University of Wisconsin; *Education*.
 Blackstone, Richard, Ph.D., Brown University; *Political Studies and Public Administration*.
 Braid, Siham, Ph.D., Lehigh University; *Mathematics*.
 Brown, Ralph, Ph.D., Columbia University; *Education and Linguistics*.
 Chalabi, Ahmad, Ph.D., University of Chicago; *Mathematics*.
 Chimienti, John, Ph.D., Yale University; *Psychology*.
 Cook, Robert, Ph.D., University of California; *Chemistry*.
 Crow, Laure, M.A., University of Michigan; *English*.
 Dajani, Nabil, Ph.D., University of Iowa; *Journalism*.
 DeKock, Roger, Ph.D., University of Wisconsin; *Chemistry*.
 Dodd, Erica, Ph.D., University of London; *Cultural Studies*.
 Edwards, Lawrence, Ph.D., Harvard University; *Chemistry*.
 Fuleihan, Joseph, Ph.D., Iowa State University; *Economics*.
 Ghandour, Marwan, Ph.D., University of Illinois; *Economics*.
 Gorry, Thomas, Ph.D., Purdue University; *Psychology*.
 Gunderson, Gil, Ph.D., University of California; *Political Studies and Public Administration*.
 Hardy, John, Ph.D., University of Washington; *Biology*.
 Hassanein, Medhat, Ph.D., University of Pennsylvania; *Economics*.
 Hayes, Willis, Ph.D., University of California; *Biology*.
 Ibrahim, Ibrahim,** D.Phil., University of Oxford; *Political Studies and Public Administration*.
 Ibrahim, Saad, Ph.D., University of Washington; *Cultural Studies*.
 Kafescioglu, Ismail, Ph.D., Case Western Reserve University; *Geology*.
 Kaloustian, Moses, Ph.D., University of Notre Dame; *Chemistry*.
 Kanaan, Adil, Ph.D., University of California; *Economics*.
 Karaoglan, Roy, Ph.D., Columbia University; *Economics*.
 Khairallah, As'ad, Ph.D., Princeton University; *Arabic*.
 Khalidi, Tarif, Ph.D., University of Chicago; *History and Archaeology*.

* On Tenure Appointment.

** On Furlough or Leave.

- Kisirwani, Marun, Ph.D., Indiana University; *Political Studies and Public Administration*.
- Letterie, Jacobus, Diploma of International Studies, Johns Hopkins University; *Political Studies and Public Administration*.
- Livingston, John, Ph.D., Princeton University; *Cultural Studies*.
- Madec, Marie-Hélène, Agrégation de Lettres Modernes, University of Paris; *European Languages and Literature* (Visiting).
- Makemson, John, Ph.D., Washington State University; *Biology*.
- Manassah, Jamal, Ph.D., Columbia University; *Physics*.
- Melikian, Anahid, Ph.D., University of Wisconsin; *English*.
- Midani, Ayman, Ph.D., University of California; *Business Administration*.
- Mohapatra, Ram, Ph.D., University of Jabalpur; *Mathematics*.
- Moracco, John, Ph.D., University of Iowa; *Education*.
- Murphy, Richard, Ph.D., University of Texas; *English and Cultural Studies*.
- Namek, Yakub, Ph.D., University of Wisconsin; *Education*.
- Nasr, Nafhat, Ph.D., Vanderbilt University; *Political Studies and Public Administration*.
- Nassif, Nabil, Ph.D., Harvard University; *Mathematics*.
- Obermeyer, Gerald, Ph.D., Indiana University; *Sociology and Anthropology*.
- Olsen, Gordon, M.A., Columbia University; *Fine and Performing Arts*.
- Parsons, Brian, M.B.A., University of Chicago; *Business Administration*.
- Pascoe, Enid, Ph.D., McGill University; *Biology*.
- Read-Collins, Nicholas, Licence-ès-Lettres, University of Poitiers; *English*.
- Richard, Sandra, Ph.D., University of Texas; *Business Administration*.
- Saegert, Joel, Ph.D., University of Texas; *Psychology*.
- Saliba, Wahib, Ph.D., Boston College; *Education*.
- Sara, Nathir, Ph.D., University of Illinois; *Education*.
- Scott, Elizabeth, M.A., Columbia University; *English*.
- * Scott, Richard, M.A., Harvard University; *Philosophy*.
- Seeden, Helga, Ph.D., University of London; *History and Archaeology*.
- Seikaly, Samir, Ph.D., University of London; *Cultural Studies and History and Archaeology*.
- Shaath, Nabeel, Ph.D., University of Pennsylvania; *Business Administration*.
- Shibl, Yusuf, Ph.D., University of California; *Business Administration*.
- Singh, Bhajan, D.Phil., University of Sussex; *Physics*.
- Sirhan, Ghazi, Ph.D., North Carolina State University; *Economics*.
- Smith, Peter, M.F.A., Pratt Institute; *Fine and Performing Arts*.
- Soghikian, Juanita,** M.A., Columbia University; *Education*.
- Spiker, Steven, Ph.D., University of Iowa; *Biology*.
- Starr, Paul, Ph.D., University of California; *Sociology and Anthropology*.
- Tang, I. Ming, Ph.D., University of Cincinnati; *Physics*.
- Venkatasubramanian, Calicut, Ph.D., Queen's University, Kingston, Ja.; *Geology*.
- Watson, Gary, Ph.D., Cornell University; *Physics*.
- Zaatar, Muhammad, Ph.D., Colorado State University; *Mathematics*.

LECTURERS

- Abboud, Shehadeh, M.A., AUB; *English*.
- Bross, Jurgen, State Exam., University of Freiburg; *European Languages and Literature*.

* On Tenure Appointment.

** On Furlough or Leave.

Buheiry, Marwan, M.A., AUB; *Cultural Studies and History and Archaeology*.
 Chamieh, Suhayl, M.B.A., AUB; *Business Administration*.
 Clark, John, M.A., AUB; *English*.
 Cook, Jean-Marie, Ph.D., Harvard University; *Cultural Studies*.
 Dajani, Burhan, M.A., AUB; *Business Administration*.
 Etinoff, Nedko, Th.B., Near East School of Theology, Beirut; *Fine and Performing Arts*.
 Fistere, John, B.A., Colgate University; *Journalism*.
 Hajjar, Nadim, Ph.D., University of California; *Economics*.
 Hallab, Mary, Ph.D., Louisiana State University; *English*.
 Hovey, Allen, B.M., Boston University; *Fine and Performing Arts*.
 Kankashian, Ibrahim, M.A., AUB; *English*.
 Krüger, Michael, M.A., Justus Liebig Universität, Giessen; *European Languages and Literature*.
 Marmura, Aziz, M.B.A., University of Michigan; *Business Administration*.
 Milecki, Mary Ann, M.A., Columbia University; *English*.
 Montégu, John, Ph.D., Harvard University; *Religious Studies*.
 Oshagan, Vahe, Dr.-ès-Lettres d'État, University of Paris; *Cultural Studies*.
 Proust, Daniel, Licence-ès-Lettres, University of Lyon; *European Languages and Literature*.
 Saidah, Roger, Diplôme, École du Louvre; *History and Archaeology*.
 Shebaya, Peter, M.A., University of Michigan; *Fine and Performing Arts*.
 Taky Deen, Diana, B.A., AUB; *Fine and Performing Arts*.
 Taylor, George, Dip. of Teaching, Eastbourne College; *English*.
 Woosnam-Mills, Michael, M.A., AUB; *English*.
 Yaktine, Umayma, Ph.D., University of London; *Psychology*.
 Yaqub, Dorothy, M.A., University of California; *English*.

INSTRUCTORS

Alamuddin, Nada, M.A., AUB; *Psychology*.
 Amyuni, Mona, M.A., AUB; *European Languages and Literature*.
 Andrews, John, Dip. Ed., University of London; *English*.
 Aronson, Dennis, M.A., AUB; *Linguistics*.
 Bazzi, Tarif, M.A., AUB; *Arabic*.
 Bellrichard, Suzanne, B.A., Illinois Wesleyan University; *English*.
 Bender, Mildred, M.A., AUB; *English*.
 Bridgwood, Jean, M.A., AUB; *English*.
 Christidis, Theodore, M.S., AUB; *Physics*.
 Darwish, Orpha, M.S.E., Southern Illinois University; *English*.
 Fraga, Jean, B.A., University of British Columbia; *English*.
 Gammon, Allister, B.A., Mount Allison University; *Cultural Studies*.
 Ghusayni, Rauf, M.A., AUB; *Education*.
 Gordon, Ann, M.A., AUB; *English*.
 Haddad, Mona, M.A., AUB; *Education*.
 Haydar, Adnan, M.A., AUB; *English*.
 Jurdak, Murad, M.S., AUB; *Education*.
 Kadi, Zeina, M.A., AUB; *Education and Psychology*.
 Kassab, Naim, M.A., AUB; *Arabic*.
 Khoury, Samira, M.A., AUB; *Cultural Studies*.
 Kurani, David, B.A., AUB; *Fine and Performing Arts*.

Manuelian, Peter, M.A., Rutgers University; *English*.
Maple, Robert, M.A., University of Illinois; *English*.
Murphy, Elizabeth, M.A., University of Texas; *English*.
al-Radi, Nuha, Dip. Rawnsley Academy, London; *Fine and Performing Arts*.
Salam, Josephine, M.A., Radcliffe College; *English*.
Satamian, Krikor, B.A., AUB; *Fine and Performing Arts*.
Siniora, Fuad, M.B.A., AUB; *Business Administration*.
Vassilian, Asbed, M.S., AUB; *Chemistry*.
Zahawi, Selma, M.A., Columbia University; *Cultural Studies*.

RESEARCH ASSOCIATES AND ASSISTANTS

Austin, Michael, D.Phil., University of Oxford; *History and Archaeology* (Associate).
Azzam, Siham, B.A., AUB; *Arabic* (Assistant).
Badre, Leila, M.A., AUB; *History and Archaeology* (Assistant).
Ellezian, Lena, B.S., AUB; *Biology* (Assistant).
Hajjar, Olga, M.A., AUB; *Arabic* (Assistant).
Humphreys, Richard, Ph.D., University of Michigan; *History and Archaeology* (Associate).
Lakkis, Sami, Doctorat, University of Paris; *Biology* (Associate).
Murad, Amal, B.S., AUB; *Biology* (Assistant).
Nayir, Rose, M.A., AUB; *Development Administration* (Assistant).
Noble, Paul, Ph.D., McGill University; *Political Studies and Public Administration* (Associate).
Raschka, Marilyn, M.A., AUB; *Linguistics* (Assistant).
Smock, Audrey, Ph.D., Columbia University; *Middle Eastern Studies* (Associate).
Tabbara, Jumana, B.A., AUB; *Development Administration* (Assistant).
Uwaydah, May, M.A., AUB; *Linguistics* (Assistant).
Wanna, Suad, M.S., AUB; *Biology* (Assistant).

General Information

The Faculty of Arts and Sciences offers a variety of educational programs planned for the needs and interests of individual students. The foundation of the regular programs is a balanced, comprehensive and liberal education that aims both to broaden the awareness of each student and also to develop in him intellectual habits that enable him to think for himself. This liberal education emphasizes the importance of a disinterested search for truth as opposed to the blind acceptance of authority, tradition and prejudice; and to this end the student's experience in the classroom is supplemented by participation in the full life of the University community, which may involve him in extracurricular lectures, concerts and plays, student-directed activities and a large number of sports. These experiences, it is believed, will help to create balanced and educated men and women who are prepared for lives of leadership in their own communities.

Each student completes, in addition to this basic liberal education, a program of intensified study in a specialized subject, either as a preparation for professional training or as professional training in its own right.

Both the specialized and liberal programs of the Faculty aim to develop maturity of thought and an appreciative understanding of the value and techniques of research, experiment and analysis; for such an understanding is essential to all independent and

creative thought, and will lead no more to the undermining of national loyalties than to bigotry. Whatever their special field, graduates of the Faculty of Arts and Sciences should be able to appreciate the values of both Near Eastern and Western civilizations, and to select with discrimination those aspects which can best contribute to the culture and development of their own countries.

ADMISSION

For complete and detailed information regarding admission to the University, including certificates recognized, see pages 18 to 29 in the section on Admission under General Information at the beginning of this catalogue.

The specific requirements for admission to the Freshman class are found on pages 21 to 25, to the Sophomore class on pages 25 to 27, to Advanced Standing on pages 27 to 28, and to Graduate Work in the section on Admission in the chapter at the end of this catalogue entitled Graduate Study.

CATEGORIES OF STUDENTS

1. Full-Time Students

To be considered full-time, a student must carry a minimum load of 12 credits per semester. For Summer Session, see p. 58.

The normal schedule of *Freshman* students each semester is 15 credits plus Physical Education. Freshman students may be permitted by action of the Administrative Committee of the Faculty to take less than the full program; but in this case they will be required to complete the Freshman program, together with any courses they have failed, in the following year.

During the *Sophomore*, *Junior* and *Senior* years, the normal schedule for full-time students each semester is from 12 to 18 credits. The student and his Advisor will decide on the maximum number of credits that can be carried. (The suggested limit of 18 credits is not absolute, but merely an indication to Advisors of what is a normal load). Students in the Sophomore, Junior and Senior classes carrying more than 12 credits may (with their Advisor's permission) reduce their load to 12 credits, provided they do so not later than 10 weeks after the start of the semester (6 weeks in the case of the Summer School). Full-time students who wish to reduce their schedule to less than 12 credits, or who wish to drop a required course, must apply to the Administrative Committee for approval.

2. Part-Time and Special Students

This category includes part-time and unclassified students allowed to work for degrees; holders of degrees but not working for a higher degree; and students who follow special programs of study not leading to degrees from this University. All such students must carry a minimum of six credits per semester; must meet the University admission requirements; and must secure the approval of either the Administrative Committee or the Graduate Committee of the Faculty before admission to part-time or special status.

3. Auditors

Auditors are admitted to certain courses on payment of the special auditor's fee, and on obtaining the permission of the professor in charge of the course and of the Registrar.

Auditors must meet the admission requirements of the University, but this requirement may be waived by the Administrative Committee in the case of a mature person who has been working for a number of years. The University does not recognize auditors as students; they may not take examinations, and the Registrar does not keep a record of their courses and thus cannot issue to them any certificates.

PROGRAMS OF STUDY

1. Undergraduate Programs

Students may select one of two academic paths; the first, normally involving four years of study beginning with the Freshman year, is primarily a liberal education. The second is essentially professional or pre-professional training, preparing students for admission to the Faculties of Agricultural Sciences and Engineering and Architecture, and the Schools of Medicine, Pharmacy and Public Health. Students enrolled in the pre-professional programs are required to complete basic courses of liberal education as a part of their preparation for the professional schools.

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

- (a) Bachelor of Arts. Four years.
- (b) Bachelor of Science. Four years.
- (c) Bachelor of Business Administration. Four years.
- (d) Pre-Medical. An interdepartmental program in Biology and Chemistry, preparing students to meet the minimum requirements for admission to the School of Medicine but without guaranteeing acceptance. Three years.
- (e) Pre-Pharmacy; pre-Public Health; pre-Engineering and Architecture; pre-Agriculture. One year (the Freshman Science program).
- (f) The University Orientation Program. For students who meet the AUB admission requirements except in English Language. See special section entitled Institutes, Centers and Special Programs, following descriptions of Arts and Sciences Departments and their offerings.

2. Graduate Study

Full information and general requirements for graduate study are found in the chapter at the end of this catalogue entitled Graduate Study.

REGULAR FRESHMAN PROGRAM

The Freshman program, completion of which entitles a student to promotion to Sophomore, consists of 30 credits plus Physical Education. Successful completion of the program demands a grade of 70 or more in at least 12 credits.

On admission to the Freshman class, a student must enroll in either the Arts or the Science program; although exceptional programs are possible if approved by the Administrative Committee. Courses taken in these programs are the following:

(1) Freshman Arts

	<i>Semesters</i>	<i>Credit Hours</i>
Arabic 101 and 102	2	6
English 103 and 104; or 105 and 106	2	8
History 101 and 102	2	6
Biology 103 and 104; or Chemistry 101 and 102; or Physics 103 and 204	2	8

One elective	1	3
Physical Education 001 and 002; <i>or</i> 003 and 004*	2	non-credit

Arabic 101 and 102 are required of all students whose native language is Arabic. Non-Arabic speaking students elect in place of Arabic any two courses open to Freshmen students; except that Freshman Arts students may elect Mathematics 101 and 102 only if they achieve in the entrance examination in Mathematics the minimum score required for this course; or if they secure the approval of the Department of Mathematics.

(2) Freshman Science

	<i>Semesters</i>	<i>Credit Hours</i>
Arabic 101 and 102	2	6
English 103 and 104; <i>or</i> 105 and 106	2	8
Mathematics 101 and 102	2	8
Chemistry 101, 201 and 203; <i>or</i> Physics 101 and 102	2	9-10
Physical Education 001 and 002; <i>or</i> 003 and 004*	2	non-credit

Arabic 101 and 102 are required of all students whose native language is Arabic. Non-Arabic speaking students elect in place of Arabic any two courses open to Freshmen students. If such a student plans to major in Chemistry, he is advised to elect Physics 101 and 102 along with Chemistry 101 and 201.

Chemistry 101, 201 and 203 are required of students planning to major in Biology and Chemistry, or to enter Medicine, Pharmacy, Public Health, or Agriculture; Physics 101 and 102 are required of students planning to major in Physics; Chemistry 101, 201 and 203 and Physics 101 and 102 of students planning to enter Engineering and Architecture.

GRADUATION REQUIREMENTS

1. Degree of Bachelor of Arts, Bachelor of Science, Bachelor of Business Administration

The following are the graduation requirements for the degrees of B.A., B.S. and B.B.A.:

- (a) A minimum of eight semesters residence beginning with the Freshman class, or six semesters beginning with the Sophomore class, at recognized institutions of higher learning, provided at least three semesters and 36 credits are completed at AUB. For purposes of this requirement, two summer sessions shall be considered equivalent to one semester;
- (b) A minimum of 120 credits for students who enter as Freshmen and 90 credits for students who enter as Sophomores. With the approval of the Curriculum Committee, Departments may establish programs that exceed these minimum credit requirements;
- (c) A minimum of 30 credits in courses numbered 210 or above in the major Department with a cumulative average of 70 or more, plus any additional requirements set by the Department; or the requirements of other types of major programs as described in section 2 following;

001 and 002 *Freshman Athletics for Men*, and 003 and 004 *for Women*. 0 cr; annually. A theory and performance approach toward appreciation and knowledge of athletics, body building and various sports.

- (d) The following courses or their equivalent: English 201, the Library Orientation course* (these must be taken during the Sophomore year), Arabic 201 or any other Arabic course numbered 221 and above (for Arabic-speaking students only);
- (e) Cultural Studies 201, 202 (normally during the Sophomore year), 203, 204 (normally during the Junior year), and a minimum of 18 additional credits outside the major Department, exclusive of requirements in (d) above and of the normal Freshman program;
- (f) A grade of 70 or more in at least 50 credits numbered 200 or above;
- (g) Some Departments further require that their students sit for the Undergraduate Record Examination. Individual Departments can use a comprehensive test for their evaluation of the students. Information concerning departmental policy on this matter may be obtained from the Departments concerned.

Interdepartmental Majors and Teaching Majors

Besides the Departmental Major, which consists of a minimum of 30 credits of courses numbered 210 or above in one Department and other departmental requirements, students may also enroll for Interdepartmental Majors or Teaching Majors.

- (a) An Interdepartmental Major consists of a minimum of 24 credits in courses numbered 200 and above in each of two Departments in related fields. An average of 70 is required for courses taken in each Department.
- (b) A Teaching Major consists of a minimum of 30 credits in courses numbered 210 or above in a Department offering a subject taught in elementary or secondary schools, plus the requirements of the Department of Education for the Teaching Diploma.

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

3. The Teaching Diploma

See under Department of Education.

4. The Sophomore Diploma

This diploma was discontinued after October, 1967. Successful completion of the Sophomore class qualifies students for acceptance by American colleges and universities into the Junior class, and for admission to British universities.

5. Graduation with Distinction

In order to graduate *with distinction* a student must have an average of 85 or higher in his Junior and Senior years and be recommended by his Department for distinction. In order to graduate *with high distinction* a student must have an average of 90 or higher in his Junior and Senior years and must be recommended by his Department for high distinction.

6. Directed Study

All students with averages in their major of 82 or above at the beginning of their Senior

* See section "Sophomores" under Department of English, page 82.

year shall be eligible to elect a course of directed study. Students with averages lower than 82 may be admitted to directed study at the discretion of the Department.

Students who elect a course of directed study will choose their Senior courses in consultation with a Faculty member selected by the student with approval of the Department. Among these courses may be a tutorial of from three to six credits directed by the Faculty member. This tutorial may consist of independent research, original creative compositions, or directed reading, and will include the presentation of a report or thesis on the work.

ACADEMIC RULES AND REGULATIONS

1. Classification of Students

An undergraduate student shall be considered to have completed a class when he has taken and passed 30 or more credits beyond the requirements for the previous class. However, a student who registers in October lacking 6 or fewer credits for completion of a class shall be registered in the next higher class.

A student will not be granted a certificate stating that he has completed a class until he has completed the specified courses in the regular program for that class and has acquired the requisite number of credits. The credit requirements are as follows:

- (a) for the completion of the Freshman class: 30 credits;
- (b) for the completion of the Sophomore class: 60 credits;
- (c) for the completion of the Junior class: 90 credits.

2. Correct Use of Language

Facility in the clear, correct and responsible use of language is a basic requirement for graduation to any degree.

Grades on papers (term papers, essays or examinations) that are ill-written, no matter what the course, may be lowered for the quality of the writing alone.

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

3. Grades, Incomplete Grades, Make-up Examinations

(a) Grading System. In the Faculty of Arts and Sciences the following grading system for under-graduate students is used: 90-100 (A) Excellent; 80-85 (B) Good; 70-75 (C) Fair; 60-65 (D) Weak; 55 (F) Failing; I Incomplete; IF Incomplete Failed; W Withdraw; P Pass; F Fail; X no grade reported for the course.

Grades are expressed in multiples of 5 (100, 95, 90... 45, 40).

To be placed on the Dean's Honor List, a student must: (1) be full-time; (2) have an average of at least 80; (3) rank in the top 10% of his class; (4) have no failing grades in courses which carry credit; (5) have no incomplete grades; (6) have no disciplinary action against him; and (7) be deemed worthy by the Dean to be on the Honor List.

(b) Incomplete Grades. A student who fails to complete the requirements for his courses on time will lose credit for those courses.

First Semester Courses. Incomplete grades must be made up before the end of the second semester of the same year.

Second Semester and Summer Session Courses. Incomplete grades must be made up before the beginning of the following academic year.

(c) Make-up Final Examinations. These are given only to those students who have valid excuses for having failed to take the final examinations.

First Semester Courses. Make-up final examinations are given only during the first two weeks of the second semester of the same academic year.

Second Semester Courses. Make-up final examinations are given during two periods only: 1. within two weeks after the final examination of the second semester, provided teachers are available and are willing to give the examinations; 2. at the beginning of the following academic year.

Summer Session Courses. Make-up final examinations are given at the beginning of the following academic year.

4. Attendance at and Withdrawal from Courses

(a) Students are expected to attend all classes and laboratory sessions. Absence of a student, whether excused or not, from any class or laboratory session, does not excuse the student from his responsibility for the work done at that time or for any announcements made during his absence.

(b) Class attendance. Individual instructors may at their discretion keep attendance records. An instructor may require any student who misses more than one-fifth of the class or laboratory sessions of a given course to withdraw from the course with a "W", provided that this requirement has been announced at the beginning of the semester. In such courses attendance records must be kept on file in the Department.

(c) Laboratory sessions. No student may be excused from laboratory requirements; all missed laboratory work must be made up by arrangement with the Department.

(d) Examinations and quizzes. In courses in which final examinations are given, a student may not receive a passing grade without taking a final examination. A student who misses an examination or quiz may request to take a make-up. The instructor will assume final responsibility for dealing with such requests, but may, if he wishes, require the student to obtain an excuse from the Dean's Office. At the beginning of each semester, the instructor will announce the policy that he intends to follow in the matter of missed examinations and quizzes, and will make sure that students are fully aware of this policy.

(e) Withdrawal from courses. Students are permitted to withdraw from courses not later than ten weeks after the start of the semester (six weeks in the case of the summer session); W (withdrew) will be inscribed on their record. When a student is required by an instructor to withdraw from a course because of poor attendance, W will also be inscribed on his record, regardless of the date of withdrawal.

5. Probation

The University reserves the right to drop a student for any reason and at any time. Normally a student will not be dropped for academic reasons without having been on probation for one semester or one summer session. Students on probation must take at least 12 credit hours each semester and 6 credit hours each summer session.

Placement on Probation. A student will be placed on probation for any one of the following reasons: a) if at the end of a semester or summer session he fails in one-third or more of the total number of credits he is carrying; b) if at the end of a semester, while carrying 12 or more credits, he does not earn a grade of 70 or higher in one-third or more of the total number of credits he is carrying. Students carrying a reduced schedule of less than 12 credits who have not failed in any of their courses are not subject to probation regulations until they have accumulated 12 or more credits. The counting of accumulated credits starts from the beginning of the reduced schedule. In all cases where 12 or more credits have been accumulated, probation regulations apply; c) if at any time beginning with the Sophomore year the student's cumulative average in his major field falls below 70. A Freshman or Sophomore student will not be placed on probation at the end of his first semester at the University unless he fails in one half or more of the credit hours carried.

Removal of Probation. If allowed to remain at the University, a student who is placed on academic probation continues on probation until it is removed by the Administrative Committee. The load of a student on probation shall not be less than 12 nor more than 17 credit hours during a regular semester. (This regulation is waived, however, for students registering for their final semester before graduation.)

Probation will be removed at the end of a semester or summer session provided the student passes in all courses, attains a general average of 70 or more in one third of the credits he is carrying, and attains a cumulative general average of 70 or more in the major field. For purposes of removing probation, a summer session is regarded as a semester, but only if the student carries a minimum of 8 credit hours.

Dismissal from the University. A student on probation who fails at the end of any semester or summer session in one-third or more of the total credits he is carrying will be dropped. A student who fails to remove probation by the end of the third semester after he is placed on probation will be dropped; no students, however, will be dropped at mid-year.

6. Failures and Application for Re-Admission

Failure. If a student fails a course, no re-examination is permitted. If a course is required for graduation, students failing that course must repeat it. No student may repeat a course more than once. When a student repeats a course, only the second grade will be used in computing his average.

A student who at the end of his Senior year fails to attain a cumulative average of 70 or more in his major field will be required to take additional courses in that field in excess of the total hours required for graduation, provided he is permitted to continue at the University.

Re-Admission. When, in accordance with University regulations, a student is dropped, the implication is that he is not qualified to continue his education. Consideration for re-admission is given for one of the following reasons: (a) if the student was not able to do his work efficiently because of health reasons: in such cases, the University will depend on a medical report from the University Physician; (b) if the Advisor of the student or a Faculty member or Administrative Official of the University knows of certain family problems which may have influenced the academic achievement of the student; (c) if, after spending one or two years at another institution, the student is able to present a satisfactory record and recommendation. Ordinarily, supporting documents for (a) and (b) must be presented within 30 days

after the student is dropped from the University, but in exceptional cases this may be done by the beginning of the following regular semester.

If a student is on probation and leaves the University after the tenth week of the semester, the Administrative Committee will decide whether he may be allowed to return to the University.

7. Student Advisors

Each student is assigned an academic Advisor who must approve the student's schedule each semester.

Freshman and Sophomore Students. Sophomore students who have already decided on their major should consult with their Departments for advice in determining their schedules. Other Sophomores and all Freshmen should consult the Arts and Sciences Student Academic Advisor.

Junior and Senior Students have as their Advisor a representative from the Department in which they intend to concentrate most of their work.

Interdepartmental Majors can choose their Advisor in either of the two Departments in which they are concentrating.

Teaching Majors will be advised by the Department in which the subject matter courses are taken.

SUMMER SESSION

Maximum Load. The maximum academic load during the summer session is 10 credits.

Degree Courses. The degree courses offered during the summer session are identical in standard and content with those offered during the first and second semesters. The purpose of the summer degree courses are as follows:

- (a) To enable students to make up deficiencies which are due to either failures or changes of their major programs;
- (b) To permit able students to accelerate their program of study;
- (c) To permit students, who for financial reasons are required to work while studying, to spread their academic programs over a period of eleven months, instead of the usual nine;
- (d) To permit candidates for degrees who are unable to attend the University for four full academic years to complete part or all of their programs.

Non-Degree Courses and Summer Orientation Programs. For these, see the special chapter at the end of this catalogue entitled Division of Extension and Special Programs.

Courses

Numbers Preceding Course Titles

Non-credit Courses (1-99). No academic credit for graduation.

Freshman Courses (100-199). Ordinarily taken during the Freshman year, and may be counted toward graduation only as part of the Freshman program.

Introductory Courses (200-209). May be counted toward graduation whenever taken but cannot be considered as part of the credits in the major field.

Advanced Undergraduate Courses (210-299). May be counted as credits in the major field.

Graduate Courses (300-499). Many specialized courses numbered 210 through 299 may also give graduate credit if approved by the student's supervisor and the Graduate Committee.

Odd Numbered Courses. Normally offered during the first semester.

Even Numbered Courses. Normally offered during the second semester.

Unit Courses. Courses designated with an "and" between numbers (e.g. 101 and 102) are ordinarily taken as a unit. Usually the first course must be completed before registration in the second.

Numbers Following Course Titles

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

The second number indicates the laboratory or practice hours required each week.

The third number indicates the number of credit hours applied toward graduation. The credit assigned to each course is stated for the semester. Each hour of laboratory is considered $\frac{1}{3}$ to $\frac{1}{2}$ credit hour.

Time of Course Offering

Annually. Courses marked are offered at least once during each academic year. Other courses marked *Alternate Years* and *Each Semester* are given accordingly. When frequency of offering is not indicated, the course is offered at the discretion of the Department.

Course Descriptions

Detailed course descriptions are available in the individual Departments for those requiring further information.

Courses Offered by Other Faculties

Students in Arts and Sciences may also take for credit the following courses, offered in the Faculties of Agricultural Sciences, Engineering and Architecture, and Medical Sciences:

FACULTY OF AGRICULTURAL SCIENCES:

- CP 221 Applied Entomology
- CP 223 Principles of Plant Pathology
- CP 240 Taxonomy of Economic Plants
- CP 328 Crop Ecology
- FTN 210 Brief Survey of Foods and Nutrition
- FTN 261 Introductory Biochemistry
- SI 215 Nature and Properties of Soils
- SI 267 Soil Conservation

SI 280 Soil Survey and Morphology
SI 303 Soil Genesis and Classification
SI 305 Clay Mineralogy

FACULTY OF ENGINEERING AND ARCHITECTURE:

AS 11 Man's Cultural Evolution
E13 04 Mathematics III
E13 05 Mathematics IV
ME 10 36 Chemical Engineering I

FACULTIES OF MEDICAL SCIENCES:

Biochemistry 211 Basic Biochemistry
Biochemistry 303 Advanced Biochemistry
Internal Medicine 249 Health Education
Pharmacy 225 Pharmaceutical Processes and Preparations

DEPARTMENT OF ARABIC AND NEAR EASTERN LANGUAGES

Chairman: Karam, A.

Professors: Abbas, I.; Ghul, M.; Hawi, K.; Khairallah, A.; Makarem, S.; Naimy, N.; Najm, M.; Tarazi, F.

Instructors: Bazzi, T.; Kassab, N.

UNDERGRADUATE PROGRAM

General Graduation Courses: All Arabic-speaking students are required to take 101 and 102 in the Freshman year, and 201 or any other Arabic course numbered 221 and above in either the Sophomore year or later.

Requirements for admission include the approval of the Chairman. Students intending to work for the B.A. in Arabic Language and Literature must have attained a grade of 75 and above in their general graduation course (201 or other) and must complete 48 credit hours in the Department.

B.A. in Arabic Language and Literature: Students majoring in Arabic Language and Literature are required to take the following courses: 221, 222, 231, 232, 233, 234, 237, 239, 241, 243 or 244; and to select eighteen credits, of which nine at least must be taken in the Department, among the following: 213 and 214, 217 and 218, 227, 228, 235, 236, 238, 240, 242, 245 and 246, English 219 or French 232, European Literature 215, Philosophy 232 and Anthropology 274.

B.A. in Arabic Studies: Non-Arabic speaking students are required to take the following courses: 203, 204, 211, 212, 215, 216, 225, 226, 245, 246 and 236 or 239 or 240.

Interdepartmental Majors: Students selecting Arabic as part of an Interdepartmental Major must complete the required core of 30 credits specified above. A special schedule will then be determined in conjunction with the related Departments: Education, English, European Languages and Literature, Fine and Performing Arts, History, Philosophy, Political Studies and Public Administration, Religious Studies, Sociology and Anthropology.

- 43 Remedial Arabic.** 3.0; 0 cr; annually. ٤٣ درس اعدادي في اللغة العربية .
- 101 and 102 Readings in Arabic Heritage.** 3.0; 3 cr; annually. ١٠١ و ١٠٢ قراءات من تراث العرب . يشتمل على نظرة مجملية في التراث العربي وتحليل منتقيات من آثار اعلامه بيانا للسياق الحضاري من خلل النصوص الفكرية والادبية .
- 201 Studies in Arabic Language and Literature.** 3.0; 3 cr; annually. ٢٠١ دراسات في اللغة والادب . يشتمل على نصوص مختارة يعمد الى تحليلها لغويا وادبيا يستهدف منها ضبط العبارة ، وحسن الاداء ، وانماء التدوق .
- 203 and 204 Introductory Arabic for Foreigners.** 6.0; 6 cr; annually. A thorough course in basic literary Arabic, with emphasis on the vocabulary of modern literature, the press and current affairs. (For non-Arabic-speaking students only.) ٢٠٣ و ٢٠٤ *Introductory Arabic for Foreigners.* 6.0; 6 cr; annually. A thorough course in basic literary Arabic, with emphasis on the vocabulary of modern literature, the press and current affairs. (For non-Arabic-speaking students only.)
- 211 and 212 Background of Classical Arabic Literature.** (In English.) 3.0; 3 cr; alternate years. The formative elements of the literary, intellectual and social background of Arabic Literature to the end of the 13th century A.D. ٢١١ و ٢١٢ *Background of Classical Arabic Literature.* (In English.) 3.0; 3 cr; alternate years. The formative elements of the literary, intellectual and social background of Arabic Literature to the end of the 13th century A.D.
- 213 and 214 Introductory Semitics.** 3.0; 3 cr; alternate years. A general introduction to Semitic languages. ٢١٣ و ٢١٤ *Introductory Semitics.* 3.0; 3 cr; alternate years. A general introduction to Semitic languages.
- 215 and 216 Intermediate Arabic for Foreigners.** 6.0; 6 cr; annually. Aims at developing ability to read and appreciate literary texts and comment in Arabic on press reports. (Open to non-Arabic-speaking students.) Pre-requisite: 203 or 204, or equivalent. ٢١٥ و ٢١٦ *Intermediate Arabic for Foreigners.* 6.0; 6 cr; annually. Aims at developing ability to read and appreciate literary texts and comment in Arabic on press reports. (Open to non-Arabic-speaking students.) Pre-requisite: 203 or 204, or equivalent.
- 217 and 218 Introductory Persian.** 3.0; 3 cr; annually. ٢١٧ و ٢١٨ دراسة تمهيدية في اللغة الفارسية .
- 221 and 222 Advanced Arabic Grammar.** 3.0; 3 cr; annually. ٢٢١ و ٢٢٢ أصول النحو . يتناول المبادئ الاساسية لقواعد اللغة العربية على مستوى عال .
- 225 and 226 Advanced Reporting and Translation.** 3.0; 3 cr; alternate years. Aims at enabling students to read Arabic sources and documents and to write reports and term papers in Arabic. (Open to non-Arabic-speaking students.) Prerequisites: 215 and 216, or equivalent. ٢٢٥ و ٢٢٦ *Advanced Reporting and Translation.* 3.0; 3 cr; alternate years. Aims at enabling students to read Arabic sources and documents and to write reports and term papers in Arabic. (Open to non-Arabic-speaking students.) Prerequisites: 215 and 216, or equivalent.
- 227 and 228 Arabic Linguistics.** 3.0; 3 cr; alternate years. ٢٢٧ و ٢٢٨ علوم اللغة العربية . يتناول دراسة علم الاصوات واللهجات والدلالة بالقياس الى اللغة العربية وعلم العروض والبلاغة .
- 231 Pre-Islamic Arabic Poetry.** 3.0; 3 cr; alternate years. ٢٣١ الشعر الجاهلي . يشتمل على دراسة لمصادر الشعر الجاهلي ، والمشكلات المتعلقة به ، وقيمة هذا الشعر من الوجهتين التاريخية والفنية . وعلى قراءة نماذج متنوعة من هذا الشعر وتحليلها .
- 232 Umayyad Poetry.** 3.0; 3 cr; alternate years. ٢٣٢ الشعر الاموي . يشتمل على دراسة تمهيدية للنواحي الاجتماعية والسياسية المؤثرة في توجيه الشعر الاموي على اختلاف مذاهبه وتحليل نصوص مختارة .
- 233 and 234 Abbasid Poetry.** 3.0; 3 cr; alternate years. ٢٣٣ و ٢٣٤ الشعر العباسي . يبحث في العوامل التي كونت طبيعة الشعر العباسي بالاستناد الى نتاج الاعلام من شعرائه .
- 235 Andalusian Literature.** 3.0; 3 cr; alternate years. ٢٣٥ الادب الاندلسي . يتناول دراسة الادب العربي في الاندلس ، شعره ونثره ، منذ الفتح حتى نهاية عصر المرابطين مع قراءة عدد من المختارات الادبية .

236 Koranic Studies. 3.0; 3 cr; alternate years.

٢٣٦ دراسات قرآنية. يتناول هذا الدرس تاريخ جمع القرآن: نشأة العلوم القرآنية وما يتعلق بالاسلوب القرآني وفكرة الاعجاز ومذاهب المفسرين، مع قراءة عدد من السور قراءة تطبيقية.

237 and 238 Modern Arabic Poetry. 3.0; 3 cr; alternate years.

٢٣٧ و ٢٣٨ الشعر العربي الحديث. يتناول العوامل الفاعلة في تطور الشعر في القرن العشرين بالاستناد الى مختارات من نتاج اعلامه.

239 Modern Arabic Prose (The Novel). 3.0; 3 cr; alternate years.

٢٣٩ النثر العربي الحديث (القصة). يتناول تاريخ القصة العربية الحديثة منذ نشأتها حتى اليوم، ويركز على اعلام كتابها.

240 Modern Arabic Prose (The Drama). 3.0; 3 cr; alternate years.

٢٤٠ النثر العربي الحديث (المسرحية). يتناول تطور الادب المسرحي في اللغة العربية، مقترنا بالنشاط المسرحي، مركزا على اعلام الكتاب.

241 and 242 Literary Criticism. 3.0; 3 cr; annually.

٢٤١ و ٢٤٢ مناهج النقد الادبي. يتناول تطور نظرية الادب والنقد من ارسطو الى ابن الاثير، وتفاعلها مع النظريات الغربية الحديثة.

243 and 244 Classical Arabic Prose. 3.0; 3 cr; alternate years.

٢٤٣ و ٢٤٤ النثر العربي القديم. يتناول تطور الاساليب النثرية في الادب العربي القديم مع التركيز على مشاهير الاعلام في العصرين الاموي والعباسي.

245 and 246 Background of Modern Arabic Literature. 3.0; 3 cr; annually. (In English and Arabic alternately.)

٢٤٥ و ٢٤٦ مدخل لدراسة الادب العربي الحديث. يتناول الفكر العربي منذ مطلع القرن التاسع عشر حتى نهاية الربع الاول من القرن العشرين.

GRADUATE PROGRAM

301 and 302 Graduate Seminar in Classical Arabic Literature. 3.0; 3 cr; annually.

٣٠١ و ٣٠٢ درس خاص لطلاب الدراسات العليا في الأدب العربي القديم.

303 and 304 Graduate Seminar in Modern Arabic Literature. 3.0; 3 cr; annually.

٣٠٣ و ٣٠٤ درس خاص لطلاب الدراسات العليا في الأدب العربي الحديث.

305 and 306 Graduate Seminar in Arabic Linguistics. 3.0; 3 cr; annually.

٣٠٥ و ٣٠٦ درس خاص لطلاب الدراسات العليا في علوم اللغة العربية.

399 M.A. Thesis.

٣٩٩ أطروحة الماجستير.

401 and 402 Graduate Tutorial in Classical Arabic Literature. 3.0; 3 cr; annually.

٤٠١ و ٤٠٢ درس خاص لطلاب الدراسات العليا في الأدب العربي القديم.

403 and 404 Graduate Tutorial in Modern Arabic Literature. 3.0; 3 cr; annually.

٤٠٣ و ٤٠٤ درس خاص لطلاب الدراسات العليا في الأدب العربي الحديث.

405 and 406 Graduate Tutorial in Arabic Language. 3.0; 3 cr.

٤٠٥ و ٤٠٦ درس خاص لطلاب الدراسات العليا في اللغة العربية.

499 Ph.D. Thesis.

٤٩٩ أطروحة الدكتوراه.

DEPARTMENT OF BIOLOGY

Chairman: Basson, P.W.

Professors: Avolizi, R.; Babikian, L.; Butros, J.; Deeb, S.; Hardy, J.; Hayes, W.; Hulings, N.; Makemson, J.; Pascoe, E.; Spiker, S.

The Department of Biology offers courses in the biological sciences through programs leading to the B.S. and M.S. degrees. Students wishing to major in Biology should first secure the approval of the Department by written application and obtain an average of 70 or better in Biology 201 and 202.

The requirements for the *Biology Major* are as follows: Biology 203, 215, 216, 222, 232, 243, 245, 264 and three elective courses in Biology. The Biology Major is also required to take Chemistry 208 and 209 (Organic Chemistry), one semester of Biochemistry, and Physics 204 and 205. For other students Biology 201 and 202 are prerequisites for all advanced courses.

Interdepartmental Majors are offered in conjunction with the Departments of Chemistry, Geology and Education. For requirements for the *Biology-Chemistry Interdepartmental Major*, see below under Department of Chemistry. Requirements for the *Biology-Geology Interdepartmental Major in Marine Sciences* are listed under Department of Geology.

The requirements for the *Biology Teaching Major* are as follows: Biology 201, 202, 203, 215, 216, 243, 245, 264, plus a minimum of 13 credits in Biology electives. The Biochemistry, Chemistry, Mathematics and Physics requirements are the same as for Biology majors. Education courses leading to the Teaching Diploma are also required.

103 and 104 *General Biology*. 3.3; 4 cr; annually. Basic biological principles emphasizing the human implications. Open to Arts students only.

201 and 202 *General Biology*. 3.3; 4 cr; annually. Basic mechanisms underlying the structure and functioning of living organisms. Open to Science students, and prerequisite for all 200-300 courses.

203 *Cell Biology I*. 2.3; 3 cr; annually. Morphology, physico-chemical organization, and functions of cells and their organelles.

210 *Human Biology*. 3.0; 3 cr; annually. Introduction to Man and his anatomy, physiology and genetics. Evolution of the Hominoids will be discussed. Not open to Biology majors, or Interdepartmental Biology majors.

211 *Comparative Vertebrate Anatomy*. 2.4; 4 cr; annually.

215 *Plant Physiology*. 2.4; 4 cr; annually.

216 *Animal Physiology*. 3.3; 4 cr; annually.

222 *Cell Biology II*. 3.3; 4 cr; annually. Continuation of 203 with emphasis on the molecular composition and metabolic activities of cell components, cellular composition, cellular energetics, flow of information in the cell, cellular control mechanisms, and aspects of muscle and nerve physiology. Prerequisites: Agriculture FTN 261 and 263, or consent of instructor.

232 *Development*. 3.3; 4 cr; annually. The development of the vertebrates, including the frog, chick, pig and human.

243 *Genetics*. 3.0; 3 cr; annually.

245 *Genetics Laboratory*. 0.4; 2 cr; annually. May be taken concurrently with 243 or after 243.

254 *Evolution*. 3.0; 3 cr; annually. Principles of evolution in plants and animals, including origin of life, natural selection, and population genetics. Prerequisite: 243.

256 *Systematic Botany*. 2.4; 4 cr; annually. Classification of flowering plants with emphasis on phylogeny of local flora and economic importance.

264 *Ecology*. 2.4; 4 cr; annually. Prerequisites: 201 and 202, or consent of instructor.

266 *Biological Oceanography*. 2.4; 4 cr; annually. Prerequisite: consent of instructor.

271 *Invertebrate Zoology*. 2.4; cr; annually. Introduction to the invertebrate phyla, exclusive of insects. Prerequisite: 202, or consent of instructor.

274 *Microbiology*. 2.6; 4 cr; annually. Prerequisites: Chemistry 208 and consent of instructor.

284 *Microtechnique*. 1.6; 4 cr; alternate years. Principles and techniques for the preparation of microscopic slides of animal and plant material.

290 *Special Topics in Biology*. 3.0; 3 cr; annually. Designed to explore, through lectures, seminars, and experimentation, recent advances in the major fields of plant and animal biology. Topics will be selected each year according to major trends and the needs of students. Prerequisite: consent of instructor.

291 and **292** *Undergraduate Tutorial*. 3 cr; annually. Limited to undergraduate students. Designed for directed study students and open to other undergraduate students with permission of Biology Faculty.

M.S. PROGRAM

The Department of Biology offers, in addition to the Master's degree in Biology, a Master's degree in Marine Sciences in collaboration with the Department of Geology. Candidates pursuing the Master's degree in Marine Sciences are required to take Biology 266, 364, 365 and Geology 223, in addition to other biology courses, with the consent of the Advisor, which fulfill the University requirements for a Master's degree.

326 *Endocrinology*. 2.4; 4 cr; alternate years. Morphology and physiology of endocrine glands, with emphasis on vertebrates. Open also to senior students. Prerequisites: 211 or 232 and consent of instructor.

341 *Molecular Biology of Development*. 2.3; 3 cr; annually. Mechanisms underlying development such as fertilization, morphogenetic movements, induction and differentiation, emphasizing molecular interpretations.

342 *Cell and Molecular Biology*. 3.3; 4 cr; annually. Recent developments in structure-function relationships in various cellular components at the molecular level.

344 *Advanced Genetics*. 2.3; 3 cr; annually. Selected topics in microbial and human genetics, cytogenetics and immunogenetics. Prerequisites: 243, 245 and consent of instructor.

361 *Concepts of Modern Ecology*. 3.0; 3 cr; annually. Recent theories in ecology which examine ecosystems as evolving systems. Emphasis on the use of recent publications in the field. Prerequisite: 264.

364 *Chemical Oceanography*. 2.3; 3 cr; annually.

365 *Physical Oceanography*. 2.3; 3 cr; annually.

374 Mycology. 2.4; cr; annually. Survey and study of fungi with practical isolation and determination of genera and species of fungi in soils. Prerequisite: consent of instructor.

390 Special Topics. 3.0; 3 cr; Topics will be selected each year from among the various biological disciplines which might be the specialty of Faculty present, or requested by the students. Prerequisite: consent of instructor.

391 and 392 Tutorial. 3.0 or 0.6; 3 cr; annually. Individual investigation by graduates and qualified seniors. Fields of research in which problems can be selected are: embryology; endocrinology; genetics; invertebrate zoology; marine biology and oceanography; microbiology; mycology; phycology; plant morphology; vertebrate morphology and metabolism. Prerequisites: consent of instructor and average of 80 in Biology.

393 and 394 Seminar. 1.0; cr; annually. For graduate and qualified seniors. Reports on current topics and literature. Prerequisite: consent of Instructor.

395 Advanced Marine Science. 3.0; 3 cr; annually. For graduates and qualified seniors. Selected topics in the marine sciences. Prerequisite: consent of Instructor.

399 M.S. Thesis. Investigation of a problem employing current experimental procedures, culminating in research report. For fields of selection see 391 and 392.

The following courses in other Schools may be applied toward a concentration in biology. For descriptions see the listings of the School concerned.

School of Medicine

Human Morphology 209 Basic Histology (Medicine I).

Bacteriology 227 Bacteriology and Virology (Medicine II).

Biochemistry 221 Basic Biochemistry (Medicine I).

School of Public Health

Public Health TH 225 Medical Parasitology and Mycology (Medicine II).

DEPARTMENT OF BUSINESS ADMINISTRATION

Chairman: Eid, N.

Professors: Aly, H.; Ashour, I.; Ghattas, E.; Hayden, J. (Visiting); Midani, A.; Mikdashi, Z.; Parsons, B.; Richard, S.; Shaath, N.; Shibl, Y.

Lecturers: Chamieh, S.; Dajani, B.; Marmura, A.

Instructor: Siniora, F.

The Department of Business Administration offers two programs: one leading to a Bachelor's degree in Business Administration and the other to a Master's degree in Business Administration. The aim of the Department is to provide a well rounded professional education in business. In a more detailed sense, its purpose is to achieve the following objectives:

- (1) A broad and cultural education through courses in the liberal arts, plus an ability to express oneself clearly and effectively;
- (2) A good business background by way of exposure to various aspects of business;

(3) A technical background by allowing the student to choose a specialized area of business in which to concentrate;

(4) An ability to work with people, to accept responsibility, and to identify business problems and tackle them scientifically.

Students desiring to *major in Business Administration* must first secure the approval of the Department. Beginning with the Sophomore year, a minimum of 47 credits in Business Administration, 18 credits in Economics, 12 credits in Cultural Studies, 6 credits in Arabic and English, 4 credits in Mathematics, and 3 credits in elective courses are required for the degree of B.B.A. No student is allowed to register in Business courses numbered 212 and above unless he has completed the following courses and attained an average of 70: Business Administration 201 and 210; Economics 211; Mathematics 203; and English 201.

The requirements for the B.B.A. degree are as follows: Business Administration 201, 210, 211, 212, 220, 223, 224, 231, 241, 251, 254, 255; and three courses from among 213, 215, 227, 228, 236, 238, 239, 245, 246, 257, 261, 263.

The Departments of Business Administration and Economics offer an *Interdepartmental Major* leading to a degree of *Bachelor of Arts in Business and Economics*. To be admitted into this Major a student must secure the consent of both Departments. For requirements for the Joint degree, see under Department of Economics.

201 *Introduction to Business Administration.* 3.0; 3 cr; annually.

210 *Fundamentals of Accounting I.* 4.0; 4 cr; annually. Prerequisite: 70 in 201, or consent of instructor.

211 *Fundamentals of Accounting II.* 4.0; 4 cr; annually. Prerequisite: 70 in 210.

212 *Cost Accounting and Control.* 3.0; 3 cr; annually. Prerequisite: 211.

213 *Auditing.* 3.0; 3 cr; annually. Prerequisite: 70 in 211.

215 *Advanced Accounting.* 3.0; 3 cr; annually. Prerequisite: 70 in 211.

220 *Business Law.* 3.0; 3 cr; annually. Prerequisite: Junior standing.

223 *Money and Capital Markets.* 3.0; 3 cr; annually. Prerequisites : 211 and Economics 212.

224 *Financial Management.* 3.0; 3 cr; annually. Prerequisite: 223.

227 *Commercial Banking.* 3.0; 3 cr; annually. Prerequisite: 223.

228 *Insurance.* 3.0; 3 cr; annually. Prerequisite: Junior standing.

231 *Business Administration.* 3.0; 3 cr; annually. Prerequisite: Junior standing.

236 *Production Management.* 3.0; 3 cr; annually. Prerequisite: 231.

238 *Human Relations.* 3.0; 3 cr; annually. Prerequisite: 231.

239 *Personnel Administration.* 3.0; 3 cr; annually. Prerequisite: 231.

241 *Marketing Management.* 3.0; 3 cr; annually. Prerequisite: Economics 212.

245 *International Marketing.* 3.0; 3 cr; annually. Prerequisite: 241.

246 *Marketing Research.* 3.0; 3 cr; annually. Prerequisites: 241 and Economics 213.

251 *Managerial Economics.* 3.0; 3 cr; annually. Prerequisites: Economics 212 and 213.

254 *Quantitative Methods I.* 3.0; 3 cr; annually. Prerequisites: Mathematics 203 and Economics 213.

255 *Quantitative Methods II.* 3.0; 3 cr; annually. Prerequisite: 254.

257 *Computers in Management Systems.* 3.0; 3 cr; annually. Prerequisite: Senior standing.

261 *Seminar in Industrial Development.* 3.0; 3 cr; annually. Prerequisite: Senior standing.

263 *Senior Tutorial Course.* 3.0; 3 cr; annually.

M.B.A. PROGRAM

This program is designed for students who are preparing for careers as professional managers and who desire a highly integrated program of studies wherein the primary perspective is that of general management.

Courses included within the M.B.A. program are designed to provide an understanding of a broad array of concepts and theories fundamental to business administration and to demonstrate the relevancy and application of these concepts and theories to business practice. Major elements of the program include an analysis of business functions, the management process, and the socio-political-legal-economic environment within which the business firm operates and business decisions are made. Special attention is also given to problem identification, policy formulation, the process of decision making, economic analysis, and the behavioral and quantitative aspects of business.

301 and **302** *Graduate Tutorial Course.* 3-6 cr.

303 *Business Economics.* 3.0; 3 cr.

304 *Business Research.* 3.0; 3 cr.

305 *Business Management.* 3.0; 3 cr.

306 *Organization Theory.* 3.0; 3 cr.

307 *Accounting Theory.* 3.0; 3 cr.

308 *Controllership.* 3.0; 3 cr.

309 *Marketing Seminar.* 3.0; 3 cr.

314 *Marketing Management.* 3.0; 3 cr.

315 *Production Planning and Control.* 3.0; 3 cr.

316 *Production and Inventory Management.* 3.0; 3 cr.

317 *Financial Policy.* 3.0; 3 cr.

318 *Graduate Seminar in Business Administration.* 3.0; 3 cr.

320 *Investment Analysis.* 3.0; 3 cr.

321 *International Business Finance.* 3.0; 3 cr.

322 *Central Banking and Monetary Policy.* 3.0; 3 cr.

325 *Business Policy.* 3.0; 3 cr.

399 *M.B.A. Thesis.*

DEPARTMENT OF CHEMISTRY

Chairman: Slade, L.T.

Professors: Abdul-Karim, A.; Awad, E.; Cook, R.; DeKock, R.; Edwards, L.; Haddadin, M.; Hanania, G.; Issidorides, C.; Kaloustian, M.; Olmsted, J.; Sarkis, A.; Tayim, H.; Thabet, S.

Instructor: Vassilian, A.

Students who wish to major in Chemistry must secure the approval of the Department. To be accepted as a Chemistry major a student must secure a grade average of 75 or better in Chemistry courses numbered between 200 and 210. For graduation, a student must maintain an average of 70 or better in his major courses and must complete the following minimum requirements: Chemistry 211, 212, 213, 217, 218, 219, 220, 225, 228 and 229; Mathematics 201 and 202; Physics 211 and 213; two advanced Chemistry electives.

Interdepartmental Majors including Chemistry as one subject in the major are as follows:

Biology-Chemistry Interdepartmental Major. The following courses are required of a student who desires to take a Biology-Chemistry Interdepartmental Major: Biology 201, 202, 232 and 243, plus nine additional credits in Biology; Chemistry 201, 202, 203, 204, 209, 211, 212 and 219, plus three additional credits in Chemistry; Mathematics 201; Physics 204 and 205.

Chemistry-Physics Interdepartmental Major. See under Department of Physics.

Chemistry Teaching Major. The following courses are required of a student who desires to take a Chemistry Teaching Major: Chemistry 201, 203, 206, 211, 212, 213, 217, 219, 220, 228 and 229, plus five additional credits of advanced Chemistry (thirty credits total, beyond 210 level); Education 211 or 216, 215, 255 and 256; and a minimum of five credits from the following: 211 or 216, 212, 217, 220, or 290; Mathematics 201 and 202; Physics 211 and 213.

101 *General Chemistry.* 3.3; 4 cr; each semester.

102 *General Chemistry.* 3.3; 4 cr; annually. Prerequisite: 101.

201 *Chemical Principles I.* 3.0; 3 cr; each semester.

202 *Chemical Principles II.* 3.0; 3 cr; each semester. Prerequisite: 201.

203 *Introductory Experimental Chemistry.* 0.5; 2 cr; each semester.

204 *Introductory Physical Chemistry Laboratory.* 0.5; 2 cr; each semester.

206 *Quantitative Analysis.* 2.5; 4 cr; each semester.

208 *Brief Survey of Organic Chemistry.* 3.0; 3 cr; each semester. Prerequisite: 101 or equivalent. Chemistry 209 should be taken concurrently. Credit is not given for both 208 and 211.

209 *Organic Chemistry Laboratory for Non-Majors.* 1.4; 2 cr; each semester. Corequisite: 208 or 212, which should be taken concurrently.

211 *Organic Chemistry I.* 3.0; 3 cr; each semester. Pre or corequisite: 201. Credit is not given for both 208 and 211.

212 *Organic Chemistry II.* 3.0; 3 cr; each semester. Continuation of 211, which is prerequisite. Students should take 209 or 213 concurrently.

- 213** *Organic Chemistry Laboratory*. 1.8; 4 cr; each semester. Corequisite: 212, which should be taken concurrently.
- 217** *Chemical Dynamics*. 3.0; 3 cr; each semester. Prerequisites: 201, and Mathematics 202 or consent of instructor.
- 218** *Molecular Structure*. 3.0; 3 cr; annually. Prerequisites: 201, and Mathematics 202 or consent of instructor.
- 219** *Chemical Thermodynamics*. 3.0; 3 cr; each semester. Prerequisite: 201. Corequisite: Mathematics 202 or consent of instructor.
- 220** *Physical Chemistry Laboratory*. 0.6; 3 cr; each semester. Prerequisites: 217 and 219, or consent of instructor.
- 221** *Chemical Instrumentation*. 2.3; 3 cr; Prerequisite: 220.
- 223** *Inorganic Industrial Chemistry*, 3.0; 3 cr; annually. Corequisite: 219, or consent of instructor.
- 224** *Organic Industrial Chemistry*. 3.0; 3 cr; annually. Prerequisites: 212, and 219 or consent of instructor.
- 225** *Organic Structure Determination*. 1.6; 4 cr; each semester. Prerequisite: 213.
- 227** *Technical Analysis*. 0.8; 3 cr; each semester. Prerequisite: 209 or 213.
- 228** *Inorganic Chemistry*. 3.0; 3 cr; annually. Prerequisite: 202.
- 229** *Coordination Compounds*. 3.0; 3 cr; annually. Prerequisite: 228.
- 243** *Organic Syntheses*. 0.8; 3 cr; Prerequisite: 213.
- 244** *Inorganic Preparations*. 0.8; 3 cr; Prerequisite: 228.
- 293** *Use of the Chemical Literature*. 1.0; 1 cr; annually. Prerequisite: Senior standing.
- 299** *Independent Study*. 3-6 cr. Prerequisite: Senior standing, minimum average of 80 in major.

M.S. AND PH.D. PROGRAMS

The department offers both M.S. and Ph.D. degrees in Chemistry. Graduate students may specialize in inorganic, organic or physical chemistry. Of the minimum of 24 course credits required for the M.S. degree, a minimum of 6 credits must be graduate courses in the special field of chemistry which the student intends to choose. At least 6 additional credits must be graduate courses in Chemistry outside the student's field of specialization. Course work for a Ph.D. candidate is planned by his research advisor according to the student's interest and the recommendation of his supervisory committee.

The Department is conducting research in the following areas: physical chemistry of proteins; ultracentrifugation; reaction mechanisms in organophosphorus chemistry; model biochemical systems; vapor phase optical and physical properties of porphyrins; thermal and photochemical reactions of aromatic N-oxides; synthetic heterocyclic organic chemistry; solution photochemistry and luminescence spectroscopy.

- 301** *Structure of Inorganic Compounds*. 3.0; 3 cr; annually.
- 302** *Chemistry of the Less Common Elements*. 3.0; 3 cr; alternate years.
- 303** *Chemistry of the Coordination Compounds*. 3.0; 3 cr; annually.

- 304** *Mechanisms of Inorganic Reactions*. 3.0; 3 cr; alternate years.
- 311** *Advanced Organic Chemistry*. 3.0; 3 cr; annually.
- 312** *Organic Stereochemistry*. 3.0; 3 cr; alternate years.
- 313** *Physical Organic Chemistry*. 3.0; 3 cr; alternate years.
- 314** *Heterocyclic Chemistry*. 3.0; 3 cr; alternate years.
- 315** *Chemistry and Technology of High Polymers*. 3.0; 3 cr; alternate years.
- 321** *Quantum Chemistry*. 3.0; 3 cr; annually.
- 322** *Statistical Thermodynamics*. 3.0; 3 cr; alternate years.
- 323** *Chemical Kinetics*. 3.0; 3 cr; annually.
- 324** *Electrolytes*. 3.0; 3 cr; alternate years.
- 351** and **352** *Special Topics*. 3 cr. May be repeated for credit with consent of Department.
- 399** *M.S. Thesis*.
- 499** *Ph.D. Thesis*.

CULTURAL STUDIES PROGRAM

Chairman: Harcourt, H.R.

Professors: Dodd, E.; Ibrahim, S.; Livingston, J.; Murphy, M.; Ryffel, H.; Seeden, H.; Seikaly, S.

Lecturers: Buheiry, M.; Cook, J.-M.; Oshagan, V.; Shebaya, P.; Walker, R.

Instructors: Gammon, A.; Khouri, S.; al-Radi, S.

The Cultural Studies Program is a sequence of four one-semester courses (201, 202, 203 and 204) which all Arts and Sciences students are required to take during their Sophomore and Junior years.

The Cultural Studies Program provides students with the opportunity to understand the most fundamental elements in the cultural heritages of the Middle East and the West, especially those elements which have survived to influence the forms and dynamics of contemporary culture. The courses focus mainly on primary source texts which present cultural motifs in their clearest and most meaningful symbolic form. By focusing on primary texts rather than approaching cultural phenomena within the narrower limits of one or more departmental disciplines, the Program seeks to provide a common academic "core" for students alongside their specialized study in their field of major concentration.

In each of the courses, students attend a general lecture and two discussion groups each week. The discussion groups utilize various seminar methods to help students grasp the meaning of the assigned texts and to develop a critical facility for independent judgment.

201 and **202** *Ancient, Medieval and Renaissance Culture*. 3.0; 3 cr; annually. 201 is a prerequisite for 202.

203 and **204** *Modern and Contemporary Culture*. 3.0; 3 cr; annually. 201 and 202 are prerequisites for 203, 201; 202 and 203 are prerequisites for 204.

202, 203 and **204** *Honors*. 3.0; 3 cr; annually. Occasional special sections of the

basic courses for students of exceptional ability. The prerequisites for each Honors course are the same as for the corresponding regular course.

295 Senior Seminar. 3.0; 3 cr; annually. An advanced course for students who have demonstrated superior academic ability. The seminar will deal with special topics selected by the instructor and students. Prerequisites: 201, 202, 203 and 204, and consent of instructor.

GRADUATE PROGRAM IN DEVELOPMENT ADMINISTRATION*

Chairman: Roy, D. (Visiting Professor)

Professors: Aly, H.; Sha'ath, N.

The Graduate Program in Development Administration is designed for present and prospective officials in government or private institutions, to provide them with the education and training enabling them to understand the process of development and equipping them with the administrative skills to properly formulate and implement development plans and programs.

The Program offers a Masters of Arts degree in Development Administration. It is open to holders of a university degree who qualify for graduate status. The participants, however, are mostly graduates with some years of experience in government service.

Graduate requirements include 33 credit hours of course work taken over a period of eleven months plus 6 credit hours for a research project or a thesis taken over a period of four months.

310 Tutorial in Development Administration. 3 cr.

311 Introduction to Development Administration. 3 cr.

312 Nature, Concepts and Aspects of Development in the Middle East. 3 cr.

313 Economics for Development Policy. 3 cr.

314 Quantitative Techniques for Planning and Decision-Making. 3 cr.

315 Development Planning. 3 cr.

316 Implementation of National Plans. 3 cr.

317 Administration of Public Enterprises. 3 cr.

318 Seminar in Development Studies. 3 cr.

319 Workshop on Problems in Development Administration I. 3 cr.

320 Workshop on Problems in Development Administration II. 3 cr.

399 M.A. Research Project or Thesis. 6 cr.

Interested applicants are asked to contact the Graduate Program in Development Administration for detailed description of courses.

DEPARTMENT OF ECONOMICS

Chairman: Karaoglan, R.

Professors: Diab, M.; Fuleihan, J.; Ghandour, M.; Hassanein, M.; Kanaan, A.; Khalaf, N.; Makdisi, S. (Visiting); Sayegh, Y.; Sirhan, G.

Lecturer: Hajjar, N.

* This program is currently under revision and may not be offered next year.

The Department of Economics offers programs leading to the B.A. in Economics, the B.A. in Business and Economics, the B.A. in Economics and Statistics, and the M.A. in Economics.

Students desiring to *major in the Department of Economics* must obtain the approval of the Department and must have completed Economics 211 and 212 with a grade of 70 or more in both. They must have also completed Mathematics 101 and 102 (or equivalent) or Mathematics 203. The program, which consists of a minimum of 30 credits of courses numbered 210 or above, includes Economics 211, 212, 213, 214, 217 and 227.

Students desiring to take a *Business-Economics Interdepartmental Major* must secure the consent of the Departments of Business Administration and Economics. To qualify for this Joint degree a student must complete satisfactorily the following courses: Mathematics 101 and 102 (or equivalent) or Mathematics 203; Business Administration 210, 211, 224, 231, 241 and 7 additional credits in Business to be selected by the student; Economics 211, 212, 213, 214, 217, 227 and 6 additional credits in Economics to be selected by the student.

Students desiring to take an *Economics-Statistics Interdepartmental Major* must secure the consent of the Departments of Economics and Mathematics. To qualify for this Joint degree a student must complete satisfactorily the following courses: Economics 211, 212, 217, 227 and a minimum of 4 other courses, to be chosen on the advice of the Department; Mathematics 201, 202, 205, 209, 220, 233, 234, 235, and 236 or 237.

203 *Survey of Economics*. 3.0; 3 cr; annually. No credit is given for students majoring in Economics. Credit is not given for both 203 and 211-212.

211 and **212** *Elementary Economic Theory*. 3.0; 3 cr; annually. Credit is not given for both 203 and 211-212.

213 *Economic Statistics I*. 3.0; 3 cr; annually. Prerequisite: Mathematics 203. Not open to students who have completed Mathematics 233. Credit is not given for more than one of Economics 213, Education 227, or Mathematics 207.

214 *Economic Statistics II*. 3.0; 3 cr; annually. Prerequisite: 213 or its equivalent.

217 *Intermediate Price Theory I*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212.

218 *Intermediate Price Theory II*. 3.0; 3 cr; annually. Prerequisite: 70 or more in 217.

221 *History of Economic Doctrines*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212.

222 *Twentieth Century Economic Thought*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212.

223 and **224** *Economic Organization of the Arab Middle East*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212, or consent of instructor.

226 *Public Finance*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212 for Economics majors, or 70 or more in 203 for non-Economics majors.

227 *Intermediate Macroeconomics I*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212.

228 *Intermediate Macroeconomics II*. 3.0; 3 cr; annually. Prerequisite: 227, or consent of instructor.

229 *Income Analysis and Economic Policy*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212, or consent of instructor.

230 *Economic History*. 3.0; 3 cr; annually.

232 *Contemporary Economic Systems*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212, or consent of instructor.

235 *International Trade Theory*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212.

236 *International Economic Policy*. 3.0; 3 cr; annually. Prerequisite: 70 or more in 235, or consent of instructor.

237 *Theory of Economic Development*. 3.0; 3 cr; annually. Prerequisites: 70 or more in 211 and 212, or consent of instructor.

239 *Introduction to Mathematical Economics*. 3.0; 3 cr; annually. Prerequisites: 217, 227 and Mathematics 203 or equivalent.

295 *Senior Seminar in Economics*. 3.0; 3 cr.

M.A. PROGRAM

Students desiring to obtain an M.A. in Economics are required to complete at least 24 credits of courses, of which at least 18 credits should be graduate level courses, plus 6 credits for a thesis. In case of deficiencies in the student's undergraduate record, the Department may require additional credits.

301 and **302** *Graduate Tutorial*. 3.0; 3 cr.

303 and **304** *Graduate Seminar*. 3.0; 3 cr.

305 *Statistics for Economists*. 3.0; 3 cr; annually. Prerequisites: 213 and 214, or consent of instructor.

306 *Econometrics*. 3.0; 3 cr; annually. Prerequisite: 305, or consent of instructor.

308 *Urban Economics*. 3.0; 3 cr; annually.

317 *Economics of the Firm*. 3 cr; annually.

318 *Economics of Distribution*. 3 cr; annually.

320 *Agricultural Economics*. 3 cr; annually.

328 *Theory of Employment and Economic Policy*. 3 cr; annually.

329 *National Income Analysis*. 3 cr; annually.

330 *Business Cycles*. 3 cr; annually.

335 *International Trade Theory*. 3 cr; annually.

336 *International Economic Policy*. 3 cr; annually.

337 *Framework of Economic Development*. 3 cr; annually.

338 *Framework of Economic Development — Case Study*. 3 cr; annually.

339 *Topics in Mathematical Economics*. 3 cr; annually.

399 *M.A. Thesis*.

DEPARTMENT OF EDUCATION

Chairman: Bashshur, M.

Professors: Abu-Absi, S.; Billeh, V.; Brown, R.; Cajoleas, L.; Haddad, F.; Haddad, W.; Moracco, J.; Namek, Y.; Nelson, L.W.; Sara, N.; Zarour, G.

Lecturers: Antippa, F.; Saliba, W.

Instructors: Ghusayni, R.; Haddad, M.; Jurdak, M.; Kadi, Z.

The Department of Education offers programs at both the undergraduate and graduate levels. At the *undergraduate* level its programs lead to the Bachelor of Arts degree and/or the Teaching Diploma. At the *graduate* level its programs lead to the Master of Arts degree.

The Science and Mathematics Education Center (SMEC) is a part of the Department of Education; see below under Institutes, Centers and Special Programs, page 115.

UNDERGRADUATE PROGRAM

The basic purpose of the undergraduate program is to prepare elementary and secondary school teachers. This is provided for mainly in the form of a Teaching Diploma which a student works for along with or after he completes a major in a subject matter Department.

In addition the Department of Education gives preparation in elementary education, in the form of a B.A. The purpose of a B.A. in Education is to prepare elementary school supervisors, administrators and curriculum designers. A B.A. in Education automatically includes the Teaching Diploma and thus it qualifies its holder to teach as well. However, a Teaching Diploma can be taken apart from a major in Education and in conjunction with or following a major in a subject matter Department.

I. Teaching Diploma

1. Requirements for the Teaching Diploma include the following credit hours:
 - (a) Education 211 or Education 216 (3);
 - (b) Education 215 (4);
 - (c) two Methods courses of the sequence 230-256 (6)¹;
 - (d) a minimum of 5 credits of the following: 211 or 216 (3), 212 (2), 217 (3), 220 (3), and 290 (1-3).
2. A student may work for the Teaching Diploma under any one of the following conditions:
 - (a) if he is working for a departmental major related to one of the Methods courses in Education;
 - (b) if he is working for an Interdepartmental Major² in two subject matter fields with 24 credits in each, provided one of these fields is related to one of the Methods courses in Education;

1. A student intending to receive his Diploma in elementary school teaching must take Education 232 and one of the following: Education 230, 234 or 236.

2. At present the following Interdepartmental Majors are approved: Geology-Biology, Physics-Mathematics, Biology-Chemistry and Physics-Chemistry.

- (c) if he is working for a Teaching Major¹;
- (d) if he is working for a B.A. in Education.

3. A student may work for the Teaching Diploma *after* he receives his B.A. provided his undergraduate major conforms to one of the conditions listed under 2 above. Holders of Bachelor's degrees from this University may qualify for the Diploma upon completion of the Diploma program. Holders of Bachelor's degrees from other universities may qualify for the Diploma upon completion of 30 credit hours at this University comprising the Teaching Diploma program plus 12 credits in a subject matter area which is related to one of the Methods courses in Education. The 12 credits in such subject matter should be in courses numbered 210 and above.

4. Admission to the Teaching Diploma program must go through the following procedure:

(a) upon completion of a minimum of 5 credit hours and before admission into the Methods courses a student must submit an application to the Department to enrol in the Teaching Diploma program. To be accepted, a student must attain an average of 70 in Education courses taken before applying and secure the approval of the Department. If accepted, the student becomes a *candidate* for the Diploma and the Registrar is informed accordingly;

(b) in the case of students who intend to work for the Diploma at the post-B.A. level, they must fill the same application form as is used for graduate study. Their acceptance as candidates for the Diploma will be based on their averages at the undergraduate level and other pertinent information required in the application form.

5. To qualify for the Teaching Diploma a student must attain a cumulative average of 70 in the Education courses of the Diploma and a cumulative average of 70 in the subject matter courses taken as part of the requirements for the major, or, at the post-B.A. level, as part of the requirements for the Diploma. A student who has had courses equivalent to any of the 13 credits required for the Diploma (listed above under 1 (a) - (c)) may, with the approval of his advisor and the Department, substitute other courses in Education. Not more than 6 credits of the required 13 may be substituted. Upon completion of the requirements, the Registrar will be informed in writing.

II. B.A. in Education

To qualify for a B.A. in Education a student must complete, in addition to the Teaching Diploma, the following:

- (a) Education 218, 223, and 12 credits of the following: 211, 212, 213, 216, 217, 219, 220 and 290;
- (b) 6 credits of the following Methods courses not taken as part of the Teaching Diploma: 230, 234 and 236;
- (c) 3 credits in Psychology courses of the following: 212, 217 and 220;
- (d) 24 credits at 200 level and above in subject matter Departments, with a concentration of at least 9 credits in each of two of the following Departments:

1. At present the following Teaching Majors are approved: Chemistry Teaching Major, Mathematics Teaching Major and Arabic Teaching Major.

Arabic and Near Eastern Languages, Biology, Chemistry, English, Fine and Performing Arts, Geology, History and Archaeology, Mathematics, Physics.

A cumulative average of 70 in areas (a), (b), (c) and 70 in area (d) is required.

Since the B.A. in Education automatically includes the Teaching Diploma, a student intending to major in Education must indicate, when applying for the Teaching Diploma, that he is applying for the B.A. as well. The procedure followed in evaluating his application is the same as outlined for the Teaching Diploma (see 4 above).

GRADUATE PROGRAM

The graduate program may be completed in one year by a full-time student whose undergraduate preparation includes the Teaching Diploma requirements. Other students are likely to require approximately two years to complete the requirements. It is also possible for a student to complete this program in four or five consecutive summers.

This program comprises six areas of study: educational administration; educational psychology (including school guidance, educational measurement, and psychology of learning); elementary education; social and philosophical foundations of education; teaching of English as a foreign language; teaching of science or mathematics. A student may pursue his work towards an M.A. in Education in any one of the six areas of concentration provided he meets the university requirements for admission to graduate work.

The program includes a minimum of 21 credits and a thesis. Depending on any deficiencies in his undergraduate work, a student may be required to complete a number of prerequisites as part of his graduate program. In certain cases a student may be allowed to substitute a project for a thesis, and he will then be required to take an additional 9 credits of graduate level courses.

The Department of Education, in conjunction with the Center for English Language Research and Teaching, offers a program leading to a Master's degree in the *Teaching of English as a Foreign Language*. In addition to general University requirements, admission requirements for this program are: (a) a minimum of one year's experience in teaching English; (b) a score of 600 or above on the English entrance examination. Graduates of this University are not required to take the English entrance examination. If they hold a B.A. in English plus the Teaching Diploma, requirements for this program include 21 credit hours plus a thesis or 30 credit hours plus a project. Students whose B.A. is in a field other than English and who do not hold the Teaching Diploma are required to complete a number of prerequisites, depending on their background.

Similarly a Master's degree in the *Teaching of Science or Mathematics* is offered by the Department through the Science and Mathematics Education Center in conjunction with the respective Sciences and Mathematics Departments. For students who hold a Bachelor's degree in science or mathematics and the Teaching Diploma from this University, the requirement is 21 credit hours plus a thesis or 30 credit hours plus a project. In other cases additional courses may be required depending on the student's undergraduate preparation.

Undergraduate Courses

211 *The School and the Social Order.* 3.0; 3 cr; annually.

- 212** *Dynamics of Classroom Communication.* 1.2; 2 cr; annually.
- 213** *Introduction to Educational Administration.* 3.0; 3 cr; annually.
- 215** *Learning and Human Development.* 4.0; 4 cr; annually.
- 216** *The Philosophical Foundations of Education.* 3.0; 3 cr; annually.
- 217** *Measurement and Evaluation for Classroom Teachers.* 3.0; 3 cr; annually.
- 218** *Early Childhood Education.* 3.0; 3 cr; annually. Prerequisite: 215.
- 219** *Education of Exceptional Children.* 2.2; 3 cr; alternate years.
- 220** *Instructional Media and Techniques.* 2.2; 3 cr; annually.
- 223** *Guidance and Counseling in the Schools.* 3.0; 3 cr; annually. Prerequisite: 214 or 215.
- 227** *Statistics in Education.* 3.3 cr; annually. Credit is not given for this course and any other introductory statistics course, such as Mathematics 207 or 233, Economics 213, or Psychology 210.

Methods Courses (Elementary)

- 230** *Teaching of Art and Music in Elementary School.* 2.2; 3 cr; alternate years.
- 232** *Teaching of Language Arts and Social Studies in Elementary School.* 2.2; 3 cr; alternate years.
- 234** *Teaching of New Math. in Elementary School.* 2.2; 3 cr; alternate years.
- 236** *Teaching of Science in Elementary School.* 2.2; 3 cr; alternate years.

Methods Courses (Secondary)

- 241** and **242** *Teaching of Arabic.* 2.2; 3 cr; alternate years. Prerequisites: Arabic 221, 222; and any one of the following: Arabic 203, 204, 211, 212, 215, 216, 233, 234, 235, 236, 243 and 244.
- 243** and **244** *Teaching of English as a Foreign Language.* 2.2; 3 cr; annually. Prerequisites: English 228, 231 and consent of instructor.
- 247** and **248** *Teaching of Fine and Performing Arts.* 2.2; 3 cr; alternate years. Prerequisite: consent of instructor.
- 249** and **250** *Teaching of Social Studies.* 2.2; 3 cr; annually. Prerequisite: a minimum of 12 credits in History or in one Social Sciences Department course numbered 200 or above.
- 253** and **254** *Teaching of Mathematics.* 2.2; 3 cr; annually. Prerequisite: a minimum of 12 credits in Mathematics courses numbered 200 or above.
- 255** and **256** *Teaching of Science.* 2.2; 3 cr; annually. Prerequisite: a minimum of 12 credits in relevant science courses numbered 200 or above.
- 290** *Senior Tutorial.* 1-3 cr; annually.

Graduate Courses

- 301** *Seminar in the History and Philosophy of Education.* 3.3 cr; annually.

- 302** *Seminar in the History and Philosophy of Arab Education.* 3.0; 3 cr; annually.
- 305** *Foundations of Science Education.* 3.3 cr; alternate years.
- 306** *Recent Developments in Science Education.* 3.3 cr; alternate years.
- 308** *Seminar in Foundations of Elementary Education.* 3.3 cr; annually.
- 309** *Foundations of Mathematics Education.* 3.3 cr; alternate years.
- 310** *Recent Developments in Mathematics Education.* 3.3 cr; alternate years.
- 311** *Seminar in Supervision of Instruction.* 3.3 cr; annually. Prerequisite: 213, or consent of instructor.
- 312** *Seminar in Economics of Education and School Finance.* 3.3 cr; alternate years. Prerequisite: 213, or consent of instructor.
- 313** *Seminar in Educational Administration.* 3.0; 3 cr; annually. Prerequisite: 213, or consent of instructor.
- 314** *Comparative Education.* 3.0; 3 cr; alternate years.
- 315** *Psychology of Education (Advanced).* 3.0; 3 cr; annually.
- 316** *Comparative Study of Middle Eastern Education.* 3.0; 3 cr; alternate years.
- 317** *Theory and Methods of Testing.* 3; 3 cr; alternate years. Prerequisite: 217, or consent of instructor.
- 318** *Test Construction in Education.* 3; 3 cr; alternate years. Prerequisite: 317.
- 320** *Seminar in Human Development.* 3.0; 3 cr; annually.
- 321** *General Research Methodology in Education.* 3.0; 3 cr; annually.
- 323** *Experimental Research in Education.* 3.0; 3 cr; alternate years. Prerequisite: a minimum grade of 70 in Education 227, or consent of instructor. Credit is not given for both 321 and 323.
- 324** *Problems of Teaching Reading and Literature.* 3; 3 cr; annually.
- 325** *Problems of Teaching Writing and Composition.* 3; 3 cr; annually.
- 326** *Theory and Design of Curriculum.* 3; 3 cr; annually.
- 327** *Seminar in Rural Education.* 3; 3 cr; alternate years.
- 328** *Seminar in TEFL.* 2.2; 3 cr; annually.
- 329** *Seminar in Education and Social Change.* 3.0; 3 cr; annually.
- 330** *Practicum in Guidance and Counseling.* 2.4; 4 cr; annually. Prerequisite: 223.
- 331** *Field Experience in Guidance and Counseling.* 1.2; 2 cr; annually. Prerequisite: 330.
- 332** *Seminar in Educational Planning for Social and Economic Development.* 3; 3 cr; annually.
- 390** *Special Topics.* 3; 3 cr; annually. May be repeated for credit with consent of the Department:
- (a) Politics of education;
 - (b) Tutorial in counseling;
 - (c) Tutorial in the teaching-learning process;

- (d) Education of the gifted;
- (e) Problems and texts in the history of education;
- (f) Problems and texts in the philosophy of education;
- (g) Study in depth of an educational system;
- (h) Student unrest and the future of education;
- (i) Women's education;
- (j) Technical and vocational education;
- (k) International education and the contemporary world;
- (l) Problems and issues in higher education;
- (m) Programmed instruction;
- (n) Others.

399 *M.A. Thesis or Project.*

DEPARTMENT OF ENGLISH

Chairman: Bushrui, S.

Professors: Blackstone, B.; Bratton, N.; Cook, D.; Crow, L.; Dajani, N.; Khairallah, G.; Maleh, G. (Visiting); Melikian, A.; Munro, J.; Murphy, M.; Read-Collins, N.; Scott, E.

Lecturers: Fistere, J.; Hallab, M.; Kankashian, I.; Taylor, G.

Instructors: Bellrichard, S.; Bridgwood, J.; Fraga, J.; Gordon, A.; Hayder, A.; Manuelian, P.; Maple, R.; Salam, J.

The Department of English offers courses in Communication Skills required by the University as part of its graduation requirements, and also programs leading to both the B.A. and the M.A. degrees. Students wishing to major in English must first secure the approval of the Department, must have received a grade of 75 or more in English 201, and a grade of 70 or more in Cultural Studies 201, 202. Once they have been accepted by the Department, they may choose any one of three options: (a) Literature; (b) Language; (c) Mass Communications. If they wish to major in either Literature or Language, they must also take English 205 and 207 in their Sophomore year; permission to take these courses later will be given only as a rare exception, and exemption from them will be allowed only if the Department is satisfied that the student has taken their equivalent elsewhere.

The *Communication Skills Program* consists of a series of progressively more advanced courses providing training in communication skills, both oral and written, with emphasis on the mechanics and organization of expression, vocabulary enrichment, and practice in extensive and intensive reading. The Program also includes instruction in various study skills, culminating in the writing of a full-scale research paper.

The requirements for the *Literature Major* are as follows: English 212 or 213; 226 (Prerequisite: European Literature 214), 229; one course from 210, 214, 215; one course from 216, 219, 220; two courses from 222, 223, 224, 225, 245; either 290 or 292; and four courses from 211, 212, 213, 217, 221, 227, 246, 295.

The requirements for the *Language Major* are as follows: English 213, 227, 228, 229,

231, 294; either 217 or 222; either 219 or 220; either 224 or 225; and one additional course from among those numbered from 210 to 226.

Both *Literature* and *Language majors* will be required to keep themselves abreast on the historical background of their literature courses — a reading list will be recommended for this purpose—and students' knowledge of the background may be tested in the examinations connected with each course, as well as by quizzes, and possibly term papers.

The requirements for the *Mass Communications Major* are as follows: English 243, 247, 249, 251; four courses from among English 244, 252, 253, 254, 255, 256, 257, 258, 259; English 236; English 295; and one course from among those numbered English 210 and above. In addition students must take Fine Arts 236. Finally, Mass Communications majors are encouraged to take elective courses which appear to have special relevance for those intending to work in the mass media. All such courses must be approved by the Department.

COMMUNICATION SKILLS

Freshmen (Standard Sequence)

103 *English Communication Skills*. 3.2; 4 cr; annually.

104 *English Communication Skills*. 3.2; 4 cr; annually. Prerequisite: English 103.

Freshmen (Advanced Sequence)

105 *English Communication Skills*. 4.0; 4 cr; first semester. Prerequisite: score 625 on English entrance examination, or its equivalent.

106 *English Communication Skills*. 4.0; 4 cr; second semester. Prerequisite: English 105.

Sophomores

134 *English Communication Skills*. 3.2; 4 cr; annually. Prerequisite: score 500-575 on English entrance examination, or its equivalent. (For sophomores.)

201 *Advanced English Communication Skills*. 3.0; 3 cr; annually. Prerequisites: 103 and 104, or 134, or their equivalents.

Library Orientation. 0 cr. On the effective use of libraries. Required of all Arts and Sciences students. Usually taken in conjunction with English 201, exemption from which does not, however, provide exemption from this course.

Graduates

202 *English Communication Skills for Graduate Students*. 3; 0 cr; annually. (A special course open only to graduate students deficient in English.) Prerequisite: score 500-575 on English entrance examination, or its equivalent.

LITERATURE

The Literature program in the Department of English has a dual purpose. It provides the humanistic discipline and training necessary for those who wish to obtain an education based upon wide reading and literary study, and at the same time provides a structure of courses likely to be useful to those who intend to go to graduate school.

There is a variety of courses representing a corresponding variety of critical attitudes and approaches, and great importance is attached to the cultivation of a vigorous, though disciplined, independence of mind, and that awareness and sensitivity to language in all its forms which is a prerequisite to the understanding of literature. In all this the program attempts to avoid narrow or restrictive specialization.

- 205** and **207** *Survey of English Literature*. 3.0; 3 cr; annually.
- 210** *Introduction to English Medieval Literature*. 3.0; 3 cr; alternate years.
- 211** *Elizabethan and Jacobean Drama*. 3.0; 3 cr; annually.
- 212** *Shakespeare (Poems, Sonnets, Early Comedies, Histories)*. 3.0; 3 cr; annually.
- 213** *Shakespeare (Tragedies, Late Comedies, Criticism)*. 3.0; 3 cr; annually.
- 214** *Non-Dramatic Literature of the English Renaissance from Skelton to Crashaw*. 3.0; 3 cr; annually.
- 215** *Literature of the Seventeenth Century*. 3.0; 3 cr; annually.
- 216** *Restoration and Eighteenth Century Literature*. 3.0; 3 cr; annually.
- 217** *The English Novel to 1800*. 3.0; 3 cr; alternate years.
- 219** *The Romantic Movement*. 3.0; 3 cr; annually.
- 220** *Victorian Literature Excluding the Novel*. 3.0; 3 cr; annually.
- 221** *The Nineteenth Century English Novel*. 3.0; 3 cr; alternate years.
- 222** *English Literature, 1880-1920*. 3.0; 3 cr; annually.
- 223** *Contemporary Literature in English*. 3.0; 3 cr; alternate years.
- 224** *American Literature to 1900*. 3.0; 3 cr; annually.
- 225** *American Literature from 1900*. 3.0; 3 cr; annually.
- 226** *Literary Criticism*. 3.0; 3 cr; annually. Prerequisite: European Literature 214.
- 245** *The Middle East in English Literature*. 3.0; 3 cr.
- 246** *Kahlil Gibran and His Contemporaries*. 3.0; 3 cr; annually.
- 290** *Tutorial*. 3-6 cr; offered on demand. Prerequisites: an average of 82 or above in the major program, and consent of instructor.
- 292** *Seminar for English Majors (in Literature)*. 3-6 cr; annually. (Restricted to seniors.)

LANGUAGE

The Language program consists of five courses in literature and five in language. The latter are intended mainly to provide an appropriate linguistic background for prospective teachers of English, but they also constitute a sound base for those intending to pursue graduate work in linguistics.

- 227** *Introduction to Language*. 3.0; 3 cr; annually.
- 228** *Phonetics*. 3.2; 3 cr; annually.
- 229** *History of the English Language*. 3.0; 3 cr; annually.
- 231** *Modern English Grammar*. 3.0; 3 cr; annually.

236 *Advanced Composition*. 3.0; 3 cr; annually. Prerequisite: consent of instructor.

291 *Tutorial*. 3-6 cr; offered on demand. Prerequisite: an average of 82 or above in the major program, and consent of instructor.

294 *Advanced English Grammar*. 3-6 cr; annually. Prerequisite: English 231.

MASS COMMUNICATION

Instruction in Mass Communications is directed toward the study of effective and responsible communication behavior and also the institutions of mass communication. Emphasizing the news-information-opinion functions of the media, and attempting to blend theory with practical application, the ultimate concern of the program is to train people to use the various news media as responsible agents of national development.

243 *Introduction to Mass Communications*. 3.0; 3 cr; annually.

244 *Radio and Television*. 2.2; 3 cr; annually. Prerequisite: English 249.

247 *Essentials of Communication*. 3.0; 3 cr; annually.

249 *Basic News Communication*. 2.2; 3 cr; annually. Prerequisite: English 247.

251 *Seminar in Mass Communications and Modern Society*. 3.0; 3 cr; annually. Prerequisites: English 243, and consent of instructor.

252 *Feature Writing*. 3.0; 3 cr; annually. Prerequisite: English 249, or consent of instructor.

253 *Interpreting the News*. 3.0; 3 cr; annually. Prerequisite: English 249, or consent of instructor.

254 *Advanced Practicum*. 1.4; 3 cr; annually. Prerequisite: English 249.

255 *International Communications Systems*. 3.0; 3 cr; annually.

256 *Seminar in Mass Media and National Development*. 3.0; 3 cr; annually.

257 *Principles of Public Relations*. 3.0; 3 cr; annually. Prerequisite: consent of instructor.

258 *Selected Topics in Mass Communications*. 2-6 cr; annually. Prerequisite: consent of instructor.

259 *Field Projects*. 1-4 cr; annually. Prerequisite: consent of instructor.

295 *Translation Theory and Practice: Arabic-English, English-Arabic*. 3.0; 3 cr; annually. (For Arabic-speaking students).

M.A. PROGRAM

The M.A. degree is a professional qualification and therefore involves both the acquisition of a number of skills, and the development of an explicit and disciplined awareness of a variety of scholarly and critical problems. The M.A. program should provide an opportunity for thought and wide reading, so that each student may devote himself to the study of his choice, without having to become preoccupied with the mere accumulation of credits.

Students wishing to take an M.A. degree in the *Teaching of English as a Foreign Language (TEFL)* should refer to the listings under Department of Education above.

301 *Introduction to Bibliography and Methods of Research*. 3.0; 3 cr; annually.

- 302** *Selected Topics in English Literature Before 1800*. 3.0; 3 cr; annually. Content to be determined by instructor.
- 303** *Selected Topics in English Literature After 1800*. 3.0; 3 cr; annually. Content to be determined by instructor.
- 304** *Selected Topics in American Literature*. 3.0; 3 cr; annually. Content to be determined by instructor.
- 305** *Graduate Tutorial in English or American Literature*. 3.0; 3 cr. Specific topics to be announced annually. Restricted enrollment.
- 326** *Advanced Translation Theory and Practice: Arabic into English*. 3.0; 3 cr; annually.
- 329** *Students in Old and Middle English Literature*. 3.0; 3 cr; annually.
- 341** *Advanced Phonology*. 3.0; 3 cr; annually. Prerequisite: 228.
- 342** *Theoretical Linguistics*. 3.0; 3 cr; annually. Prerequisites: 231, 294.
- 343** *Comparative and Historical Linguistics*. 3.0; 3 cr; annually. Prerequisites: 341 and 342, or consent of instructor.
- 344** *Graduate Tutorial in Linguistics*. 3 cr; offered on demand.
- 399** *M.A. Thesis*.

DEPARTMENT OF EUROPEAN LANGUAGES AND LITERATURE

Chairman: Boecker, E.

Professors: Alsleben, B. (Visiting); Amar, M.; Khairallah, A.; Khairallah, G.; Madec, M. (Visiting).

Lecturers: Bross, J.; Kruger, M.; Montégu, J.; Proust, D.

Instructor: Amyuni, M.

The Department offers programs leading to both the B.A. and the M.A. degrees. Students wishing to major in the Department must secure the approval of the Department and must have received a grade of 70 or more in English 201 and in Cultural Studies 201 and 202. They must take 12 credits in Foreign Language courses numbered above 200, and 18 credits in European Literature courses, including 214, 291 and one of 211, 212 and 213. The remaining credits required for the major are to be distributed, as recommended by the Department advisor, among courses in not less than two and not more than three specific literatures offered at this University (i.e. at this time: Arabic, English, French, German), with the understanding that usually not more than 12 of these credits will be taken in German and/or French literature. Students wishing to major in the Department are strongly advised to take elementary language courses during their Sophomore year.

The Department is prepared to offer graduate work in comparative studies involving Arabic, English, French, German, or Classical Greek and Latin Literature. Graduate students will be expected to have a solid background in at least one other language and literature besides English and/or Arabic. In addition to English 301 (a methods course taught jointly with the English Department), European Literature 302, 303, which are required of all graduate students, each student will have a special program worked out in his area of concentration: within the Department he will study his field by means of graduate seminars and tutorials; in the Departments of Arabic and English

he will be able to utilize regularly offered graduate courses, seminars, and tutorials which fit into his specialization. The thesis will involve work in not less than two and (normally) not more than three national literatures. The graduate level courses are intended to permit intensive study in the area from which the thesis will be chosen, but they should not normally be on the thesis subject itself.

Since seminars and tutorials will vary in subject matter from semester to semester, a student may take such courses more than once. The graduate courses assume that the student has already met the requirements for the B.A. in European Literature; any undergraduate deficiencies must be made up before enrolling in such courses.

CLASSICS

211 and **212** *Introduction to Greek*. 3.0; 3 cr; alternate years.

213 and **214** *Introduction to Latin*. 3.0; 3 cr; alternate years.

221 and **222** *Second Year Greek*. 3.0; 3 cr; Review of grammar and reading of original texts. Prerequisites: 211 and 212, or equivalent.

223 and **224** *Second Year Latin*. 3.0; 3 cr. Review of grammar and reading of original texts. Prerequisites: 213 and 214, or equivalent.

303 *Graduate Tutorial in Classical Greek or Latin Literature*. 3.0; 3 cr.

EUROPEAN LITERATURE

209 *Introduction to Literature*. 3.0; 3 cr; each semester. (Required of Engineering students, but open to Arts and Sciences students as an elective. *Not* open to Literature majors.)

211 *Classical Mythology and its Use in Later Literature and Art*. 3.0; 3 cr; alternate years.

212 *Classical Epic and its Influence*. 3.0; 3 cr; alternate years.

213 *Classical Drama and its Influence*. 3.0; 3 cr; alternate years.

214 *Literary Criticism*. 3.0; 3 cr; annually. History of literary criticism from the beginning to the early 19th century. This course is prerequisite for English 226.

215 *East-West Literary Relations and Influences*. 3.0; 3 cr; conducted in English, but texts to be read whenever possible in the original languages; specific content varies from year to year.

216 *European Drama*. 3.0; 3 cr. Specific content varies from year to year.

217 *European Novel*. 3.0; 3 cr. Specific content varies from year to year. Prerequisite: Junior standing.

291 *Seminar in European Literature*. 3.0; 3 cr. Restricted to seniors and graduate students in any literature, including English and Arabic.

302 *Theory of Literature*. 3.0; 3 cr. Prerequisites: European Literature 214 and English 226, or equivalent.

303 *Graduate Seminar in European Literature*. 3.0; 3 cr.

304 *Graduate Tutorial in European Literature*. 3.0; 3 cr.

399 *M.A. Thesis*.

NOTE: Students will be allowed to take 215, 216, 217 and 291 for credit more than once, if the Department is satisfied that the change in specific content warrants this arrangement.

FRENCH

201 and **202** *Elementary French*. 3.1; 3 cr; annually. Restricted to students with no knowledge of French; course includes one hour per week of language laboratory.

211 and **212** *Intermediate French*. 3.0; 3 cr; annually. Prerequisites: 201 and 202, or consent of instructor.

221 and **222** *Advanced French*. 3.0; 3 cr; annually. Study of literary texts. Prerequisites: 201 and 202, or consent of instructor.

231 *French Classicism*. 3.0; 3 cr; annually. Prerequisite: 222, or consent of instructor.

232 *French Romanticism*. 3.0; 3 cr; alternate years. Prerequisite: 222, or consent of instructor.

233 *The French Novel up to the End of the Nineteenth Century*. 3.0; 3 cr; alternate years. Prerequisite: 222, or consent of instructor.

234 *French Literature of the Sixteenth Century*. 3.0; 3 cr; alternate years. Prerequisite: 222, or consent of instructor.

235 *French Literature of the Eighteenth Century*. 3.0; 3 cr; alternate years. Prerequisite: 222, or consent of instructor.

236 *French Literature of the Twentieth Century*. 3.0; 3 cr; annually. Prerequisite: 222, or consent of instructor.

303 *Graduate Tutorial in French Literature*. 3.0; 3 cr.

GERMAN

201 and **202** *Elementary German*. 3.1; 3 cr; annually. Course includes one hour per week of language laboratory. Credit is not given for both 201, 202 and 203, 204.

203 and **204** *German for Reading Knowledge*. 3.0; 3 cr; annually. Not open to Literature students. Credit is not given for both 201, 202 and 203, 204.

211 and **212** *Intermediate German*. 3.0; 3 cr; annually. Prerequisites: 201 and 202, or consent of instructor.

221 and **222** *Advanced German*. 3.0; 3 cr; annually. Study of literary texts. Prerequisite: 212, or consent of instructor.

291 *Undergraduate Tutorial in German Literature*. 3.0; 3 cr.

303 *Graduate Tutorial in German Literature*. 3.0; 3 cr.

DEPARTMENT OF FINE AND PERFORMING ARTS

Chairman: Smith, P.H.

Professors: Arnita, S.; Carswell, J.; Colt, J. (Visiting); Frick, A.; Olsen, G.

Lecturers: Etinoff, N.; Hovey, A.; Shebaya, P.; Taky Deen, D.

Instructors: Kurani, D.; Al-Radi, N.; Satamian, K.

The Department of Fine and Performing Arts offers three programs, two of which lead

to the B.A. degree. Students may major in Art or Music. The Theater program offers electives.

ART

The Art section assumes that each of its students has a desire to make some worthwhile statement through visual media. Each student will seek to find his own best means of expression. Since the student must have an awareness of the wealth of knowledge of his time, he will take courses in the liberal arts to provide a foundation for future specialization. His first art course will be the Introduction to the Visual Arts, a general course in the appreciation of arts and the vocabulary of the artist. The student will then take courses in drawing and design to give him fundamental visual tools. From this foundation the student will undertake study in specific media; painting, ceramics, jewelry, sculpture, crafts, printmaking. Knowledge of the heritage of the arts will be developed in courses in the history of art. In his senior year the art student will have a tutorial under the professor of his choice in a specific field of interest.

The requirements for the *Art Major* are as follows: Art 211, 214 or 215, 221, 222, 223, 225, 227, 228, 229, 230, 231, 232, 233, 234, 236, 237, 238; one course selected from each of the following disciplines: Philosophy 217; Psychology 201; Sociology 210 or 271; and at least one course to be chosen from History and Archaeology.

- 211** *Introduction to the Visual Arts.* 3.0; 3 cr; annually.
- 214** and **215** *Senior Tutorial.* 0.6; 3 cr; annually. Prerequisite: consent of instructor.
- 221** *Beginning Painting.* 0.6; 3 cr; annually. Prerequisites: 227, 229 (or concurrently).
- 222** *Intermediate Painting.* 0.6; 3 cr; annually. Prerequisite: 221.
- 223** *Jewelry and Crafts.* 0.6; 3 cr; annually. Prerequisites: 227, 229 (or concurrently).
- 225** *Ceramics.* 0.6; 3 cr; annually. Prerequisites: 227, 229 (or concurrently).
- 227** *Beginning Design.* 0.6; 3 cr; annually.
- 228** *Intermediate Design.* 0.6; 3 cr; annually. Prerequisite: 227.
- 229** *Beginning Drawing.* 0.6; 3 cr; annually.
- 230** *Intermediate Drawing.* 0.6; 3 cr; annually. Prerequisite: 229.
- 231** *History of Western Art: Prehistory through Renaissance.* 3.0; 3 cr; annually. Prerequisite: 211.
- 232** *History of Western Art: Mannerism to the Present.* 3.0; 3 cr; annually. Prerequisite: 211.
- 233** *Beginning Sculpture.* 0.6; 3 cr; annually. Prerequisites: 227, 229 (or concurrently).
- 234** *Intermediate Sculpture.* 0.6; 3 cr; annually. Prerequisite: 233.
- 235** *Photography.* 0.6; 3 cr; annually.
- 236** *Printmaking.* 0.6; 3 cr; annually. Prerequisites: 227, 229 (or concurrently).
- 237** *Advanced-Intermediate Painting.* 0.6; 3 cr; annually. Prerequisite: 222.
- 238** *Advanced Painting.* 0.6; 3 cr; annually. Prerequisite: 237.

MUSIC

The courses in the Music section have been devised to give broad understanding and experience to students who wish to become professional in the field of either *Musicology* or *Composition and Conducting*. Those who look to radio, television, and cinema as a possible livelihood will find musical training available in these media. Music students receive a grounding in techniques of music theory and the history of music. Careful consideration has been given to the problems that are encountered by students who may not have had a music education in their pre-university studies. Techniques are devised to guide students individually with the aim of assisting each to realize his or her own unique capabilities.

The requirements for the *Music Major* are as follows: Music 244, 245, 246, 247, 248, 250, 252, plus either one of the following two courses: 251 or 253; plus any four courses to be selected from the following: 254, 255, 256, 257, 258, 259, 260 and 261. Students wishing to emphasize Composition and Conducting should take the sequence 254, 255, 256 and 257. Students wishing to emphasize Musicology should take the sequence 258, 259, 260 and 261. The prospective B.A. candidate must also achieve a required level of proficiency in musical performance. He may acquire instruction outside AUB if necessary. The Faculty of the Music section of the Department of Fine and Performing Arts will ultimately pass on his proficiency. All candidates will be expected to perform on at least two instruments. The combinations may be the piano and a wind instrument; the piano and a stringed instrument; or a wind and a stringed instrument, in which case the candidate should also have a knowledge of the piano.

- 240** *Introduction to the Art of Music I.* 3.0; 3 cr; annually.
- 241** *Introduction to the Art of Music II.* 3.0; 3 cr; annually.
- 242** *Applied Choral Music I.* 1.0; 1 cr; annually. Prerequisite: consent of instructor.
- 243** *Applied Choral Music II.* 1.0; 1 cr; annually. Prerequisite: consent of instructor.
- 244** *History of Music: Prehistory through Baroque.* 3.0; 3 cr; annually.
- 245** *History of Music: Classical through Contemporary.* 3.0; 3 cr; annually.
- 246** *Elements and Theory of Music I.* 3.0; 3 cr; annually.
- 247** *Elements and Theory of Music II.* 3.0; 3 cr; annually. Prerequisite: 246.
- 248** *Counterpoint I.* 3.0; 3 cr; annually. Prerequisite: 247.
- 249** *Counterpoint II.* 3.0; 3 cr; annually. Prerequisite: 248, or consent of instructor.
- 250** *Harmony I.* 3.0; 3 cr; annually. Prerequisite: 247, or consent of instructor.
- 251** *Harmony II.* 3.0; 3 cr; annually. Prerequisite: 250.
- 252** *Formal Analysis I.* 3.0; 3 cr; annually. Prerequisite: 247.
- 253** *Formal Analysis II.* 3.0; 3 cr; annually. Prerequisite: 252.
- 254** *Advanced Theory and Composition I.* 3.0; 3 cr; alternate years. Prerequisites: 244 through 253.
- 255** *Advanced Theory and Composition II.* 3.0; 3 cr; alternate years. Prerequisite: 254.
- 256** *Principles of Orchestration and Conducting I.* 3.0; 3 cr; alternate years. Prerequisites: 244 through 253.

257 *Principles of Orchestration and Conducting II.* 3.0; 3 cr; alternate years. Prerequisite: 256.

258 *Early Music through Bach.* 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

259 *Music of the Classical Period.* 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

260 *Beethoven and the Romantics.* 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

261 *Music of the Twentieth Century.* 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

262 *Instrumental Performance Class.* 1.4; 3 cr; annually. Prerequisite: consent of instructor.

263 *Instrumental Recital Class.* 1.4; 3 cr; annually. Prerequisite: consent of instructor.

THEATER

The Theater section offers a program that is tailored to the training of talent in all aspects of theater (including radio, television and film). Two areas of concentration are presently offered, one in *Acting* and one in *Production*. Acting students will receive expert training in improvisation, pantomime, movement, voice production and speech. Production students will concentrate on the art and craft of directing, stage-management, set and costume design, lighting, and make-up. Prospective actors, directors, technicians, designers, playwrights, and educators will find unique opportunities of achieving both professional and academic competence in their future fields. Ample occasion for creative work is given, through workshop classes, the Drama Club and occasional participation in semi-professional productions.

264 *Introduction to the Elements of Theater.* 3.0; 3 cr; annually.

265 *Introduction to the Various Forms of Theatrical Presentation.* 3.0; 3 cr; annually.

266 *Script Interpretation.* 3.0; 3 cr; alternate years.

267 *Voice and Speech I.* 2.2; 3 cr; annually.

268 *Voice and Speech II.* 2.2; 3 cr; annually. Prerequisite: 267.

269 *Improvisation I.* 1.4; 3 cr; annually.

270 *Improvisation II.* 1.4; 3 cr; annually. Prerequisite: 269.

271 *Movement and Mime I.* 1.4; 3 cr; annually.

272 *Movement and Mime II.* 1.4; 3 cr; annually. Prerequisite: 271.

273 *Stagecraft.* 2.2; 3 cr; annually.

274 *Stage Design.* 2.2; 3 cr; annually.

275 *Directing I.* 2.2; 3 cr; alternate years.

276 *Directing II.* 2.2; 3 cr; alternate years. Prerequisite: 275.

277 *History of World Theater.* 4.0; 4 cr; alternate years.

278 *History of Manners, Customs and the Arts.* 4.0; 4 cr; alternate years.

279 *Modern and Contemporary Drama.* 3.0; 3 cr; alternate years.

280 *Seminar on Special Topics in Modern World Theater.* 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

281 *Seminar on Theater in the Middle East.* 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

282 *Tutorial.* 3.0; 3 cr; annually. Prerequisite: consent of instructor.

283 *Workshop.* 0.6; 3 cr; annually.

DEPARTMENT OF GEOLOGY

Chairman: Beydoun, Z.

Professors: Kafescioglu, I.; Rogers, A. (Visiting); Venkitasubramanyan, C.

Lecturer: Goedicke, T.

The Department of Geology offers programs leading to the degrees of Bachelor of Science and Master of Science in Geology.

Students wishing to major in Geology must secure the approval of the Department and must have taken Freshman Science or its equivalent, and are expected to make up as early as possible any deficiencies they may have in both Chemistry and Physics. They must attain a grade of 70 or more in Geology 201 to become full majors and must complete the following courses and in which a general average of 70 or more must be maintained: 202, 207, 210, 211, 212, 213, 214, 215, 219, 221, 222, 223, 224 and 229, making a total of 48 semester credit units. No course may be taken by majors without its prerequisite. Advanced students in their final year are encouraged to take additional geology courses from the graduate level provided other requirements permit. One or several field trips form required parts of some courses, and are generally run one Sundays.

Interdepartmental Majors and Programs. Interdepartmental courses are offered in conjunction with the Department of Biology leading to the degrees of Bachelor of Science and Master of Science in Marine Sciences.

Candidates for the *Interdepartmental Major in Marine Sciences* must secure the approval of the two sponsoring Departments and must complete the following requirements: Biology 201, 202, 243, 264, 266, 271; Chemistry 201, 203 and 208; Geology 201, 202, 211, 212, 214, 222, 223 and 271; Physics 204 and 205.

201 *Physical Geology.* 3.2; 4 cr; each semester. Materials, structures, and geological processes of the Earth.

202 *Historical Geology.* 3.0; 3 cr; annually. Geological history as revealed by the rocks and fossil record. Prerequisite: 201, or consent of instructor.

207 *Map Interpretation.* 1.4; 3 cr; annually. Description and interpretation of geological maps and structures. Prerequisite: 201.

210 *Geomorphology.* 3.0; 3 cr; annually. Land-forms and their evolution. Prerequisites: 201 and 207, or consent of instructor.

211 *Crystallography and Physical Mineralogy.* 1.4; 3 cr; annually. Crystalline state and properties of minerals related to their crystal structure. Prerequisite: Chemistry 101, or consent of instructor.

212 *Optical Mineralogy*. 1.4; 3 cr; annually. Theory of crystal optics and systematic study of common rock forming minerals in thin section. Prerequisite: 211.

213 *Structural Geology*. 2.2; 3 cr; annually. Structures of the earth crust and their interpretation. Prerequisite: 201.

214 *Stratigraphy*. 3.0; 3 cr; annually. The sequence and character of the layered rocks, their facies, formation and correlation. Prerequisites: 201 and 202.

215 *Invertebrate Paleontology*. 1.4; 3 cr; annually. Systematic study of invertebrate fossils. Prerequisite: 202.

217 *Geology for Archaeologists*. 3.0; 3 cr; annually if required. May be given in seminar form; no credit for Geology majors. Basic geological principles, Quaternary geology, fossil man and raw materials for the archaeologist.

219 *Geologic Field Methods*. 0.6; 3 cr; annually in the summer only and prior to 229. Introduction to methods used in geological mapping. Prerequisites: 207, 213 and 214.

221 *Petrology*. 2.2; 3 cr; annually. Composition, origin and occurrence of rocks; identification from hand specimens and in thin section under the polarizing microscope. Prerequisite: 212.

222 *Sedimentary Petrology and Sedimentology*. 1.4; 3 cr; annually. Petrography of sediments, sedimentary rocks and their microscopic structures, and techniques in sedimentology. Prerequisites: 212 and 214, or concurrently with consent of instructor.

223 *Geological Oceanography*. 3.0; 3 cr; annually. Physical geology, sedimentation and geomorphology of the sea floor. Prerequisites: 210 and 214, or consent of instructor.

224 *Regional Geology*. 3.0; 3 cr; annually. Detailed structural geology, stratigraphy, geological history and economic geology of selected regions. Prerequisites: 213 and 214.

229 *Individual Summer Field Work*. 0.18; 6 cr; annually. Offered only in the summer immediately after 219. A complete and independent geological investigation of a designated area and preparation of a detailed geological map and report. Prerequisite: 219.

271 and **272** *Senior Tutorial Course*. 1-3 cr.

M.S. PROGRAM

Candidates pursuing the *Master of Science program in Geology* may select from the graduate courses offered in the Department, depending on their field of interest, and may also be directed to take undergraduate and graduate courses from other departmental course offerings allied to their chosen fields.

Candidates pursuing the *Master of Science program in Marine Sciences* with emphasis on Geology must take Geology 223, Biology 266, 364 and 365 in addition to other courses in Geology. These will be worked out with advisors and will depend on the candidate's geological background and current geological interests in the field of Marine Sciences.

Graduate level courses are restricted to graduate students and advanced seniors.

303 *Geochemistry*. 3.0; 3 cr. Application of chemical concepts to fundamental geological problems.

- 304** *Geophysics*. 3.0; 3 cr. Application of physics to the study of the earth and its crust.
- 306** *Mineral Deposits*. 2.3; 3 cr. Occurrence and classification of mineral deposits and theories of their formation; identification of ore minerals.
- 307** *Petroleum Geology*. 3.0; 3 cr. Origin, migration and accumulation of petroleum; surface and subsurface exploration methods and exploitation techniques.
- 313** *Photogeology*. 1.4; 3 cr. Principles of aerial photo-interpretation and the construction of planimetric geological maps and mosaics, using the stereoscope.
- 317** *Micropaleontology*. 2.2; 3 cr. Introduction to the study of various groups of microfossils and their application.
- 318** *Hydrogeology*. 3.0; 3 cr. Geology of ground water.
- 320** *Graduate Seminar*. 3.0; 3 cr. A critical discussion of current geological problems.
- 329** and **330** *Selected Topics in Advanced Geology*. 3.0; 3 cr. May be repeated for credit.
- 399** *M.S. Thesis*.

DEPARTMENT OF HISTORY AND ARCHAEOLOGY

Chairman: Gordon, D.

Professors: Baramki, D. (Curator of Museums); Khalidi, T.; Salibi, K.; Seeden, H.; Ward, W.; Zayid, M.; Zeine, Z.; Ziadeh, N.; Zurayk, C.

Lecturers: Buheiry, M.; Kouymjian, D.; Montégu, J.; Saidah, R.

HISTORY

The Department offers three concentrations in History: Ancient, European, Arab and Near Eastern. In Arab History, a program toward the Ph.D. degree is also available. Requirements for admission to the Department include the approval of the Chairman and a grade of 70 or more in Cultural Studies 201 and 202. Students expecting to work in Arab History must also have a knowledge of Arabic.

Students majoring in History must complete a minimum of 36 credit hours in the Department, including History 201, 286, 291 and 292. In addition, the student must complete 6 credit hours each in two of the following related Departments: Arabic Literature, English Literature, Economics, European Languages and Literature, Philosophy, Political Studies and Public Administration, Religious Studies, Sociology and Anthropology. Detailed programs will be determined by subcommittees of the Department which will advise each student on courses in his major, related Departments, and electives.

101 and **102** *Survey of Modern Europe*. 3.0; 3 cr; annually. Political and cultural development of Europe, 1500-1939.

210 *Introduction to Historical Methodology*. 3.0; 3 cr; alternate years. Methods of historical research and writing.

211 and **212** *Ancient History of the Near East*. 3.0; 3 cr; alternate years. Historical and cultural survey of Egypt, Turkey, Palestine, Syria, Lebanon and Iraq, from prehistoric times to Alexander the Great.

213 *The Syro-Lebanese Coast in Ancient Times.* 3.0; 3 cr; alternate years. Historical and cultural development of the Phoenician city-states along the Syro-Lebanese coast from Alalakh to Tyre, from prehistoric times to the Persian period.

214 *Law and Society in the Ancient Near East.* 3.0; 3 cr; alternate years. Legal, economic and social institutions of Egypt and Western Asia in pre-classical times, based on readings from original documents in translation.

215 and **216** *History of Greece.* 3.0; 3 cr; alternate years. Political and cultural history of the Aegean Basin to the death of Alexander the Great.

217 and **218** *History of Rome.* 3.0; 3 cr; alternate years. Political, social and cultural history of Rome and the Roman Empire to the founding of Constantinople.

219 *History of the East, 323 to 31 B.C.* 3.0; 3 cr; alternate years. Political and cultural history of the Hellenistic Age from the death of Alexander the Great to the Battle of Actium.

229 and **230** *History of the Arabs.* 3.0; 3 cr; annually. For non-Arabic-speaking students. Political and cultural development of Arab society from the rise of Islam to the establishment of the Ottoman Empire.

231 *History of the Near East from 610 to 1071 A.D.* 3.0; 3 cr; alternate years. From the accession of Heraclius to the Battle of Manzikert.

232 *History of the Near East from 1071 to 1517 A.D.* 3.0; 3 cr; alternate years. The Crusader and the Mameluke periods, from the Battle of Manzikert to the Ottoman conquest of Egypt.

233 *History of the Arabs to 632 A.D.* 3.0; 3 cr; alternate years. From the earliest times to the death of the Prophet. *In Arabic.*

234 *History of the Arabs from 632 to 750 A.D.* 3.0; 3 cr; alternate years. Expansion and development of the Arab Empire from the death of the Prophet to the fall of the Omayyads. *In Arabic.*

235 *History of the Arabs from 750 to 861 A.D.* 3.0; 3 cr; alternate years. The rise of the Islamic Empire and the cultural awakening under the Abbasids. *In Arabic.*

236 *History of the Arabs from 861 to 1258 A.D.* 3.0; 3 cr; alternate years. The Islamic Empire through the period of political instability to the fall of Baghdad in 1258. *In Arabic.*

237 *History of the Ottoman Empire from its Origin to 1800 A.D.* 3.0; 3 cr; annually. History and political and religious institutions of the Ottoman Empire, and relations between Arabs and Turks in the Asiatic possessions of the Empire.

238 *History of the Ottoman Empire and the Arab Near East in the 19th and 20th Centuries, 1800-1920 A.D.* 3.0; 3 cr; annually. The Eastern Question, emphasizing the impact of Europe on the Middle East and the emergence of Arab nationalism.

239 *History of the Arab East 1517-1798 A.D.* 3.0; 3 cr; alternate years. The Arab East (Egypt, the Fertile Crescent and Arabia) from the Ottoman conquest to the French occupation of Egypt.

240 *History of the Arab East 1798-1939 A.D.* 3.0; 3 cr; alternate years. The Arab East during the Arab awakening, emphasizing the impact of the West on the Arabs and their reaction in the domain of politics and culture.

241 *History of Persia in the 19th Century.* 3.0; 3 cr; alternate years. Political, social

and cultural institutions of Persia, with special emphasis on diplomatic relations with Europe.

243 *History of the Arab World since 1920.* 3.0; 3 cr; alternate years. A survey of the Arab world and North Africa dealing with movements of independence, recent developments and current trends.

244 *History of North Africa 1800-1939 A.D.* 3.0; 3 cr; alternate years. Political and cultural history of the North African countries (Libya, Tunisia, Algeria and Morocco) in the 19th and early 20th centuries.

245 *History of Lebanon 634 to 1920 A.D.* 3.0; 3 cr; alternate years. History of Mount Lebanon and its neighbourhood from the Arab conquest of Syria until the emergence of the State of Greater Lebanon.

246 *History and Culture of the Armenian People to 1400 A.D.* 3.0; 3 cr. Geographical, historical and racial factors in the creation of the Armenian people; contact and interchange with Hellenistic, Roman, Persian and Christian societies; Christian Armenian culture.

247 *History and Culture of the Armenian People from 1400 A.D. to Modern Times.* 3.0; 3 cr. Armenia under Ottoman, Persian and Russian domination (political, social and cultural aspects); the awakening of the 19th century; the beginning of modern literature; the first World War and the dispersion of the Armenian people; the Armenian Diaspora.

252 *The Middle Ages.* 3.0; 3 cr; annually. Survey of the establishment of the basic institutions of Western medieval civilization.

253 *European History 1350-1618 A.D.* 3.0; 3 cr; annually. The changing European civilization of the Renaissance and the Reformation.

254 *European History 1618-1815 A.D.* 3.0; 3 cr.; annually. European History from the Thirty Years' War through the French Revolution.

255 *Europe 1815-1871 A.D.* 3.0; 3 cr; annually. Political and cultural history of Europe from the Congress of Vienna to the Franco-Prussian War.

256 *Europe 1871-1914 A.D.* 3.0; 3 cr; annually. Diplomatic and political events culminating in the First World War, with particular emphasis on the expansion of Europe during its period of world domination and the failure of the European powers to avoid a war.

257 *The Contemporary World Since 1917 A.D.* 3.0; 3 cr; annually. Contemporary trends in world society.

258 *Main Currents in the History of a Particular Nation.* 3.0; 3 cr; Course content to be determined by instructor, and may vary from year to year. May be repeated for credit.

259 *Main Currents in United States History.* 3.0; 3 cr. Selected topics in American history. Course content to be determined by instructor, and may vary from year to year.

286 *Historical Interpretation.* 3.0; 3 cr; annually. Historical and critical analysis of the major theories and schools of historical interpretation.

291 and **292** *Senior Seminar in History.* 3.0; 3 cr; annually.

301 and **302** *Graduate Seminar in Ancient History.* 3.0; 3 cr.

303 and **304** *Graduate Seminar in Arab and Near Eastern History.* 3.0; 3 cr.

305 and **306** *Graduate Seminar in European History.* 3.0; 3 cr.

321 and **322** *Graduate Seminar in Ancient History*. 3.0; 3 cr.

323 and **324** *Graduate Tutorial in Arab and Near Eastern History*. 3.0; 3 cr.

325 and **326** *Graduate Tutorial in European History*. 3.0; 3 cr.

327 *Historical Writing*. 3.0; 3 cr; annually. Development of historical writing and of man's conceptions of the aim, scope and method of history.

360 *Historiography and Documentation*. 3.0; 3 cr. Tutorial course on the use and evaluation of original documents in history.

399 *M.A. Thesis*.

499 *Ph. D. Thesis in Arab History*.

ARCHAEOLOGY

The Department offers a Master's degree program in Archaeology.*

211 and **212** *Methodology*. 3.0; 3 cr. Examination of archaeological sites and ancient monuments in the Near East, and of the methods used in archaeological excavations and interpretation of results. The course, in addition to classroom lectures, will include visits under expert guidance to historical sites both virgin and under excavation.

213 *Archaeology of the Near East: the Prehistoric Period and Bronze Age*. 3.0; 3 cr. Survey of the development of man's material culture to ca. 1200 B.C. The advance from the hunting to the agricultural stage of culture, the growth of villages into towns and cities, the development of industry, monumental architecture and representational art, and the trend towards uniformity in material culture will be surveyed according to the archaeological record.

214 *Archaeology of the Near East: the Iron Age*. 3.0; 3 cr. Survey of the archaeological remains of the Near East ca. 1200 B.C. to the Persian period, with special stress on the cultural impact of ethnic movements in the Near East during that period. The leading role of the Phoenicians in the diffusion of elements of civilization will be emphasized with reference to the archaeological record.

215 and **216** *Archaeology of the Greek World*. 3.0; 3 cr. Survey of the archaeology of the Aegean Basin with an emphasis on the art and architecture of Classical Greece.

217 and **218** *Hellenistic and Roman Archaeology*. 3.0; 3 cr. Examination of the material records of Alexander's conquest of the Near East, and the subsequent Hellenization of the area down to the end of the Roman period.

301 and **302** *Graduate Tutorial Course*. 3.0; 3 cr. Prerequisites: 211, 212.

303 and **304** *Archaeology of Palestine*. 3.0; 3 cr. Prerequisites: 211, 212.

307 and **308** *Numismatics of the Near East*. 3.0; 3 cr. Prerequisites: 211, 212.

309 and **310** *Archaeology of Phoenicia with Special Reference to the Excavation of Byblos and Ras Shamra-Uqarit*. 3.0; 3 cr. Prerequisite: 211; a knowledge of French is essential.

399 *M.A. Thesis*.

* The Department of Geology offers Geology 217 Geology for Archaeologists.

DEPARTMENT OF MATHEMATICS

Chairman: Yaqub, F.

Professors: Ali, J.; Anderson, J. (Visiting); Braidi, S.; Chalabi, A.; Hanna, A.; Hamdan, M.; Heymans, P.; Hijab, W.; Kennedy, E.; Mohapatra, R.; Muwafi, A.; Nassif, N.; Regier, M.; Shukla, U.; Yff, P.; Zaatar, M.

Lecturer: Fraga, R.

UNDERGRADUATE PROGRAM

The Department of Mathematics offers two alternative majors, Mathematics and Statistics, each major leading to the degree of B.A. or B.S. The requirements for the B.S. degree include a minimum of 27 credits (18 credits for students entering the University at the Sophomore level) in one or more of the following Departments: Biology, Chemistry, Geology and Physics.

To be acceptable as a major, a student must secure the approval of the Department, must obtain a grade of at least 70 in each of 201 and 202, and a grade of at least 70 in 220 (Statistics option) or an average of at least 70 in 205 and 220 (Mathematics option). Course requirements are as follows: for *Mathematics Major*: 201, 202, 205, 209, and 32 credits in courses numbered 210 and above, including 213, 214, 220, 221, 223, 224, 233, 241; for *Statistics Major*: 201, 202, 205, 209, and 32 credits in courses numbered 210 and above, including 220, 223, 224, 233, 234, 235, 236 or 237, 238.

In addition, the following majors are possible: (1) *Mathematics Teaching Major*: requirements for this major are 201, 202, 205, 209, plus 30 credits in courses numbered 210 and above, including 213, 215, 220, 233, 241, 261, of which 3 credits may be replaced by Philosophy 211; plus requirements of the Education Department for the Teaching Diploma; (2) *Mathematics-Physics Interdepartmental Major*, for which see under Department of Physics; (3) *Economics-Statistics Interdepartmental Major*, for which see under Department of Economics.

MATHEMATICS

101 *Introductory College Mathematics.* 3.0; 3 cr; annually. No credit is given to students who take 203. A score of 590 on the Mathematics Placement Examination, Part I, is acceptable for exemption from his course.

102 *Calculus and Analytic Geometry I.* 4.0; 4 cr; annually. Prerequisites: 101 and high school trigonometry. A score of 400 on the Mathematics Placement Examination, Part II, is acceptable for exemption from this course.

201 *Calculus and Analytic Geometry II.* 4.0; 4 cr; annually. Prerequisite: 102.

202 *Calculus and Analytic Geometry III.* 4.0; 4 cr; annually. Prerequisite: 201.

203 *Basic Mathematics for Social Sciences.* 4.0; 4 cr; annually. No credit is given to students who take 101.

205 *Sets and Algebraic Systems.* 3.0; 3 cr; annually.

209 *Digital Computer Programming I.* 1.0; 1 cr; annually.

211 *Digital Computer Programming II.* 2.2; 3 cr; annually. Prerequisite: 209 or equivalent.

213 *Higher Geometry.* 3.0; 3 cr; annually. Prerequisites: 70 or more in 201 and 202.

214 *Introduction to Topology*. 3.0; 3 cr; annually. Prerequisites: 205, and 70 or more in 201 and 202.

215 *History of Mathematics*. 3.0; 3 cr. Prerequisite: 202, or consent of instructor.

216 *Topics in Topology*. 3.0; 3 cr. Prerequisite: 214.

220 *Introduction to Linear Algebra*. 3.0; 3 cr; annually. Prerequisites: 102 and 205.

221 *Introduction to Differential Equations*. 3.0; 3 cr; annually. Prerequisite: 202, which may be taken concurrently.

222 *Methods of Partial Differential Equations*. 3.0; 3 cr. Prerequisite: 221.

223 *Advanced Calculus I*. 3.0; 3 cr; annually. Prerequisites: 205, and 70 or more in 201 and 202.

224 *Advanced Calculus II*. 3.0; 3 cr; annually. Prerequisite: 223.

227 *Introduction to Complex Variables*. 3.0; 3 cr. Prerequisite: 202.

241 *Topics in Algebra I*. 3.0; 3 cr; annually. Prerequisites: 205, and 70 or more in 201 and 202.

242 *Topics in Algebra II*. 3.0; 3 cr. Prerequisite: 241.

251 *Numerical Analysis*. 3.0; 3 cr. Computer-oriented. Prerequisites: 209 and 202 or equivalent.

255 *Applied Mathematics*. 3.0; 3 cr. The topics covered in this course will vary from year to year depending on the interests of students and Faculty.

256 *Special Topics in Computer Science*. 3.0; 3 cr. Course content will vary from semester to semester depending on the interest of students and Faculty.

261 *Number Theory*. 3.0; 3 cr. Prerequisites: 70 or more in 201 and 202.

271 *Set Theory*. 2.0; 2 cr; annually. Prerequisite: 205.

293 and **294** *Special Topics in Mathematics*. 1-3 cr. The topics for each year are selected according to the needs of students.

295 *Senior Tutorial Course*. 3-6 cr. Directed study in special areas of concentration selected by the student in consultation with a Faculty advisor.

STATISTICS

207 *Elementary Probability and Statistics*. 2.2; 3 cr; annually. Not open to students who qualify for 233.

233 *Introduction to Probability and Statistics*. 3.0; 3 cr; annually. Prerequisites: 205, and 70 or more in 201 and 202.

234 *Statistical Inference I*. 2.2; 3 cr; annually. Prerequisite: 233.

235 *Statistical Inference II*. 3.0; 3 cr; annually. Prerequisite: 234.

236 *Elements of Sample Surveys*. 3.0; 3 cr. Prerequisite: 234.

237 *Statistical Design of Experiments*. 2.2; 3 cr. Prerequisite: 234.

238 *Probability Theory*. 3.0; 3 cr. Prerequisite: 233.

GRADUATE PROGRAM

For Mathematics majors, the following courses are required of all students: 227,

303, 314, 341. For Statistics majors, the following courses are required of all students: 227, 303, 331, 332, 333.

In addition to regular university scholarships, a limited number of departmental teaching and research assistantships is available to graduate students. A half-time teaching assistant is paid a stipend of L.L.360 per month plus free tuition. For more information write to the Chairman of the Department.

MATHEMATICS

301 and **302** *Graduate Tutorial Courses*. 1-3 cr. Prerequisite: consent of instructor.

303 *Functions of a Real Variable*. 3.0; 3 cr; annually. Prerequisites: 214, 224 and 271, or consent of instructor.

304 *Functions of a Complex Variable*. 3.0; 3 cr. Prerequisites: 224, 227, or consent of instructor.

305 and **306** *Advanced Topics in Mathematics*. 3.0; 3 cr. The topics for each year are selected according to the needs of students.

314 *Algebraic Topology*. 3.0; 3 cr; annually. Prerequisite: 214.

341 *Rings and Modules*. 3.0; 3 cr; annually. Prerequisite: 241.

399 *M.A. or M.S. Thesis*.

STATISTICS

331 *Advanced Probability Theory*. 3.0; 3 cr. Prerequisite: 227 and 238.

332 *Advanced Mathematical Statistics*. 3.0; 3 cr. Prerequisites: 235 and 238.

333 *Multivariate Analysis*. 3.0; 3 cr. Prerequisites: 237 and 238.

335 and **336** *Advanced Topics in Statistics*. 3.0; 3 cr. The topics for each year are selected according to the needs of students.

399 *M.A. or M.S. Thesis*.

GRADUATE CENTER FOR MIDDLE EASTERN STUDIES

Director: Ghul, M.

Participating Departments: Arabic and Near Eastern Languages, Economics, Education, History and Archaeology, Philosophy, Psychology, Political Studies and Public Administration, Religious Studies, and Sociology and Anthropology.

The Graduate Center for Middle Eastern Studies offers an interdisciplinary and interdepartmental graduate program providing opportunities for study and research leading to the degree of Master of Arts in the field of Middle Eastern Studies. The program draws on the resources of the various Departments in the Faculty of Arts and Sciences which together offer approximately one hundred semester courses pertaining to Middle Eastern Studies.

All students enrolled in the program are expected to take the core courses or their equivalent, and as many undergraduate or graduate courses as are deemed necessary by the Director to satisfy the requirements of the candidate's particular concentration.

Requirements for admission and details regarding the number of credit hours needed for fulfilling the requirements of the M.A. degree are governed by the regulations of the chapter at the end of this catalogue entitled Graduate Study. The core courses include a Middle Eastern language (Arabic, Turkish, Persian or any other language necessary for the particular needs of the student) and a course in each of the following areas: Islamic history and civilization, Ottoman history and institutions, nineteenth century modernization movements, and contemporary Middle Eastern society. A thesis showing competence in methodology and in the candidate's area of concentration is required. The written comprehensive examination covering the candidate's major field of study may be taken upon completing all but six of the total credits required for graduation.

DEPARTMENT OF PHILOSOPHY

Chairman: Makinson, D.

Professors: Fakhry, M.; Malik, C.; Scott, R.

The Department of Philosophy offers programs leading to both the B.A. and the M.A. degrees.

UNDERGRADUATE PROGRAM

Students wishing to major in Philosophy must secure the approval of the Department. A major in Philosophy will take a minimum of 36 credit hours in Philosophy courses numbered 210 and above, including 211, 215 and either 230 or 231. However, up to 6 credit hours from the following courses may, with the consent of the advisor to undergraduate students, also be counted towards the 36 required credit hours: Arabic 241 and 242, English 226, European Literature 214, History 286, Mathematics 205 and 271, Political Studies and Public Administration 215, 216, 217, 291.

Philosophy majors must obtain a cumulative average of at least 70 in Cultural Studies 201, 202, 203, 204.

Each student majoring in Philosophy is encouraged to choose a related field of interest from which to take as many as possible of his electives.

- 201** *Introduction to Philosophy*. 3.0; 3 cr; every semester. An introduction to some of the main problems, issues and ideas in philosophy.
- 211** *Introduction to Logic*. 3.0; 3 cr; annually. An introduction to the basic concepts and principles of reasoning and inference.
- 213** *History of Ancient and Medieval Philosophy*. 3.0; 3 cr; alternate years. A survey of major philosophical ideas and traditions in the ancient and medieval periods, with special emphasis on Plato, Aristotle, Augustine, Avicenna, Averroes and Aquinas.
- 214** *History of Modern Philosophy*. 3.0; 3 cr; alternate years. A survey of major philosophical ideas and traditions from Descartes to the present day.
- 215** *Ethics*. 3.0; 3 cr; alternate years. An examination of the main varieties of ethical theory.
- 217** *Aesthetics*. 3.0; 3 cr; alternate years. Some approaches to aesthetics and the philosophy of art.
- 220** *Symbolic Logic*. 3.0; 3 cr; annually. A detailed treatment of the methods and theories of truth-functional and quantificational logic. Prerequisite: Philosophy 211, or Mathematics 205.
- 222** *Philosophy of Science*. 3.0; 3 cr; alternate years. Some philosophical aspects of scientific inquiry. Prerequisite: 211, or consent of the instructor.
- 230** *Philosophy of Plato*. 3.0; 3 cr; alternate years. Selected Dialogues of Plato, with attention to their relations to Plato's time and to philosophical problems today.
- 231** *Philosophy of Aristotle*. 3.0; 3 cr; alternate years. Aristotle's theory of man and nature.
- 232** *Islamic Philosophy*. 3.0; 3 cr; alternate years. Offered either in Arabic or in English. Prerequisite: 231, or consent of instructor.
- 233** *The Medieval Synthesis*. 3.0; 3 cr; alternate years. Major Scholastic philosophers and problems, with some reference to the impact of Arabic philosophy on Western thought in the thirteenth century. Prerequisite: 231, or consent of instructor.
- 240** *Classical Rationalist Philosophers*. 3.0; 3 cr; alternate years. A study of the thought of one or more of Descartes, Spinoza and Leibniz.
- 242** *Classical Empiricist Philosophers*. 3.0; 3 cr; alternate years. A study of the thought of one or more of Locke, Berkeley and Hume.
- 245** *Contemporary Philosophical Movements*. 3.0; 3 cr; alternate years. Main ideas of some recent trends in philosophical thought. Prerequisite: 211, or consent of instructor.
- 291** and **292** *Special Topics Seminars*. 3.0; 3 cr; given from time to time as need and opportunity arise. Prerequisite: consent of instructor.
- 293** and **294** *Special Authors Seminars*. 3.0; 3 cr; given from time to time as need and opportunity arise. Prerequisite: consent of instructor.

GRADUATE PROGRAM

General requirements for graduate study are found in the chapter at the end of this catalogue entitled Graduate Study. The course requirements for an M.A. in Philosophy consist of 21 credit hours in Philosophy courses, of which at least 15

credit hours must be in courses numbered 300 and above, together with any additional prerequisite courses determined by the Department to make up for deficiencies in undergraduate preparation.

With the consent of the advisor to graduate students, up to 9 credit hours from courses offered by other Departments may be counted towards the 21 credit hours required, if these courses are relevant to the student's intended field of specialization.

302 *Selected Problems in the Theory of Value.* 3.0; 3 cr; alternate years. Prerequisite: 215, or consent of instructor.

303 *Selected Problems in Logic.* 3.0; 3 cr; alternate years. Prerequisite: 220, or consent of instructor.

305 *Topics in Classical Islamic Philosophy.* 3.0; 3 cr; alternate years. Prerequisite: 232, or consent of instructor.

306 *Recent Arab and Islamic Thought.* 3.0; 3 cr; alternate years. Prerequisite: 232, or consent of instructor.

311 *Kant.* 3.0; 3 cr; alternate years. Prerequisites: 240 and 242, or consent of instructor.

312 *Hegel and the Hegelian Traditions.* 3.0; 3 cr; alternate years. Prerequisite: 240 and 242, or consent of instructor.

315 *Contemporary Philosophy.* 3.0; 3 cr; alternate years. A discussion of some contemporary fields, authors, or movements in philosophy. Prerequisite: 245, or consent of instructor.

321 and **322** *Special Topics Seminars.* 3.0; 3 cr; given from time to time as need and opportunity arise. Prerequisite: consent of instructor.

323 and **324** *Special Authors Seminars.* 3.0; 3 cr; given from time to time as need and opportunity arise. Prerequisite: consent of instructor.

325 and **326** *Graduate Tutorial.* 3.0; 3 cr; given from time to time as need and opportunity arise. Prerequisite: consent of instructor.

399 *M.A. Thesis.*

DEPARTMENT OF PHYSICS

Chairman: McClain, J.

Professors: Bitar, K.; Bruin, F. (Director of Observatory); Heineken, F.W.; Manasah, J.; Mavromatis, H.A.; Mourad, P.; Schilcher, K.; Singh, B.; Tang, I.M.; Watson, G.; Zahlan, A.B.

Instructor: Christidis, T.

The Department of Physics offers courses at the *undergraduate* level leading to a B.S. degree in Physics or in an Interdepartmental Major combining courses in Physics and Mathematics or Physics and Chemistry. The Department also offers a number of courses for students majoring in other Departments.

Physics 101, 102, 211 and 212 are introductory courses for students of Physics, Chemistry or Engineering. Physics 103, 204 and 205 are designed for students of Medicine, Nursing, Pharmacy or Biology.

Students who wish to follow a Physics Major or an Interdepartmental Major must secure the approval of the advisor of Physics undergraduate students. They must

obtain an average of 70 in the Physics courses normally taken in the Sophomore year; namely, 211, 212, 213, 214 and 215.

The programs for the *Physics Major*, the *Chemistry-Physics Interdepartmental Major* and the *Mathematics-Physics Interdepartmental Major* include the following Physics courses: 101, 102, 211, 212, 213, 214, 215, 217 and 219. In addition, students taking a *Physics Major* must take Physics 218, 220, 221, 229 and four courses chosen from Physics 216, 222, 223, 224, 225, 226, 227, 228, 230, 231 and 232 as well as Mathematics 101, 102, 201, 202, 209, 221 and two courses chosen from Mathematics 211, 220, 222, 227 and 251.

Students taking a *Chemistry-Physics Interdepartmental Major* must take six additional credits in Physics courses numbered 210 and above as well as Chemistry 101, 201, 202, 209, 211, 212, 218 and 219 and Mathematics 101, 102, 201, 202 and 221.

Students taking a *Mathematics-Physics Interdepartmental Major* must take six additional credits in Physics courses numbered 210 and above as well as Mathematics 101, 102, 201, 202, 205, 213, 241, 261 and six more credits in Mathematics courses numbered 200 or above.

The Department provides facilities for *graduate* work leading to the M.S. and Ph.D. degrees. A grade of "Excellent" is required on the General Examination for permission to work for a Ph.D. degree. The research activities of the Department include theoretical elementary particle physics, nuclear physics, solid-state physics, and quantum optics and experimental low-temperature physics, magnetic resonance, and molecular spectroscopy.

101* *Introductory Physics I.* 4.3; 5 cr; annually.

102* *Introductory Physics II.* 4.3; 5 cr; annually. Prerequisite: 101.

103* *General Physics I.* 3.3; 4 cr; annually.

204* *General Physics II.* 3.3; 4 cr; annually. Prerequisites: 103; Mathematics 102 at least concurrently.

205 *General Physics III.* 3.3; 4 cr; annually. Prerequisite: 204.

210 *Classical Astronomy.* 2.2; 3 cr; annually. Prerequisite: 102, or Mathematics 102.

211 *Introductory Physics III.* 3.0; 3 cr; annually. Prerequisites: 102 and Mathematics 102.

212 *Introductory Physics IV.* 3.0; 3 cr; annually. Prerequisites: 102 and Mathematics 102.

213 *Electricity and Magnetism Laboratory.* 0.3; 1 cr; annually. Prerequisite: 211 at least concurrently.

214 *Modern Physics Laboratory.* 0.3; 1 cr; annually. Prerequisite: 212 at least concurrently.

* Students holding a Lebanese Baccalaureate Part II (Mathematics) or the equivalent are exempt from 101 and 102. Alternatively they may be exempted from 101 and 102 by scoring sufficiently highly in the Physics Sophomore entrance examination. Students holding a Lebanese Baccalaureate Part II (Experimental Science or Mathematics) or the equivalent are exempt from 103. Alternatively they may be exempted from 103 by scoring sufficiently highly in the Physics 103 exemption examination. Not more than ten credits may be received for 101, 102, 103 and 204.

- 215** *Thermal Physics*. 3.0; 3 cr; annually. Prerequisites: 102 and Mathematics 102.
- 216** *Electronics*. 3.3; 4 cr; annually. Prerequisites: 211 and 213.
- 217** *Mechanics*. 5.0; 4 cr; annually. Prerequisites: 102 and Mathematics 202.
- 218** *Quantum Mechanics*. 3.0; 3 cr; annually. Prerequisites: 212 and 217.
- 219** *Electromagnetic Theory I*. 3.0; 3 cr; annually. Prerequisites: 211 and Mathematics 202.
- 220** *Electromagnetic Theory II*. 3.0; 3 cr; annually. Prerequisite: 219.
- 221** *Advanced Laboratory I*. 1.6; 4 cr; annually. Prerequisites: 213 and 214.
- 222** *Advanced Laboratory II*. 1.6; 4 cr. Prerequisite: 221.
- 223** *Atomic and Molecular Physics*. 3.0; 3 cr. Prerequisite: 218.
- 224** *Mathematical Methods of Physics*. 3.0; 3 cr. Prerequisite: Mathematics 221 at least concurrently.
- 225** *Nuclear Physics*. 3.0; 3 cr. Prerequisite: 218.
- 226** *Solid State Physics*. 3.0; 3 cr. Prerequisite: 218.
- 227** *Relativity*. 3.0; 3 cr. Prerequisites: 217 and 220 at least concurrently.
- 228** *Optics*. 3.0; 3 cr. Prerequisite: 211.
- 229** *Current Topics in Physics*. 1.0; 1 cr. Prerequisite: senior standing.
- 230** *Astrophysics*. 2.2; 3 cr; annually. Prerequisite: 212.
- 231** and **232** *Selected Topics*. 3.0; 3 cr. May be repeated for credit.
- 291** and **292** *Senior Tutorial Course*. 1-3 cr. May be repeated for credit.
- 301** *Mathematical Methods of Physics*. 3.0; 3 cr.
- 303** *Thermodynamics and Statistical Mechanics*. 3.0; 3 cr; annually.
- 304** *Solid State Physics*. 3.0; 3 cr. Prerequisite: 313.
- 307** *Classical Mechanics*. 3.0; 3 cr; annually.
- 308** *Electrodynamics*. 3.0; 3 cr; annually.
- 309** *Special Theory of Relativity*. 3.0; 3 cr. Prerequisites: 307 and 308.
- 310** *Radio and Microwave Spectroscopy*. 3.0; 3 cr.
- 313** *Quantum Mechanics I*. 3.0; 3 cr; annually.
- 314** *Quantum Mechanics II*. 3.0; 3 cr. Prerequisite: 313.
- 316** *Atomic and Molecular Structure*. 3.0; 3 cr. Prerequisites: 303 and 313.
- 322** *Nuclear Physics*. 3.0; 3 cr. Prerequisite: 323.
- 325** *Elementary Particles*. 3.0; 3 cr. Prerequisite: 314.
- 331** and **332** *Selected Topics*. 3.0; 3 cr. May be repeated for credit.
- 391** and **392** *Graduate Tutorial*. 1-3 cr. May be repeated for credit. Required of all students working on Ph.D. thesis.
- 399** *M.S. Thesis*.
- 499** *Ph.D. Thesis*.

DEPARTMENT OF POLITICAL STUDIES AND PUBLIC ADMINISTRATION

Chairman: Salem, E.

Professors: Batatu, J.; Burrowes, R.; Crow, R.; Gunderson, G.; Hanania, F.; Ibish, Y.; Ibrahim, I.; Iskandar, A.; Khalidi, W.; Kisirwani, M.; Letterie, J.; Nasr, N.

Senior Lecturer: Bashir, I.

The Department of Political Studies and Public Administration offers courses leading to both the B.A. and the M.A. degrees in Political Studies (P.S.) or Public Administration (P.A.). Students wishing to major in either of these two fields must secure and maintain the approval of the Department and satisfy the conditions which are detailed below.

For admission to the *Political Studies* Undergraduate program, a student must obtain a grade of 75 or higher in 201, and an overall average of 70 in 201, Cultural Studies 201, 202 and Economics 203 or 211-212.

Students majoring in Political Studies are required to complete 42 credits in the Department which must include 201, 215, 216, 217, 225, 233, 250, 251, 252, 293; one senior seminar from 291, 294, 295, 296; one course from 203, 257, 258, 297; and two additional courses.

Political Studies majors are also required to take the following courses outside the Department, and are urged to choose electives from among the recommended courses listed below. Required courses: Economics 203 or 211-212; one of Psychology 201, 212, 220; and one of Sociology 201, 221, 223, 224, Anthropology 272. Recommended courses: Economics 222, 226, 232; History 238, 240, 245, 255, 256, 257, 259.

For admission to the *Public Administration* Undergraduate program, a student must obtain an average of 75 or higher in 201 and 202, and an overall average of 70 in 201, 202, Cultural Studies 201, 202, and Economics 203 or 211-212.

Students majoring in Public Administration are required to complete 42 credits in the Department which must include 201, 202, 203, 217, 257, 258, 273, 275, 277, 297, 298; one course from 250, 251, 252; one course from 253, 259, 294, 296; and one additional course.

Public Administration majors are also required to take the following courses outside the Department, and are urged to choose electives from among the recommended courses listed below. Required courses: one of Business Administration 210, 231, 238, 254, 257; Economics 203 or 211-212; and one course in statistics from the following: Economics 213, Education 227 or Mathematics 207; one of Psychology 201, 212, 220; one of Sociology 201, 221, 223, 224, 246, Anthropology 272. Recommended courses: Economics 222, 226, 232; History 238, 240, 245, 255, 256, 257, 259.

201 and/or consent of instructor is required for all Political Studies undergraduate courses except Senior Seminars. 201, 203 and/or consent of instructor are required for all Public Administration undergraduate courses except Senior seminars. Senior standing or consent of instructor is a prerequisite for Senior Seminars in Political Studies and Public Administration.

POLITICAL STUDIES

The Political Studies program consists of a series of elementary and advanced courses designed to give the student a basic training in political theory, comparative governmental and international relations, and introduce him to the methods of political science. In addition, special attention is given to the study of political relations and institutions in the Arab Middle East.

- 201** *Introduction to Political Studies and Public Administration.* 3.0; 3 cr.
- 202** *Introduction to Political Institutions and Processes.* 3.0; 3 cr.
- 204** *Introduction to International Relations.* 3.0; 3 cr.
- 211** *History of Islamic Political Thought I.* 3.0; 3 cr.
- 212** *History of Islamic Political Thought II.* 3.0; 3 cr.
- 215** *History of Western Political Thought I.* 3.0; 3 cr.
- 216** *History of Western Political Thought II.* 3.0; 3 cr.
- 217** *History of Western Political Thought III.* 3.0; 3 cr.
- 223** *Jurisprudence.* 3.0; 3 cr.
- 225** *Public International Law.* 3.0; 3 cr.
- 233** *International Organization.* 3.0; 3 cr.
- 234** *Communism and the Arab World.* 3.0; 3 cr.
- 236** *Arab-Western Relations.* 3.0; 3 cr.
- 250** *Modern Governments: United Kingdom.* 3.0; 3 cr.
- 251** *Modern Governments: United States of America.* 3.0; 3 cr.
- 252** *Modern Governments: U.S.S.R.* 3.0; 3 cr.
- 253** *Modern Governments of the Middle East.* 3.0; 3 cr.
- 255** *Modern Islamic Political Institutions.* 3.0; 3 cr.
- 291** *Senior Seminar in Political Philosophy.* 3.0; 3 cr.
- 293** *Senior Seminar of Foreign Policy of the Great Powers.* 3.0; 3 cr.
- 294** *Senior Seminar in Western Political Processes.* 3.0; 3 cr.
- 295** *Foreign Policies of Non-Middle Eastern Developing Countries.* 3.0; 3 cr.
- 296** *Senior Seminar in Arab Political Processes.* 3.0; 3 cr.
- 299** *Senior Seminar in Research Methodology.* 3.0; 3 cr.

PUBLIC ADMINISTRATION

The Public Administration program consists of a series of courses designed to introduce the student to the theory of public organization and techniques of administration in the public sector. Hence, the program aims at preparing students for careers in the public sector, and developing in them the appreciation of the role of civil service in development.

- 201** *Introduction to Political Studies and Public Administration.* 3.0; 3 cr.
- 202** *Introduction to Political Institutions and Processes.* 3.0; 3 cr.

- 203** *Public Administration*. 3.0; 3 cr.
217 *History of Western Political Thought III*. 3.0; 3 cr.
257 *Comparative Public Administration (Western)*. 3.0; 3 cr.
258 *Comparative Public Administration (Middle Eastern)*. 3.0; 3 cr.
259 *Public Administration in Lebanon*. 3.0; 3 cr.
273 *Public Personnel Administration*. 3.0; 3 cr.
275 *Organization and Management*. 3.0; 3 cr.
277 *Public Budgeting*. 3.0; 3 cr.
297 *Senior Seminar in Administrative Theory*. 3.0; 3 cr.
298 *Senior Seminar in Public Bureaucracy*. 3.0; 3 cr.
299 *Senior Seminar in Research Methodology*. 3.0; 3 cr.

M.A. PROGRAMS

Graduate standing or consent of instructor is a prerequisite for all graduate courses in Political Studies and Public Administration.

Graduate students in *Political Studies* are required to take the following courses: 299, 201, 302 and 303, plus three additional courses in any one selected sub-discipline of political studies (governmental institutions and processes, international affairs, political philosophy) at any level.

Graduate students in *Public Administration* are required to take the following courses: 299, 357 and 397. Beyond this, students may choose to follow a general program ranging over the several fields of Public Administration or to choose one of four concentrations (fiscal management, personnel administration, organization and management, administrative theory) in which they will take at least three additional courses.

The graduate program in Political Studies leads to the M.A. degree and is meant to provide an advanced survey in depth of the methodological and theoretical frameworks of analysis and approaches to the study of selected areas of specialization in political studies. At this level of his training the student will be extensively exposed to the literature in political studies in general and his area of specialization in particular.

- 299** *Senior Seminar in Research Methodology*. 3.0; 3 cr.
301 *Theories of Political Philosophy*. 3.0; 3 cr.
302 *Theories of International Relations*. 3.0; 3 cr.
303 *Theories of the Political Systems*. 3.0; 3 cr.
316 *International Politics of the Arab World*. 3.0; 3 cr.
317 *Modern European Political Philosophy*. 3.0; 3 cr.
318 *Modern Islamic and Arab Political Philosophy*. 3.0; 3 cr.
319 *Graduate Seminar in Political Philosophy*. 3.0; 3 cr.
326 *International Law and Diplomacy*. 3.0; 3 cr.
331 *Problems of the Cold War*. 3.0; 3 cr.

- 333** *Graduate Seminar in International and Regional Organization.* 3.0; 3 cr.
- 350** *Graduate Seminar in Governmental Institutions and Processes.* 3.0; 3 cr.
- 353** *Graduate Seminar in the Modern Governments of the Middle East.* 3.0; 3 cr.
- 354** *Modern Governments of Non-Middle Eastern Developing Countries.* 3.0; 3 cr.
- 371** *Institutional Foundations of Middle Eastern Society.* 3.0; 3 cr.
- 372** *Graduate Tutorial in Political Studies and Public Administration.* 3.0; 3 cr.
- 373** *Politics and Administration.* 3.0; 3 cr.
- 378** *Political and Administrative Development.* 3.0; 3 cr.
- 379** *Modernization and Political Change in the Middle East in the 19th and 20th Centuries.* 3.0; 3 cr.
- 382** *Political Themes in Contemporary Arab Writing.* 3.0; 3 cr.
- 392** *Graduate Seminar in Legal Issues.* 3.0; 3 cr.
- 394** *Graduate Seminar in International Relations.* 3.0; 3 cr.
- 399** *M.A. Thesis.*

The graduate program in Public Administration leads to the M.A. degree and is designed to provide a general focus ranging over the sub-fields of public administration and to prepare graduate students for professional careers in the public service. It allows for specialization in the areas of fiscal management, personnel administration, organization and management, and administrative theory.

- 299** *Senior Seminar in Research Methodology.* 3.0; 3 cr.
- 357** *Comparative Public Administration.* 3.0; 3 cr.
- 358** *Local Government.* 3.0; 3 cr.
- 370** *Problems in Public Personnel Administration.* 3.0; 3 cr.
- 371** *Bureaucracy in Islam.* 3.0; 3 cr.
- 372** *Graduate Tutorial in Political Studies and Public Administration.* 3.0; 3 cr.
- 373** *Politics and Administration.* 3.0; 3 cr; alternate years.
- 374** *Graduate Seminar in Public Administration.* 3.0; 3 cr.
- 375** *Administrative Analysis.* 3.0; 3 cr.
- 377** *Problems in Financial Administration.* 3.0; 3 cr.
- 378** *Political and Administrative Development.* 3.0; 3 cr.
- 380** *Governmental Planning, Budgeting and Control.* 3.0; 3 cr.
- 381** *Case Problems in Public Administration.* 3.0; 3 cr; alternate years.
- 397** *Graduate Seminar in Administrative Theory.* 3.0; 3 cr.
- 399** *M.A. Thesis.*

DEPARTMENT OF PSYCHOLOGY

Chairman: Melikian, L.

Professors: Chimienti, J.; Diab, L.; Gorry, T.; Prothro, E.; Saegert, J.

Lecturer: Yaktine, U.

Instructor: Alamuddin, N.

UNDERGRADUATE PROGRAM

Students desiring to major in the Department of Psychology must secure the approval of the Department and must have received a grade of 70 or more in 201 and passed 210. Requirements for a major include 201, 212, 217, 218, 219, 220, 221, 222 and 292. In addition to these required courses, the student must elect at least 6 credits from the following: 214, 215 (not open to students who have taken 219), 216, 225, 227. 203 does not count among the 33 credits needed for majors.

201 *General Psychology.* 3.0; 3 cr; annually. Principles and findings of modern psychology with attention to their experimental foundations.

203 *Psychology of Adjustment.* 3.0; 3 cr; alternate years. Human motivation, conflict and adjustment. Prerequisite: 201.

210 *Statistics for Psychological Research.* 3.0; 2 cr; annually. Introduction to descriptive and inferential statistics, with emphasis on application of techniques.

212 *Social Psychology.* 3.0; 3 cr; annually. The interaction between individuals and the group. Data from laboratory and field experiments are used. Prerequisite: 201.

214 *Personality and Culture.* 3.0; 3 cr; alternate years. Modal personality and the relation of such personalities to socio-cultural systems, with special attention to the Middle East. Prerequisite: 212 or 220.

215 *Introductory Experimental Psychology.* 2.2; 3 cr; annually. Introduction to experimental methods, with laboratory experiments in each area. Prerequisite: 201. Not open to students who have taken 219.

216 *Abnormal Psychology.* 3.0; 3 cr; annually. Examination of normal and abnormal reaction patterns, with detailed study of such behavior disorders as psychoneuroses, psychoses and mental deficiency. Prerequisite: 220.

217 *Psychology of Perception.* 3.0; 3 cr; annually. Psychophysics and the experimental study of perceptual processes. Prerequisite: 201.

218 *Psychology of Learning.* 3.0; 3 cr; annually. The learning process, including verbal learning and problem-solving. Prerequisite: 201.

219 *Experimental Method.* 2.3; 3 cr; annually. Design and conduct of psychological experiments, and analysis and interpretation of their results. Prerequisites: 210, 217 and 218.

220 *Psychology of Personality.* 3.0; 3 cr; annually. Examination of methods of measuring personality, theories of personality, biological and sociological factors which influence personality. Prerequisite: 201.

221 *Physiological Psychology*. 3.0; 3 cr; annually. The substances of behavior, including the nervous and endocrine systems. Prerequisite: 218.

222 *History and Systems of Psychology*. 3.0; 3 cr; annually. Historical development of scientific conceptions of human behavior; examination of contemporary psychological systems. Prerequisites: 217 and 218.

225 *Psychology of Development*. 3.0; 3 cr; annually. Psychological development from before birth to adulthood. Prerequisite: 201.

227 *Psychological Measurement and Scaling*. 3.0; 3 cr; alternate years. Principles and methods of measurement and scaling in psychology. Prerequisites: 201 and 210.

291 *Senior Tutorial*. 3.0; 3 cr; annually. Prerequisite: 219.

292 *Undergraduate Seminar in General Psychology*. 3.0; 3 cr; annually. Review of significant research in major areas in psychology. Prerequisite: consent of instructor.

GRADUATE PROGRAM

The Department offers an M.A. program in Psychology. The Department requires all graduate students to take 301 and 302 and a minimum of 12 of the remaining course credits from graduate courses. A minimum of 24 credits plus 6 credits for a thesis is required for graduation. The Department may require more credits in case of deficiencies in the student's undergraduate record.

301 *Research Design*. 3.0; 3 cr; annually. An advanced course in all aspects of the design of psychological research, including methods of statistical analysis.

302 *Contemporary Systems of Psychology*. 3.0; 3 cr; annually. A critical appraisal of contemporary systems of psychology. Theoretical and empirical work in learning will be viewed as representing a central contribution.

304 *Advanced Social Psychology*. 3.0; 3 cr; alternate years. A critical survey of social-psychological theory and research, with special emphasis on attitude measurement, attitude change, intragroup and intergroup relations, social perception, and group conformity processes. Prerequisite: 212.

305 *Clinical Assessment*. 3.0; 3 cr; annually. History and method of assessment, and specific diagnostic techniques. Prerequisite: 216.

306 *Counseling and Psychotherapy*. 3.0; 3 cr; alternate years. Theories and practices of psychological counseling. Prerequisite: 305.

307 *Seminar in Social Psychology*. 3.0; 3 cr; annually. Prerequisite: consent of instructor.

308 *Seminar in Clinical Psychology*. 3.0; 3 cr; alternate years. Prerequisite: consent of instructor.

309 and **310** *Seminar in General Psychology*. 2.0; 3 cr; annually. Prerequisite: consent of instructor. Topic varies from semester to semester.

399 *M.A. Thesis*.

Courses offered by other Departments may, with the approval of the chairman of the Department, be applied toward a concentration in Psychology.

DEPARTMENT OF RELIGIOUS STUDIES

Chairman: Jafri, H.

Professor: Kouymjian, D.

Lecturer: Montégu, J.

UNDERGRADUATE PROGRAM

The Department of Religious Studies offers four areas of concentration leading to the B.A. degree: (1) Ancient and Classical religions, (b) Christianity, (c) Islam and (d) South and Far Eastern religions (especially Hinduism and Buddhism). Requirements for a major in Religious Studies are: (1) a minimum of 30 hours in the Department, including 211 or 212, 215, 216, 222 and 241; (2) a reading knowledge of one of the languages of the texts to be studied. The area of concentration and specific courses beyond those required will be selected in consultation with an advisor in the Department. The Department may require 12 hours of work in allied Departments (Arabic and Near Eastern Languages, History and Archaeology, Philosophy, Political Studies and Public Administration, and Sociology and Anthropology) or specific courses from any Department bearing on the student's concentration.

Ancient and Classical Religions

211 *Ancient Near Eastern Religions I.* 3.0; 3 cr; alternate years. The religions of Ancient Mesopotamia and Egypt.

212 *Ancient Near Eastern Religions II.* 3.0; 3 cr; alternate years. The religions of the Canaanites and Hebrews.

213 *Introduction to the Religion of the Old Testament.* 3.0; 3 cr; alternate years. Religious thought in the Old Testament with special attention to its general Near Eastern environment.

214 *Old Testament Prophets.* 3.0; 3 cr; alternate years. Selected material from the books of the Prophets, studied in the context of the historical background and issues of their day.

215 *Graeco-Roman Religions.* 3.0; 3 cr; annually. A study of Ancient Greek and Roman religions and Hellenistic religions.

216 *Judaism.* 3.0; 3 cr; annually. The foundation of Judaism; the religion of the Diaspora; literature, sects and schools of thought in the age of the Tannaim.

Christianity

221 *Jesus of Nazareth.* 3.0; 3 cr; alternate years. Sources, records and interpretations of the rôle of Jesus as the founder of Christianity.

222 *History of Christianity I: from the origins to A.D. 325.* 3.0; 3 cr; alternate years. The beginnings of Christianity and development of the Christian Church to the Council of Nicaea.

223 *History of Christianity II: from A.D. 325 to 1453.* 3.0; 3 cr; alternate years. From the Council of Nicaea to the fall of Constantinople, with emphasis on the differences between the Latin and the Byzantine Churches.

224 *History of Christianity III: the 16th Century*. 3.0; 3 cr; alternate years. The Reformation and the Counter-Reformation.

225 *Studies in Christian Texts*. 3.0; 3 cr; alternate years. The examination of religious texts of a selected tradition—Greek, Syriac, Armenian, Coptic etc.

231 *History of the Eastern Orthodox Churches I*. 3.0; 3 cr; annually. Origins and development of the Armenian, Coptic, Maronite, Nestorian and Syrian Churches.

232 *History of the Eastern Orthodox Churches II*. 3.0; 3 cr; annually. The second semester will be devoted entirely to one of the following Churches: Armenian, Byzantine, Coptic and Ethiopic, Jacobite-Syrian, Nestorian-Assyrian; may be repeated for credit.

233 *The West and Eastern Churches, 11th-12th Centuries*. 3.0; alternate years. The effect of the West on the Eastern Orthodox and Byzantine Churches.

234 *Heresies and Sects in Eastern Christendom*. 3.0; 3 cr; alternate years. Emphasis will be on the Council of Chalcedon, the Nestorians, the Paulicians and the Iconoclastic movement.

237 *Religious Art and Iconography of Eastern Christendom*. 3.0; 3 cr; annually. The second semester will be devoted entirely to Armenian or Byzantine or Coptic and Syrian art and architecture; may be repeated for credit.

Islam

241 *The Rise and Development of Islam I*. 3.0; 3 cr; annually. General introduction, life and mission of the Prophet, the foundation of Islam, its beliefs and religious institutions.

242 *The Rise and Development of Islam II*. 3.0; 3 cr; annually. Territorial, dynastic and internal expansion and development of Islam from the Caliphate of the Rashidun to the Ottomans.

243 *Islamic Religious Thought*. 3.0; 3 cr; annually. Origin, growth and progress in intellectual and mystical construction of religious thought, dialectical theology and development of dogma in Islam: Mu'tazila, Asharism, Maturidism, Sufism, and the rôle played by al-Ghazzali.

244 *Introduction to the Study of the Qur'an*. 3.0; 3 cr; alternate years. Textual history, structure and style, survey of the origins and growth of the commentaries (Tafsir) and their methods, and different interpretations and approaches both in classical and modern times.

245 *History and Theory of Islamic Law*. 3.0; 3 cr; annually. Origin, development, rise and function of the legal schools: Maliki, Hanafi, Shafi'i, Hanbali and Shi'i.

251 *Sufi Doctrine and Organization*. 3.0; 3 cr; annually. Rise and early development, beginnings of institutional Sufism, its impact on post-classical Islam and the emergence of Orthodox Sufism, Sufi theosophy and popular Sufi orders.

252 *Firaq and Maqalat (Sects and Doctrines) in Islam*. 3.0; 3 cr; alternate years. Religious and spiritual tensions coupled with the politico-social dimensions which gave rise to the main divisions and denominational groupings popularly called sects in Islam. Prerequisite: 241, or consent of Instructor.

253 *Islam in the Modern Period*. 3.0; 3 cr; annually. Development of intellectual, religious, reformist and modernist movements since the 19th century; the West

and the Muslim countries, the revolt of Islam and the movements of Islam outside the Arab World.

254 *The Civilization of Islam*. 3.0; 3 cr; alternate years. The cultural achievement in the civilization of Islam, in different regions and epochs, from the 7th to the 12th centuries.

257 *Religious Art and Architecture of Islam*. 3.0; 3 cr; annually. History and development of selected aspects of Islamic art and architecture. Course content varies; may be repeated for credit.

South and Far Eastern Religions

261 *Living Religions of the East*. 3.0; 3 cr; alternate years. Introduction to the historic religions of South and Far East Asia, particularly India, China and Japan.

Seminars, Tutorials, etc.

291 *Contemporary Religious Issues*. 3.0; 3 cr; alternate years. Current crises, debates, issues and proposed solutions in today's living religions. May be repeated for credit.

295 *Seminar in the History of Religions*. 3.0; 3 cr; annually. Special problems in the general field of religious studies. May be repeated for credit.

296 *Tutorial in the History of Religion*. 3.0; 3 cr; offered on demand. May be repeated for credit.

GRADUATE PROGRAM

The Department of Religious Studies offers M.A. degrees in Ancient, Classical, Christian, Islamic, and South and Far Eastern religions. Each student accepted by the Department will have a program worked out in his specialization. Within the Department he will study his field mainly by means of graduate seminars and tutorials, the subject matter of which will vary from year to year. If necessary, depending on the student's background, the Department may also assign him certain courses in the series 211 through 257.

301 *Seminar in Materials and Methods in Religious Studies*. 3.0; 3 cr.

302 *Advanced Reading in Original Texts*. 3.0; 3 cr.

303 and **304** *Seminar in Religious Studies*. 3.0; 3 cr.

305 and **306** *Tutorial in Religious Studies*. 3.0; 3 cr.

399 *M.A. Thesis*.

DEPARTMENT OF SOCIOLOGY AND ANTHROPOLOGY

Chairman: Khuri, F.

Professors: Basson, Pr.; Khalaf, S.; Obermeyer, G.; Starr, P.

Lecturer: Dodd, P.

The Department of Sociology and Anthropology offers two options leading to the B.A. degree: a major in Anthropology and a major in Sociology. Admission requires approval of the Department and a grade of 70 or more in Sociology 201 or in Anthropology 210 and in English 201. The Department also offers programs leading to the M.A. in Anthropology and the M.A. in Sociology.

The requirements for the B.A. programs are as follows:

Major in Anthropology: Anthropology 210 and 270 or 271; and 24 additional credit hours distributed among topical and area courses in anthropology, of which 6 credit hours may be selected from courses offered in the Sociology section of the Department.

Major in Sociology: Sociology 201, 262, 264; an introductory course in statistics selected from the following: Economics 213, Education 227, Mathematics 207, Psychology 210; and 24 additional credit hours in sociology, of which 6 credit hours may be selected from courses offered in the Anthropology section of the Department.

The Department's *Manual for Graduate Students* contains information on its graduate programs additional to that contained elsewhere in this catalogue.

Candidates for the *M.A. in Anthropology* are required to take Anthropology 382.

Candidates for the *M.A. in Sociology* are required to take Sociology 306 and Sociology 307. By appropriate reading, courses, and tutorials the student is expected to develop a knowledge of two areas of concentration. The following list of areas of concentration is suggestive but not exhaustive: demography and urban sociology, social disorganization and social problems, stratification, political sociology, the family, social psychology, Middle Eastern society, modernization and societal development, industrial sociology, ethn'ic and religious groups. Normally, the thesis will be written on a topic in one of the two selected areas of concentration.

SOCIOLOGY

201 *Introduction to Sociology.* 3.0; 3 cr; each semester.

212 *Urbanization.* 3.0; 3 cr; alternate years. Prerequisite: 201, or consent of instructor.

213 *Demography.* 3.0; 3 cr; alternate years. Prerequisite: 201, or consent of instructor. An introductory Statistics course is recommended.

216 *Sociology of Health and Medical Care.* 3.0; 3 cr; alternate years. Prerequisite: 201.

221 *Public Opinion.* 3.0; 3 cr; alternate years. Prerequisite: 201, or Anthropology 210.

223 *Political Sociology.* 3.0; 3 cr; alternate years. Prerequisite: 201, or consent of instructor.

- 224** *Social Interaction*. 3.0; 3 cr; alternate years.
- 231** *The Family*. 3.0; 3 cr; alternate years. Prerequisite: 201, or Anthropology 210.
- 233** *Contemporary Arab Society*. 3.0; 3 cr; annually. Prerequisites: junior or senior standing, and consent of instructor.
- 240** *Social Stratification*. 3.0; 3 cr; alternate years. Prerequisite: 201, or Anthropology 210.
- 246** *Industrial Sociology*. 3.0; 3 cr; alternate years. Prerequisite: 6 credits in Sociology/Anthropology, or consent of instructor.
- 250** *Social Disorganization and Deviant Behavior*. 3.0; 3 cr; alternate years. Prerequisite: 6 credits in social sciences, or consent of instructor.
- 261** *Development of Social Thought*. 3.0; 3 cr; annually. Prerequisite: 6 credits in Sociology/Anthropology, or consent of instructor.
- 262** *Contemporary Sociological Theory*. 3.0; 3 cr; annually. Prerequisite: 12 credits in Sociology/Anthropology, or consent of instructor.
- 264** *Methods of Social Research*. 3.4; 5 cr; annually. Laboratory: engagement in actual research projects, application of techniques of data collection and analysis and interpretation of research findings. Prerequisite: 201.
- 299** *Senior Independent Study*. 3-6 cr. Prerequisite: senior standing, eligibility for graduation with distinction.
- 301** and **302** *Graduate Seminar*. 3-6 cr; annually.
- 303** and **304** *Graduate Tutorial*. 3 cr.
- 306** *Seminar in Social Research Methods*. 3.0; 3 cr; annually.
- 307** *Advanced Sociological Theory*. 3.0; 3 cr; annually.
- 308** *Modernization in the Arab World*. 3.0; 3 cr; alternate years.
- 309** *Social Institutions of Middle Eastern Societies*. 3.0; 3 cr; alternate years.
- 320** *Special Topics*. 3.0; 3 cr. Graduate courses or seminars will be offered on the following topics, whenever possible:
- (a) Deviance and disorganization;
 - (b) Family, youth and socialization;
 - (c) Human ecology and demography;
 - (d) Industrialization and labor;
 - (e) Political sociology;
 - (f) Sociology of education;
 - (g) Sociology of health and medical care;
 - (h) Sociology of literature;
 - (i) Structural aspects of development;
 - (j) Third world revolutionary movements;
 - (k) Urbanization.
- 399** *M.A. Thesis*.

ANTHROPOLOGY

- 210** *Introduction to Anthropology*. 3.0; 3 cr; each semester.
- 270** *World Ethnography*. 3.0; 3 cr; annually. Prerequisite: 210, or Sociology 201.

- 271** *Social Anthropology*. 3.0; 3 cr; alternate years. Prerequisite: 210 or 270, or consent of instructor.
- 272** *Cultural Change*. 3.0; 3 cr; alternate years. Prerequisite: 210 or 270, or consent of instructor.
- 273** *Ethnic Groups in Plural Societies*. 3.0; 3 cr. Prerequisite: 210 or 270, or consent of instructor.
- 274** *Peoples of the Middle East*. 3.0; 3 cr; annually. Prerequisite: 210 or Sociology 201, or consent of instructor.
- 275** *Primitive Religion and Magic*. 3.0; 3 cr; alternate years. Prerequisite: 210 or 270, or consent of instructor.
- 276** *Peasant Society*. 3.0; 3 cr. Prerequisite: 210 or 270, or consent of instructor.
- 280** *Circum-Mediterranean Cultures*. 3.0; 3 cr. Prerequisite: 210, or Sociology 201, or consent of instructor.
- 281** *Political Anthropology*. 3.0; 3 cr; alternate years. Prerequisites: 210 or 270, and an area course, or consent of instructor.
- 282** *Economic Anthropology*. 3.0; 3 cr; alternate years. Prerequisites: 210 or 270, and an area course, or consent of instructor.
- 293** *Peoples of Africa*. 3.0; 3 cr; alternate years. Prerequisite: 210 or Sociology 201, or consent of instructor.
- 299** *Senior Independent Study*. 3-6 cr. Prerequisite: senior standing, eligibility for graduation with distinction.
- 370** *Graduate Survey of Anthropology*. 3.0; 3 cr; annually as required.
- 371** and **372** *Seminars in Problems in Middle Eastern Ethnology*. 3.0; 3 cr; annually. Prerequisite: graduate standing, or consent of instructor.
- 373** and **374** *Graduate Tutorials*. 3.0; 3 cr; alternate years. Prerequisite: graduate standing, or consent of instructor.
- 375** and **376** *Seminars in General Ethnology*. 3.0; 3 cr; alternate years. Prerequisite: graduate or special student standing, or consent of instructor.
- 377** *Methods of Research in Anthropology*. 3.0; 3 cr; alternate years. Prerequisite: completion of one year of graduate work in Anthropology or of a combined program in Anthropology and Sociology.
- 382** *History of Anthropological Theory*. 3.0; 3 cr; alternate years. Prerequisite: graduate standing, or consent of instructor.
- 390** *Special Topics*. 3-6 cr.
- 399** *M.A. Thesis*.

INSTITUTES, CENTERS AND SPECIAL PROGRAMS

Center for English Language Research and Teaching

Director: Praninskas, J.

Professors: Abu Absi, S.; Bratton, N.; Brown, R.; Cook, D.; Yorkey, R.

Instructor: Aronson, D.

The Center has five main functions:

- (1) in cooperation with the Departments of English and Education it sponsors programs leading to the Teaching Diploma and to an M.A. degree in the Teaching of English as a Foreign Language;
- (2) it publishes a quarterly journal on English Language teaching, *TEFL*, which is distributed free of charge to approximately 3500 teachers in 32 countries;
- (3) it maintains a Materials Center comprising an up-to-date collection of textbooks, journals, reports and visual aids which are available for inspection by visiting teachers and administrators;
- (4) it offers consultation services and assistance in all aspects of English language teaching and teacher training throughout the Middle East;
- (5) it engages in research in language learning problems and produces materials for specialized English language programs.

Economic Research Institute

Director: Karaoglan, R.

The Economic Research Institute, which is affiliated to the Department of Economics, was established in 1953 to study problems of the rapidly developing economies of the various countries of the Middle East. The Department of Economics is responsible for teaching, and the Economic Research Institute for research, in the field of economics.

The specific aims of the Institute are:

- (1) to provide time and facilities for basic (academic) research;
- (2) to conduct contract research geared to the socio-economic development of the Arab world, at the request and with the support of governments and semi-public bodies;
- (3) to build up, systematize and publish a body of data on the region;
- (4) to provide training in research for outstanding graduate students;
- (5) to promote and publish economic writing by Institute members and outside economists.

Science and Mathematics Education Center

Director: Zarour, G.

Professors: Billeh, V.; Haddad, W.; Namek, Y.

Lecturer: Jurdak, M.

The Science and Mathematics Education Center, which is a part of the Department of Education, has the following four main functions:

- (1) the training of prospective science and mathematics teachers on both the B.A. and M.A. levels in conjunction with the science and mathematics departments;
- (2) the training of in-service teachers by means of summer institutes, conferences and workshops;
- (3) a consultation service to schools and governments regarding textbooks, curriculum planning, equipment, laboratories and methods of evaluation;
- (4) research and development in the fields of science and mathematics education.

University Orientation Program

Director: Abboud, S.

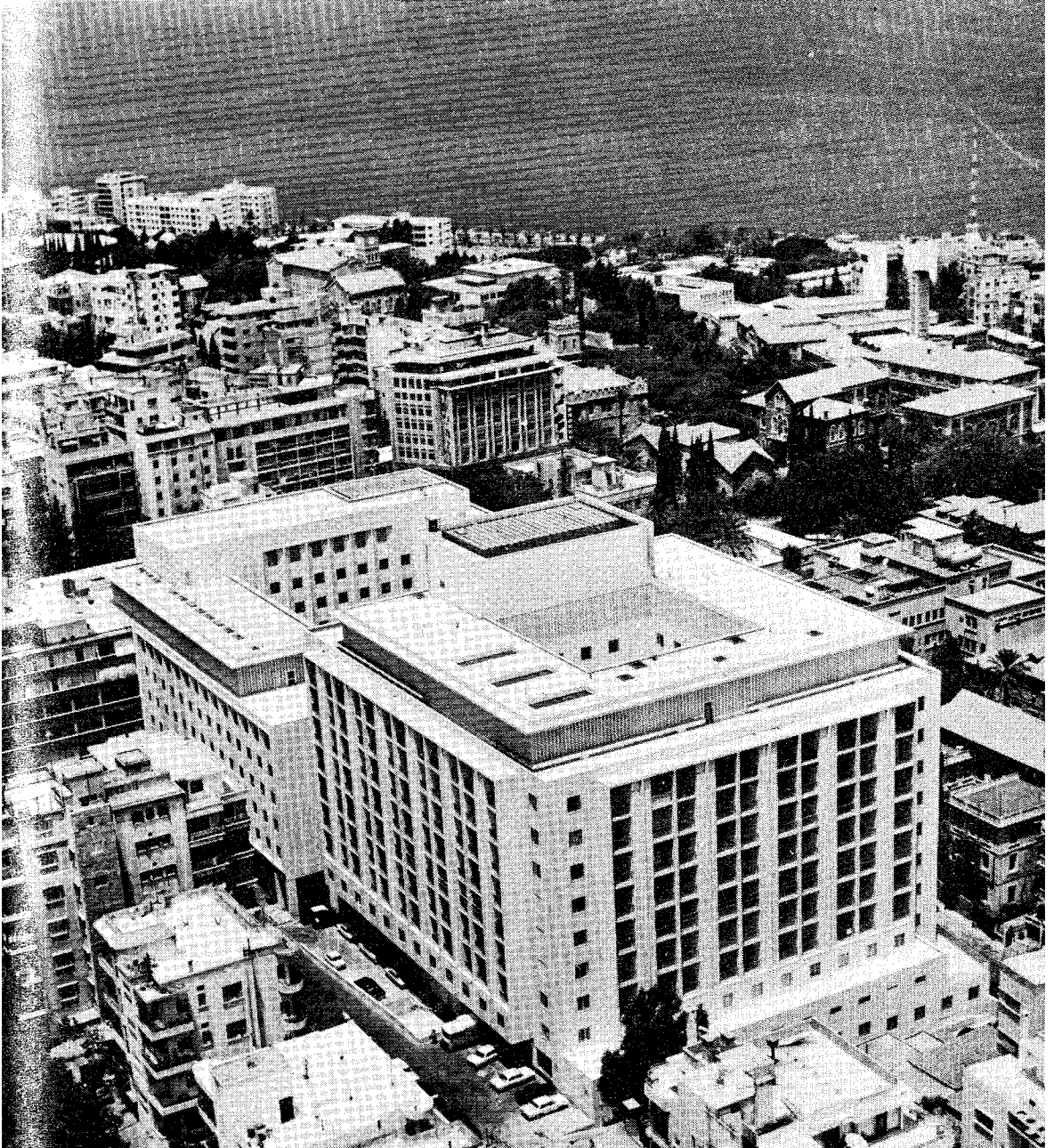
Lecturers: Clark, J.; Milecki, M.; Woosnam-Mills, M.; Yaqub, D.

Instructors: Andrews, J.; Bender, M.; Darwish, O.; Murphy, E.

The University Orientation program is a special service program instituted by the Faculty of Arts and Sciences to meet the needs of students who qualify for university entrance except for a deficiency in English language skills. It is primarily for scholarship students whose fees are paid through the Bursary Students' Office, and enrollment is limited. When the quota is not filled by scholarship students, private applicants are selected. A minimum score in the English entrance examination is required.

The program provides twenty hours per week of intensive classroom instruction in grammar, vocabulary, reading and writing plus language laboratory practice for the development of oral fluency and aural comprehension. Social and cultural activities are arranged to afford students an opportunity to practice English skills outside the classroom. Participants are recommended for admission to regular university classes at the end of their first, second or third semester of attendance depending upon their achievement.

FACULTIES OF MEDICAL SCIENCES



FACULTIES OF MEDICAL SCIENCES

Craig S. Lichtenwalner, M.D., M.P.H.; *Professor of Public Health Practice, Dean.*
Raif E. Nassif, M.D., M.P.H.; *Professor of Clinical Pathology, Associate Dean.*
Fuad S. Haddad, Ph.D., *Associate Professor of Education; Registrar.*

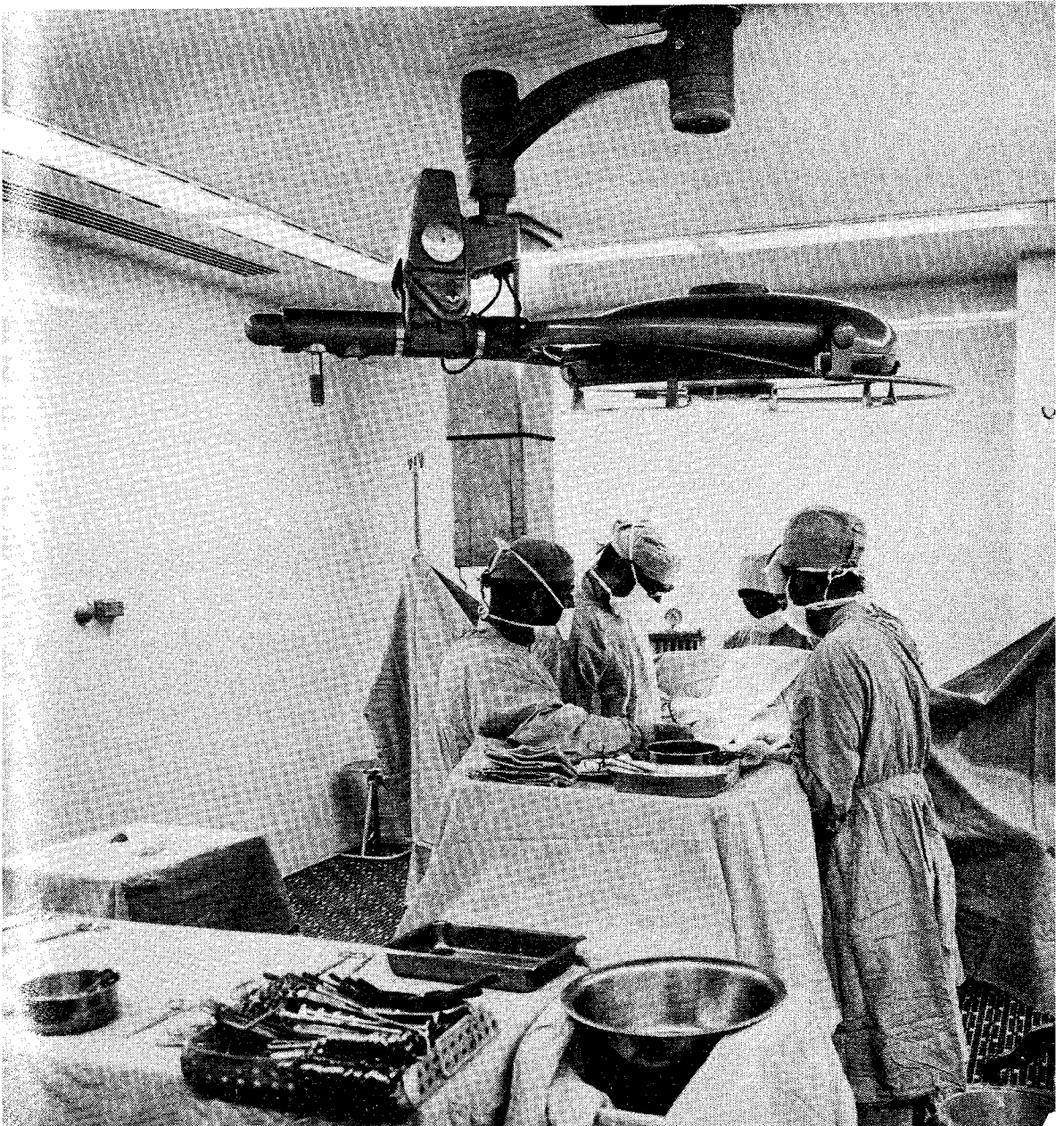
The Faculties of Medical Sciences constitute one of the four major academic divisions of the University and include four Schools, which are described in the following chapters:

- School of Medicine, established in 1867;
- School of Pharmacy, established in 1871;
- School of Nursing, established in 1905;
- School of Public Health, established in 1954.

In addition to the Schools, two other administrative units are included: the University Hospital, established in 1905 (see p. 14), and the University Health Service (see p. 32).

Each School or unit has a Director who is responsible to the Dean of the Faculties of Medical Sciences.

SCHOOL OF MEDICINE



SCHOOL OF MEDICINE

Faculty List 1972-1973

Craig S. Lichtenwalner, M.D., M.P.H.; *Professor of Public Health Practice, Dean of the Faculties of Medical Sciences.*

Raif E. Nassif, M.D., M.P.H.; *Professor of Clinical Pathology, Director of the School of Medicine, Associate Dean of the Faculties of Medical Sciences.*

Adel K. Afifi, M.D., M.S.; *Associate Professor of Human Morphology, Assistant Director of the School of Medicine.*

Khalil Abu Feisal, M.D.; *Associate Professor of Internal Medicine, Audiovisual Coordinator.*

Fuad S. Haddad, Ph.D.; *Associate Professor of Education, Registrar.*

PROFESSORS EMERITI

Ghantus, Musa, M.D., AUB; *Human Morphology.*

Kerr, Stanley, Ph.D., University of Pennsylvania; *Biochemistry (Distinguished).*

Sahyoun, Philip, M.D., AUB; *Pathology.*

Shanklin, William, Ph.D., Yale University; D.Sc., Bridgewater College; *Histology and Neuroanatomy.*

Yenikomshian, Hovsep, M.D., AUB; *Internal Medicine.*

PROFESSORS

* Bickers, William, M.D., Medical College of Virginia; *Obstetrics and Gynecology.*

Dagher, Ibrahim, M.D., AUB; *Surgery (Thoracic) (Clinical).*

* Diab, Alfred, M.D., AUB; *Ophthalmology and Otorhinolaryngology.*

* Fawaz, George, M.S., AUB; Ph.D., University of Graz; M.D., University of Heidelberg; *Pharmacology and Therapeutics.*

* Garabedian, Garabed, M.S., AUB; Ph.D., University of Minnesota; *Bacteriology and Virology.*

Haddad, Chafic, M.D., AUB; D.T.M., University of Liverpool; *Internal Medicine (Endocrinology) (Clinical).*

* Khachadurian, Avedis,** M.D., AUB; *Biochemistry.*

* Kirkwood, Samuel, M.D., Harvard Medical School; D.Sc. (Hon.), Macalester College; LL.D., Amherst College; *Obstetrics.*

* Kurban, Amal, M.D., AUB; *Internal Medicine (Dermatology).*

Manougian, Antranig, M.D., AUB; D.P.M., University of Edinburgh; *Psychiatry (Clinical).*

* Matta, Camille,** M.D., AUB; M.S., University of Iowa; *Ophthalmology.*

* McLaren, Donald, M.B., Ch.B., M.D., University of Edinburgh; D.T.M. & H., Ph.D., University of London; *Clinical Nutrition.*

* Nachman, Henry, M.D., AUB; *Pediatrics (Clinical).*

* Nassif, Raif E., M.D., AUB; M.P.H., Yale University; *Clinical Pathology.*

Noltinius, Harald, M.D., University of Freiburg; *Pathology.*

* Sabra, Fuad, M.D., AUB; *Internal Medicine (Neurology).*

Shahid, Munib, M.D., AUB; *Internal Medicine (Hematology) (Clinical).*

* Shwayri, Edmond, M.D., AUB; *Internal Medicine (Nephrology).*

* Tabbara, Riad, M.D., AUB; *Internal Medicine (Cardiology).*

* On Tenure Appointment.

** On Furlough or Leave.

ASSOCIATE PROFESSORS

- * Abu Feisal, Khalil, M.D., AUB; *Internal Medicine (Respiratory)*.
- * Abu Haydar, Najib, M.D., AUB; *Internal Medicine (Endocrinology)*.
- * Affi, Adel, M.D., AUB; M.S., University of Iowa; *Human Morphology*.
Alami, Samih, Ph.D., M.D.; University of Oklahoma; *Clinical Pathology*.
- Antypas, Philip, M.D., AUB; *Surgery (Plastic)* (Clinical).
- * Azar, Joseph, M.D., AUB; D.T.M. & H., University of London; *Internal Medicine (Infectious Diseases)*.
- Azoury, Bahij, M.D., AUB; D.M.Sc., Columbia University; *Surgery (Urology)* (Clinical).
- Azoury, Ramez, M.D., AUB; *Obstetrics and Gynecology*.
- Azzam, Samir, M.D., AUB; *Internal Medicine (Hematology)* (Clinical).
- * Balikian, Jirair, M.D., AUB; *Radiology*.
- Baraka, Anis, M.D., D.A., University of Cairo; *Anesthesiology*.
- Berbari, Adel, M.D., AUB; *Internal Medicine (Nephrology)* and *Physiology*.
- * Dagher, Fuad, M.D., AUB; *Surgery*.
- * Durr, Ibrahim, Ph.D., Western Reserve University; *Biochemistry*.
- * Farah, Fuad, M.D., AUB; *Internal Medicine (Dermatology)*.
- Firzli, Salim, M.D., AUB; *Pediatrics* (Clinical).
- * Fuleihan, Farid J.D., M.D., AUB; *Internal Medicine (Respiratory)*.
Ghandur-Mnaymneh, Latifeh, M.D., AUB; *Pathology*.
- Haddad, Fuad Sami, M.D., AUB; F.R.C.S., Canada; *Surgery (Neurosurgery)* (Clinical).
- * Hajj, Samir, M.D., AUB; *Obstetrics and Gynecology*.
- * Halasa, Adnan, M.D., AUB; M.S., University of Iowa; *Ophthalmology*.
Ibrahim, Muhammad, M.B., Ch.B., University of Cairo; M.D., Guy's Hospital Medical School, London; *Human Morphology*.
- Idriss, Hassan, M.D., AUB; *Pediatrics* (Clinical).
- * Issa, Philip, M.D., Faculté Française de Médecine, Beirut; *Radiology*.
- * Jabbur, Suhayl, M.D., AUB; Ph.D., University of Washington; *Physiology*.
- * al-Khalidi, Usama, M.S., AUB; Ph.D., University of Michigan; *Biochemistry*.
- * Khuri, Raja, M.D., AUB; *Physiology*.
Mamo, Jubran, M.D., AUB; *Ophthalmology* (Clinical).
- * Matossian, Robert, M.D., AUB; *Bacteriology and Virology*.
- * Melhem, Rafic, M.D., AUB; *Radiology*.
Mishalany, Henry, M.D., AUB; *Surgery (Pediatric)* (Clinical).
Mnaymneh, Walid, M.D., AUB; *Surgery (Orthopedic)* (Clinical).
- * Muallem, Musa,** M.D., AUB; *Anesthesiology*.
Mufarrij, Afif, M.D., AUB; *Human Morphology* (Clinical).
Mufarrij, Ibrahim, M.D., AUB; *Obstetrics and Gynecology* (Clinical).
- * Najjar, Samir, M.D., AUB; *Pediatrics*.
Nassif, Ramzi, M.D., AUB; *Otorhinolaryngology* (Clinical).
Nassif, Sami, M.D., AUB; *Pediatrics (Cardiology)* (Clinical).
Nsouli, Afif, M.D., AUB; *Surgery (Orthopedic)* (Clinical).
Obeid, Sami, M.D., AUB; *Surgery* (Clinical).
- * Rizk, Ghassan, M.D., AUB; *Radiology*.
- * Rubeiz, George, M.D., AUB; *Internal Medicine (Cardiology)*.

* On Tenure Appointment.

** On Furlough or Leave.

- Shamma'a, Munir, M.D., AUB; *Internal Medicine (Gastroenterology)* (Clinical).
 * Simaan, Joseph, ** M.D., AUB; *Pharmacology and Therapeutics*.
 * Slim, Michel, M.D., AUB; *Surgery (Pediatric)*.
 Smith, Barrie, Ph.D., University of Iowa; *Human Morphology* (Visiting).
 * Yacoubian, Hagop, M.D., AUB; *Surgery (Thoracic)*.

ASSISTANT PROFESSORS

- Abu Haydar, Fadlo, M.D., AUB; *Internal Medicine (Gastroenterology)* (Clinical).
 Abu Jamra, Fawzi, M.D., AUB; *Surgery (Plastic)* (Clinical).
 Allam, Charles, M.D., Faculté Française de Médecine, Beirut; *Clinical Pathology*.
 Antun, Fuad, M.D., AUB; D.P.M., Ph.D., University of Edinburgh; *Internal Medicine (Psychiatry)*.
 Asfour, Raja, M.D., AUB; M.S., Columbia University; *Pediatrics* (Clinical).
 Awdeh, Zuhayr, Ph.D., University of London; *Nutrition*.
 Baghdassarian, Sahag, M.D., AUB; *Ophthalmology*.
 Barakat, Bassam, M.D., AUB; *Obstetrics and Gynecology*.
 Bitar, John, M.D., AUB; *Pediatrics* (Clinical).
 Bridi, George, M.D., AUB; *Internal Medicine (Nephrology)* (Clinical).
 Brihi, Emile, M.D., AUB; *Radiology*.
 Bulos, Suhayl, M.D., AUB; F.R.C.S., Edinburgh; *Surgery (Orthopedic)* (Clinical).
 Cortas, Nadim, M.D., AUB; *Pharmacology and Therapeutics*.
 Dabbous, Ibrahim, M.D., AUB; *Pediatrics* (Clinical).
 Dagher, Rifaat, M.D., AUB; *Surgery* (Clinical).
 Der Kaloustian, Vasken, M.D., AUB; *Pediatrics*.
 Fanous-Daouk, Muhiba, M.D., AUB; *Anesthesiology*.
 Faris, Amin, M.D., AUB; *Internal Medicine (Neurology)* (Clinical).
 Faris, Bishara, M.D., AUB; *Ophthalmology*.
 Ghandur, Mustafa, M.D., AUB; *Pediatrics* (Clinical).
 Haddad, Nadra (Abu Feisal), M.D., AUB; *Pediatrics* (Clinical).
 Hajjar, Jean-Jacques, M.D., AUB; *Physiology*.
 Hemadeh, Kamal, M.D., AUB; *Surgery (Urology)* (Clinical).
 Hubaytar, Rafik, M.D., AUB; *Internal Medicine (Respiratory)* (Clinical).
 Iliyya, Fawzi, M.D., AUB; *Obstetrics and Gynecology* (Clinical).
 Iskandar, George, M.D., AUB; *Obstetrics and Gynecology* (Clinical).
 Kabakian, Hrayr, M.D., AUB; *Radiology*.
 Kaid Bey, Sami, M.D., AUB; *Internal Medicine (Cardiology)* (Clinical).
 Kanaan-Atallah, Naim, M.D., AUB; *Radiology*.
 Kanawati, Abdallah, M.D., University of Damascus; Dip. in Nutrition, University of London; *Nutrition*.
 Karam, Farid, M.D., AUB; *Otorhinolaryngology* (Clinical).
 Karam, Karam, M.D., AUB; *Obstetrics and Gynecology*.
 Khalifeh, Riad, M.D., AUB; M.S., University of Iowa; *Internal Medicine (Neurology)* (Clinical).
 Khawwam, Edward, M.D., Faculté Française de Médecine, Beirut; *Ophthalmology* (Clinical).
 Khazin, Aida, M.D., AUB; *Pediatrics*.
 Khouri, Farid, M.D., AUB; *Clinical Pathology*.

* On Tenure Appointment.

** On Furlough or Leave.

Malak, Johnnie, M.D., AUB; *Internal Medicine (Dermatology)* (Clinical).
 Malakian, Artin, Ph.D., University of North Carolina; *Bacteriology and Virology*.
 Moadie, Jean, M.D., AUB; *Internal Medicine (Allergy)* (Clinical).
 Mroueh, Adnan, M.D., AUB; *Obstetrics and Gynecology*.
 Mukheiber, Nabil, M.D., AUB; *Internal Medicine (Nephrology)* (Clinical).
 Nabbut, Nassim, Ph.D., University of Texas; *Bacteriology and Virology*.
 Nahhas, William, M.D., AUB; *Obstetrics and Gynecology* (Clinical).
 Nasr, Munir, M.D., AUB; *Obstetrics and Gynecology* (Clinical).
 Nassar, Sami, M.D., AUB; *Surgery (Neurosurgery)* (Clinical).
 Nassar, Victor, M.D., AUB; *Pathology*.
 Puzantian, Vahé, M.D., AUB; D.P.M., University of Edinburgh; *Psychiatry* (Clinical).
 Rahme, Edmond, M.D., AUB; *Internal Medicine (Neurology)* (Clinical).
 Rayyis, Suad, M.D., AUB; *Internal Medicine (Endocrinology)* (Clinical).
 Rebeiz, Jean, M.D., AUB; *Pathology*.
 Sahakian, John, M.D., Faculté Française de Médecine, Beirut; *Obstetrics and Gynecology* (Clinical).
 Salamun, Samir, M.D., AUB; *Ophthalmology* (Clinical).
 Salem, Antun, M.D., AUB; *Internal Medicine (Gastroenterology)* (Clinical).
 Salem, Philip, M.D., AUB; *Internal Medicine*.
 Salman, Salah, M.D., AUB; *Otorhinolaryngology*.
 Salti, Ibrahim, M.D., AUB; Ph.D., University of Toronto; *Internal Medicine (Endocrinology)*.
 Shediac, Caesar, M.D., AUB; *Internal Medicine (Endocrinology)* (Clinical).
 Shehadeh, Najib, M.D., AUB; *Internal Medicine (Dermatology)* (Clinical).
 Shehadeh, Samir, M.D., AUB; *Surgery (Plastic)* (Clinical).
 Sinno, Anwar, M.D., AUB; *Pediatrics (Neurology)*.
 Srouji, Ilias, M.D., AUB; *Pediatrics*.
 Suidan, Fayez, M.D., AUB; *Obstetrics and Gynecology* (Clinical).
 Tomb, Janine, M.D., Faculté Française de Médecine, Beirut; *Pathology*.
 Touma, Amin, M.D., AUB; *Internal Medicine (Cardiology)* (Clinical).
 Uthman, Suhayl, M.D., AUB; *Internal Medicine (Gastroenterology)* (Clinical).
 Uwaydah, Marwan, M.D., AUB; *Internal Medicine* (Clinical).
 Wakid, Nabil, M.S., AUB; Ph.D., Cambridge University; *Biochemistry*.
 Yashruti, Abdul Latif, M.D., AUB; *Surgery and Human Morphology* (Clinical).

LECTURERS

Abu-Haidar, George, M.A., AUB; *Clinical Pathology (Clinical Biochemistry)*.
 Drooby, Ala'ud-Din, M.D., University of Lausanne; D.P.M., Conjoint Board of England; *Psychiatry*.
 Hayek, John, M.D., AUB; D.P.M., University of Durham; *Psychiatry*.
 Kana'an, Khattar, M.D., AUB; *Anesthesiology*.
 Nasr, Fuad, M.D., Faculté de Médecine, Montpellier; *Internal Medicine (Rheumatology)*.
 Nasr, Michel, M.D., University of Geneva; *Internal Medicine (Cardiology)*.
 Nasrallah, Salah, M.D., AUB; *Internal Medicine*.
 Nassar, Nabil, M.D., AUB; M.P.H., Johns Hopkins University; *Internal Medicine*.
 Nucho, Charles, M.D., AUB; *Internal Medicine*.
 Thaddeus, Jacob, M.D., AUB; *Industrial Medicine*.

INSTRUCTORS

- Ariss-Timani, Majd, M.D., Faculté Française de Médecine, Beirut; *Pediatrics*.
Arslanian, Erika, M.D., University of Erevan, Armenia; *Anesthesiology*.
Ayyoub, Charles, M.B., M.S., University of Adelaide; D.C.H., Royal College of Physicians, London; M.R.C.P., Edinburgh; *Pediatrics* (Clinical).
Baloglou, Paul, M.D., Faculté Française de Médecine, Beirut; *Ophthalmology* (Clinical).
Barakat, Nabil, B.D.S., University of Cairo; M.S., Loyola University, Chicago; *Surgery and Otorhinolaryngology* (Clinical).
Bikhazi, Kamal, M.D., AUB; *Human Morphology and Surgery* (Clinical).
Chakhtoura, Antoine, M.D., Faculté Française de Médecine, Beirut; *Psychiatry* (Clinical).
Jabir, Raif, M.D., AUB; *Internal Medicine (Endocrinology)* (Clinical).
Jubran, Fuad, M.D., AUB; *Internal Medicine (Cardiology)* (Clinical).
Juljulian, Harutioun, M.D., University of Padua; *Internal Medicine (Dermatology)* (Clinical).
Manougian, Elizabeth, AUB; *Pharmacology and Therapeutics*.
Moghrabi, Rafik, M.D., Faculté de Médecine, Bordeaux; *Anesthesiology*.
Nahra, Khalil, M.D., AUB; *Surgery* (Clinical).
Najjar, Faysal, M.D., AUB; *Surgery* (Clinical).
Nuwayhed, Nizar, M.D., AUB; *Otorhinolaryngology* (Clinical).
Nuwayri-Salti, Nuha, M.D., AUB; *Human Morphology*.
Sanjad, Sami, M.D., AUB; *Pediatrics (Nephrology)*.
Wahbeh, Nabila, M.D., AUB; *Pediatrics (Hematology)* (Clinical).
Yenikomshian, Stepan, M.D., AUB; *Internal Medicine (Cardiology)* (Clinical).
Zaidan, Michel, M.D., Faculté de Médecine, Montpellier; *Psychiatry* (Clinical).

ASSISTANT INSTRUCTOR

- Tilkian, Ohannes, *Human Morphology* (Technical Supervisor and Assistant Instructor).

RESEARCH ASSOCIATE

- Fawaz, Eva, M.S., AUB; *Pharmacology and Therapeutics*.

RESEARCH ASSISTANTS

- Abu Samra, Shafeeka, B.A., Beirut College for Women; *Nutrition*.
Agulian, Samuel, B.S., AUB; *Physiology* (Senior Research Assistant).
Assaf, Maha, B.S., University of London; *Radiology*.
Bahuth, Nadia, B.S., AUB; *Human Morphology* (Senior Research Assistant).
Bahuth, Wadad, B.S., AUB; *Pathology*.
Barakat, Mona, B.S., AUB; *Pediatrics*.
Bikhazi, Ghassan, M.S., AUB; *Biochemistry*.
Chelebian, Antranig, *Physiology*.
Dollie, Freda, B.S., University of South Africa; *Internal Medicine (Psychiatry)*.
Hallal, Rowayda, M.S., AUB; *Pediatrics*.
Hanna, Sami, B.S., AUB; *Otorhinolaryngology*.
Imad, Azmi, M.S., University of London; Member, A.S.S.E.; *Radiology* (Senior Research Assistant).

Jabara, Haifa, B.S., Beirut College for Women; *Biochemistry*.
 Jabbur, Karim, B.A., AUB; *Pharmacology and Therapeutics*.
 Jebejian, Kevork, B.A., AUB; *Pediatrics*.
 Katul, George, B.E., AUB; *Electronics* (Senior Research Assistant).
 Kissoyan, Berj, B.S., AUB; *Physiology*.
 Krajian, Berjouhy, B.S., AUB; *Bacteriology and Virology*.
 McPhail, Juhaina, M.D., Faculté Française de Médecine, Beirut; *Obstetrics and Gynecology* (Senior Research Assistant).
 Meneshian, Gilbert, B.S., AUB; *Surgery*.
 Meneshian, Marie-Louise, B.S., AUB; *Pathology*.
 Mire, Joanne, M.S., AUB; *Human Morphology* (Senior Research Assistant).
 Nassar, Najwa, B.S., Beirut College for Women; *Pharmacology and Therapeutics*.
 Saadeh, Faysal, M.S., AUB; *Pathology* (Senior Research Assistant).
 Sahli, Itaf, B.S., AUB; *Clinical Pathology* (Senior Research Assistant).
 Sursock, Joumana, B.S., Lebanese University; *Internal Medicine*.
 Tchalian-Read, Marie, B.S., AUB; *Nutrition*.
 Tejirian, Asdghig, B.S., AUB; *Pharmacology and Therapeutics*.
 Tenekjian, Krikor, B.S., AUB; *Internal Medicine (Dermatology)* (Senior Research Assistant).
 Tomey, George, M.S.E.E., University of Washington; *Electronics* (Senior Research Assistant).
 Zekian, Beatrice, B.S. in Pharmacy, AUB; *Nutrition*.

ASSOCIATES

Abu-Jaudeh, Ceasar, M.D., AUB; F.A.C.S.; *Otorhinolaryngology*.
 Abu-Zahr, Labib, M.D., AUB; *Surgery*.
 Attallah, Basil, M.D., AUB; *Internal Medicine*.
 Atiyeh, Maurice, M.D., AUB; *Internal Medicine*.
 Bakdash, Hisham, M.D., University of Damascus; *Surgery (Neurosurgery)*.
 Barakat, Amin, M.D., AUB; *Pediatrics*.
 Chatty, Eyad, M.D., University of Damascus; *Human Morphology*.
 Haddad, Fuad, M.D., University of Istanbul; *Anesthesiology*.
 Haddad, Paul, M.D., Faculté Française de Médecine, Beirut; *Pediatrics*.
 Hajj, Muhsin, M.D., AUB; *Internal Medicine (Cardiology)*.
 Harboyan, Garbis, M.D., AUB; *Otorhinolaryngology*.
 Kabbani, Mahmoud, M.D., AUB; *Surgery*.
 Musallam, Salim, M.D., AUB; *Pediatrics*.
 Noujaim, Sami, M.D., Faculté Française de Médecine, Beirut; *Surgery*.
 Pasha, Najdat Ibrahim, M.D., AUB; *Surgery (Plastic)*.
 Rashdouni, Leon, M.D., AUB; *Internal Medicine (Cardiology)*.
 Rubeiz, Michel, M.D., AUB; *Surgery (Plastic)*.
 Saad, Atif, M.D., AUB; *Internal Medicine (Gastroenterology)*.
 Saade, Butros, M.D., Faculté Française de Médecine, Beirut; *Physical Medicine and Rehabilitation*.
 Sayegh, Roger, M.D., AUB; *Ophthalmology*.
 Shibaklu, Zuheir, M.D., AUB; *Internal Medicine (Dermatology)*.
 Shu'ayb, Wehbeh, M.D., AUB; *Surgery (Thoracic)*.
 Tamari, Joseph, D.Ch.D., Faculté Française de Médecine, Beirut; D.S.D., North-western University; *Human Morphology*.

General Information

The School of Medicine is a member of the Association of American Medical Colleges and is subject to the regulations of the Board of Regents of the State of New York where the University is incorporated.

The entrance requirements and the program leading to the degree of Doctor of Medicine are similar to those of standard medical schools in the United States except that the course of study has been extended from four years to five years to conform with Lebanese law. The fifth year, which consists of practical work in the University Hospital and other affiliated hospitals, is an internship.

Graduates are qualified for the licensing examination in Lebanon upon completion of the fifth year student internship.

The School of Medicine endeavors to provide opportunities for its undergraduate students to develop individual initiative, creative ability and professional leadership through participation in extra-curricular seminars, discussion groups, research projects and student organizations. A number of the students themselves have made valuable contributions along this line as officers of the Medical Students' Society.

Although the primary function of the School is to give students a basic training in medicine, the School also offers specialist training on a selective and limited basis. This program, inaugurated in 1945, consists of either a three or a four year residency in the University Hospital involving training in a medical specialty.

A program of postgraduate medical education provides several short refresher courses in the medical specialties each year to physicians in the area. These courses are conducted jointly by members of the Faculty and prominent specialists from America and Europe. In addition the Medical Faculty and Alumni sponsor each year a Middle East Medical Assembly in which 35 to 40 prominent physicians from America and Europe participate. Between 400 and 500 physicians attend these sessions.

A chapter of Alpha Omega Alpha, the honor medical society, was granted to the School of Medicine in 1958. Members are elected by the membership of Alpha Omega Alpha on the basis of high scholarship and good moral character.

The physical plant of the School of Medicine includes Van Dyck Hall which houses the departments of Biochemistry, Human Morphology, Pharmacology and Therapeutics and Physiology with their teaching laboratories and classrooms, the Medical Library, and the offices of the Dean of the Faculties of Medical Sciences and the Director of the School of Medicine; Phase I of the new Medical Center which houses the academic offices and research laboratories of the Departments of Anesthesiology, Bacteriology and Virology, Internal Medicine, Obstetrics and Gynecology, Ophthalmology, Otorhinolaryngology, Pathology, Pediatrics, Radiology and Surgery, as well as the Nutrition Research Program; Phase II of the new Medical Center which houses the academic offices and research laboratories of the Department of Clinical Pathology and the University Hospital.

Clinical teaching is carried out in the Out-patient Department located in the new Medical Center, the University Hospital with a capacity of 420 beds, and the affiliated hospitals which include the Sidon Government Hospital, the Lebanon Hospital for Mental and Nervous Disorders, and the Hamlin Hospital for Chest Diseases.

The new Basic Sciences Building, part of Phase III, is at an advanced state of construction. Also under construction as part of Phase III are a new Medical Library and a Post-Graduate Medical Center. Occupancy of all these buildings is expected in the fall of 1973.

ADMISSION

The School of Medicine was established to give properly qualified candidates of the Near East the opportunity for sound training in both the art and science of medicine and, consequently, preference for admission is given to candidates from the Near East. Enrollment in the first year is limited to about 50 students who are chosen for personal as well as academic qualifications. In most cases a student of the University is not considered for admission to the School of Medicine if his general average is below 75 or if he has incurred any failures.

For complete and detailed information regarding admission to the University, including certificates recognized, see pages 18 to 29 of the section of Admissions at the beginning of the catalogue.

To be eligible for admission to the School of Medicine a student must have completed the legal premedical educational requirements of AUB. The specific requirements for admission to first year Medicine are found on page 28, and to Graduate Work in the section on Admission under Graduate Study at the end of this catalogue.

GRADUATION REQUIREMENTS

To be eligible for the degree of Doctor of Medicine a student must complete the curriculum of the School of Medicine, must be in residence during the fifth year and must do satisfactory work in various sections of the fifth year. The degree is granted with *distinction* to students who complete the first four years with an average of 85 or more, who incur no academic delinquencies, who complete three years in residence at the School of Medicine of this University, who attain a rating of excellent in at least one section in the fifth year and who are recommended by the Clinical Committee. The recommendation of the Clinical Committee is based upon a comprehensive appraisal of the student's intellect and character; particular weight is given to the qualities demonstrated during the fifth year.

To be eligible for the degree of Bachelor of Science, a degree granted by the Faculty of Arts and Sciences, a student must complete satisfactorily the program of the Faculty of Arts and Sciences through the Junior year including the general graduation requirements, must be in residence during the Junior year and must complete satisfactorily the first year in the School of Medicine. This degree does not necessarily entitle students to promotion in the School of Medicine. The degree is granted with *distinction* to students who are recommended by the Preclinical Committee, who complete the Junior year in the Faculty of Arts and Sciences of this University with an average of 80 or more and who complete the Junior year and first year Medicine with a cumulative general average of 85 or more. The degree may be granted with *high distinction* to students who complete the Junior year and first year Medicine with a cumulative general average of 90 or more.

ACADEMIC RULES AND REGULATIONS

Grades and Promotion

In the School of Medicine the following grading system is used in the first four years: 90-100 Excellent; 80-89 Good; 70-79 Fair; below 70 Failing. In the fifth year students are evaluated as Excellent, Satisfactory or Unsatisfactory.

For promotion from one class to the next higher a student must pass all courses, attain an average of 75 or more and be recommended by the Preclinical or Clinical Committee as the case may be.

In addition to these minimum academic requirements, each student in the Medical program must have a speaking knowledge of Arabic before entering the third year. This requirement may be waived by special vote of the Clinical Committee.

Since 1966 students are required to take the examinations of the National Board of Medical Examiners which are given in two parts. Part I, covering the material taught in the first two years, is given to the second year class. Part II, covering the material taught in the third and fourth years, is given to the fourth year class. The scores achieved in these examinations make up 25% of the final grades of second and fourth year courses.

Regular attendance is required at lectures, clerkships and laboratories. Absences of one third or more of the period of clerkship or courses will be reviewed by the appropriate Committee which decides on the measures to be taken.

To be placed on the Dean's Honor List a student must: (a) have a minimum grade average of 80; (b) stand in the approximate top 15% of his class; (c) have no failure; (d) have no special condition for promotion; (e) not be repeating; and (f) be taking a minimum of two-thirds of the scheduled hours of his class.

Failures and Deficiencies

Any student in the first or second year who passes all courses with an average of less than 75 is required to repeat the year or to pass special written general examinations before promotion. These examinations are in the following fields: for first year students, the human morphology group including histology, and the physiology group including biochemistry; for second year students, the pathology group including bacteriology, parasitology, introduction to medicine and clinical pathology, and the pharmacology unit.

A student in the first or second year who fails in not more than one major* course, one major and one minor* course, or two minor courses may be allowed to take make-up examinations. Make-up examinations are given just prior to the beginning of regular classes.

A student failing in any course at the end of the first semester will be warned. A student failing three or more courses at the end of the first or second semester during any academic year may be dropped.

A student in the third or fourth year who fails in any section may be asked to repeat the section, or to spend his month of vacation in the Department giving the course, or repeat the year, depending on the recommendation of the Department and the decision of the Clinical Committee.

* A course that is weighted at 3 or more semester credits is considered major (see Curriculum).

A student in the third or fourth year who fails in two sections or who has a general average below 75 may be required to repeat the year or be dropped from the School, depending on the decision of the Clinical Committee.

A student in the fifth year with unsatisfactory work in a section will be required to repeat that section. A student with unsatisfactory work in two or more sections will be required to repeat the year.

Students failing the general examinations or the course make-up examinations are required to repeat the year. A minimum satisfactory average for students repeating the first or second year is 80. Students repeating the third or fourth year must score a final grade of 75 or above in each course. No student may repeat the same year more than once.

GRADUATE STUDY

Full information and general requirements for graduate study are found in the chapter at the end of this catalogue entitled Graduate Study.

Curriculum

	No. of Weeks	Lec. and Rec. Hours	Lab. Hours	Total Hours	Semester Credit Hours
First Year*					
Biochemistry 211 Basic Biochemistry	16	48	64	112	5
Human Morphology 207 Gross Anatomy	16	27	192	219	7
Human Morphology 209 Basic Histology	16	34	48	82	3
Interdepartmental 200 Homeostasis	4	47	70	117	5
Interdepartmental 202 Cardiovascular System	2	22	31	53	2
Interdepartmental 204 Metabolism	4	42	75	117	5
Interdepartmental 206-207 Social and Preventive Medicine	32	34	46	80	4
Interdepartmental 208 Nervous System Physiology 210 General Physiology and Introductory Biophysics	5	86	54	140	6
	16	24	24	48	2
<i>Total</i>				968	39
Second Year*					
Bacteriology 227 Bacteriology and Virology	10	50	90	140	6
Interdepartmental 221-222 Introduction	19	98	196	294	12
Internal Medicine 227 Psychopathology	16	16	32	48	2
Pathology 229 General Pathology	14	72	133	205	9
Pharmacology 228 Pharmacology and Toxicology	16	96	96	192	9
Public Health EB 225 Medical Statistics	16	16	32	48	2
Public Health EB 226 Epidemiology	16	16	32	48	2
Public Health TH 225 Medical Parasitology and Mycology	6	30	54	84	3
<i>Total</i>				1,059	45

* For courses given in other Schools, see under School concerned.

	No. of Weeks	Lect. and Rec. Hours	Lab. or Clin. Clerkships Hours	Total Hours
Third Year*				
Clinical Conferences	36	180	—	180
Internal Medicine 246 Clinical Clerkship	16	120	640	760
Internal Medicine 248 Medical Ethics	1	4	—	4
Internal Medicine 250 Forensic Medicine	3	12	—	12
Internal Medicine 225 Psychiatry	6	25	—	25
Obstetrics and Gynecology 257 Clinical Clerkship	9	—	360	360
Ophthalmology 247 Introduction to Ophthalmology	3	12	—	12
Otorhinolaryngology 247 Lectures on Otorhino- laryngology	4	16	—	16
Pediatrics 246 Clinical Clerkship	9	35	360	395
Public Health EB 267 Clerkship in Preventive Medicine and Public Health	2	—	80	80
Surgery 240 Introduction to Clinical Surgery	32	32	—	32
<i>Total</i>				1,876
Fourth Year				
Anesthesiology 266 and 267 Clinical Seminar and Clinical Clerkship	3	11	120	131
Clinical Conferences	44	220	—	220
Internal Medicine 265 Psychiatry Clinical Clerkship	4	—	160	160
Internal Medicine 266 Clinical Clerkship	12	—	480	480
Ophthalmology 267 Clinical Clerkship and Seminar	3	—	120	120
Otorhinolaryngology 267 Clinical Clerkship	3	—	120	120
Pediatrics 267 Clinical Clerkship	8	—	320	320
Surgery 267 Clinical Clerkship	12	—	480	480
<i>Total</i>				2,031

* For courses given in other Schools, see under School concerned.

	No. of Weeks	Total Hours
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Fifth Year

The student is given the option to choose one of the following:

1. Straight Internship		
Internal Medicine 288, Pediatrics 288, Obstetrics and Gynecology 288 or Surgery 288	48	2,880
Clinical Conferences		300
<i>Total</i>		<u>3,180</u>
2. Mixed Internship		
Internal Medicine 287 or Pediatrics 287	13	780
Surgery 287	9	540
Obstetrics and Gynecology 287	4	240
Sidon Government Hospital (Interdep. 280)	4	240
Elective in any department	18	1,080
Clinical Conferences		300
<i>Total</i>		<u>3,180</u>

Courses

Numbers Preceding Course Titles

1. Courses required for the Doctor of Medicine degree are numbered 200-299, as follows:

200-219 indicate courses given in first year Medicine

220-239 indicate courses given in second year Medicine

240-259 indicate courses given in third year Medicine

260-279 indicate courses given in fourth year Medicine

280-299 are reserved for clinical clerkships during the fifth year, which is a year of internship.

For first and second years, odd numbers refer to first semester courses, and even numbers to second semester courses. Year courses are indicated by a hyphen between the two numbers.

2. Graduate courses leading to Master's and Doctor of Philosophy degrees are numbered 300-399.

3. Regular medical courses approved for graduate work (M.S. and Ph.D. program) have two numbers. The number in brackets is used only for graduate students.

4. Numbers preceded by "Interdepartmental" indicate integrated courses taught by two or more Departments together.

Numbers Following Course Titles

The first number following the title of a course indicates the total number of lecture, conference and discussion hours given, except where otherwise stated.

The second number indicates the total laboratory or clinical practice hours, except where otherwise stated.

The third number indicates the number of semester credit hours. Credit hours are used in conjunction with first and second year courses only.

Course Descriptions

All the following courses, except those indicated as electives, are required of students working toward the degree of Doctor of Medicine. Courses so designated may be elected with permission of the instructor by properly qualified students of the School of Pharmacy; a few marked courses are open to undergraduate students in the Faculty of Arts and Sciences.

Detailed course descriptions are available in the individual Departments for those requiring further information.

INTERDEPARTMENTAL TEACHING

First Year

200 (300) Homeostasis. 47.70; 5 cr; annually. This integrated topic covers the study of the internal environment and its physiological regulation by two homeostatic organs, the lungs and the kidneys. Didactic lectures cover the physiology, biochemistry and histology of the topic as a whole, treating internal environment, homeostasis and feedback mechanisms, blood, the lung, the kidney and electrolytes. Laboratory exercises closely parallel the didactic teaching. The course lasts 4 weeks.

202 (302) Cardiovascular System. 22.31; 2 cr; annually. The structure and function of the cardiovascular system is presented in an integrated manner. Laboratory exercises are intended to familiarize the student with the tools and methods of physiological experimentation. Didactic hours are equally divided between the two subjects of cardiac and vascular physiology.

204 (304) Metabolism. 42.75; 5 cr; annually. Study of the gastrointestinal tract, biochemical nutrition, metabolism and its regulation by the endocrine system, and the reproductive system. The biochemistry, physiology and histology of the organs and systems are presented in an integrated manner. The course lasts 4 weeks.

206-207 Social and Preventive Medicine. 34.46; 4 cr; annually. An integrated course stressing psychological and sociological aspects of medicine.

208 (308) Nervous System. 86.54; 6 cr; annually. This covers the study of structure and function of the human nervous system, and lasts 5 weeks.

Second Year

221-222 Introduction to Medicine. See Department of Internal Medicine.

Third Year

241-242 Specialty Lecture Series. 153.0. Given by the Departments of Internal Medicine (Legal Medicine and Psychiatry), Ophthalmology, Otorhinolaryngology, and Surgery.

Fifth Year

280 Student Internship in Sidon Government Hospital. 0.240.

Graduate

309 *Biology of Nerve and Muscle*. 48.0; 3 cr; alternate years. A multidisciplinary and integrated study of the anatomy, physiology, biochemistry, pharmacology and pathology of nerve and muscle with emphasis on skeletal muscle.

DEPARTMENT OF ANESTHESIOLOGY

Acting Chairman: Baraka, A.

Professors: Fanous-Daouk, M.; Muallem, M.

Lecturer: Khattar, K.

Instructors: Arslanian, E.; Moghrabi, R.

Associate: Haddad, F.S.

266 *Clinical Seminars*. 12.0. Each group of students serving a clinical clerkship in Anesthesiology is given a course of 12 seminars in practical aspects of anesthesiology and resuscitation.

267 *Clinical Clerkship*. 0.120. While the above series of seminars is in progress the students spend 3 weeks in the Department of Anesthesiology. They learn the care of unconscious patients, and administer anesthesia under supervision.

DEPARTMENT OF BACTERIOLOGY AND VIROLOGY

Chairman: Garabedian, G.

Professors: Malakian, A.; Matossian, R.; Nabbut, N.; Uwaydah, M.

The Department of Bacteriology and Virology offers *undergraduate* courses to students in the Schools of Medicine, Pharmacy, Public Health and Nursing. It also offers a *graduate* program leading to the degree of Master of Science in Bacteriology and Virology including immunology. The applicant for graduate study should have adequate undergraduate preparation which should be wide in scope and include various aspects of biology, physics and chemistry. Additional course work is arranged according to the student's interest and competence.

Note that in this Department numbers following course titles indicate hours per *week*.

15 *Bacteriological Technique I*. 2.4; 4 cr; 1st semester, annually. Techniques for the identification of disease-causing microorganisms.

16 *Bacteriological Technique II*. 2.6; 5 cr; 2nd semester, annually.

102 *Microbiology for Nurses* (Diploma). 2.2; 3 cr; annually. Introductory course in medical microbiology.

227 (301) *Bacteriology and Virology*. 5.6; 6 cr; 10 weeks, annually. Fundamental aspects of microbial genetics and metabolism; principles of immunity and immunobiology; pathogenesis, immunity and laboratory diagnosis of diseases caused by bacteria, rickettsiae and viruses. For students of Medicine II; others by consent of the instructor.

237 *Microbiology for Nurses* (Degree). 2.2; 3 cr; annually. Fundamental aspects of medical microbiology.

248 *Medical Microbiology*. 3.4; 5 cr; annually. Fundamental aspects of medical microbiology. For Pharmacy students.

302 *Animal Virology*. 2.2; 3 cr; alternate years. Molecular biology of animal viruses; viral infections in man and animals. Prerequisite: 227 (301) or 248.

325 *Experimental Immunology*. 1.4; 3 cr; alternate years. Methods employed in immunological research. Prerequisite: 227 (301) or 248.

326 *Advanced Immunology*. 3.0; 3 cr; alternate years. Biological and biochemical aspects of host resistance and immunity. Prerequisite: 227 (301) or 248.

349 *Pathogens and Antibiotics*. 2.2; 3 cr; alternate years. An advanced treatment of bacterial pathogens and antimicrobials. Prerequisite: 227 (301) or 248.

362 *Diagnostic Bacteriology and Virology*. 1.6; 4 cr; alternate years. Procedures employed for the isolation and identification of bacterial and viral pathogens. Prerequisite: 227 (301) or 248.

391 and **392** *Journal Club*. 1.0; 1 cr; annually. A review of current microbiological literature. Graduate students and Staff.

393 and **394** *Microbiology Seminar*. 1.0; 1 cr; annually. Recent advances in bacteriology, immunology and virology. Graduate students and Staff.

399 *M.S. Thesis*.

DEPARTMENT OF BIOCHEMISTRY

Acting Chairman: Durr, I.

Professors: Khachadurian, A.; al-Khalidi, U.; Wakid, N.

Biochemistry is a multidisciplinary *graduate* field. The graduate program leads to the degrees of M.S. and Ph.D.

The requirements for admission to the graduate program are: a degree of B.A. or B.S. from a college or university, an academic record above average, grade 80 (letter grade of B) or better. Students are expected to have completed the following courses or their equivalent: Biology 201 and 202, Chemistry 201, 202, 215 and 216 and Physics 101 and 102. In addition to the above the completion of as many as possible of the following as an undergraduate is highly desirable: Biochemistry 211, Biology 274 and 243, Chemistry 206, 217, 218 and 225, and Mathematics 201 and 202.

211 (300) *Basic Biochemistry*. 48.64; 5 cr; 1st semester. For students of Medicine, Pharmacy, senior Science and graduate students. Prerequisite: Organic Chemistry and consent of Department.

248 *Biochemistry of Body Fluids and Tissues*. 2 cr; 2nd semester. Primarily for students of Pharmacy. Prerequisite: 211.

303 *Advanced Biochemistry*. 3 cr; 1st sem.; alternate years. Prerequisite: 211 (300).

305 *Metabolism*. 3 cr; 1st semester; alternate years. Prerequisite: 211 (300).

307 and **308** *Biochemical Methods*. 4 cr each. Prerequisite: 211 (300). Ordinarily open only to graduate students in Biochemistry.

309 and **310** *Projects in Biochemistry*. Prerequisite: completion of or enrollment in 303 or 305.

311 and **312** *Biochemistry Tutorial*. 2 cr each.

313 *General Readings in Biochemistry and Related Topics*. 2 cr. A summer course given in conjunction with the Department of Physiology.

314 *Physiological Chemistry*. 2 cr; 2nd semester. The biochemistry of blood and other specialized tissues and of the organism as a whole. Prerequisite: 211 (300).

315 and **316** *Research Seminar*. 1 cr each. Prerequisite: 211 (300).

317 and **318** *Biochemical Literature Survey*. 1 cr each. Prerequisite: 211 (300).

319 and **320** *M.S. Thesis*. Original research under Staff supervision, leading to the M.S. degree.

391 and **395** *Ph.D. Thesis*. Original research under Staff supervision, directed toward the Ph.D. degree.

Homeostasis. See 200 in section on "Interdepartmental Teaching".

Metabolism. See 204 in section on "Interdepartmental Teaching".

DEPARTMENT OF CLINICAL PATHOLOGY

Acting Chairman: Alami, S.

Professors: Allam, C.; Khuri, F.; Nassif, R.E.; Wakid, N.

Lecturer: Abu-Haidar, G.

11-12 *Clinical Chemistry I and II*. 64.128; 4 cr each course.

17-18 *Clinical Pathology I and II*. 39.96; 2 cr each course.

Introduction to Medicine. See 221-222 under Department of Internal Medicine.

DEPARTMENT OF HUMAN MORPHOLOGY

Chairman: Afifi, A.

Professors: Ibrahim, M.; Mufarrij, A.; Smith, B. (Visiting); Yashruti, A.

Instructors: Bikhazi, K.; Nuwairy-Salti, N.; Tilkian, H.

Associates: Chatty, E.; Tamari, J.

The Department of Human Morphology offers *undergraduate* courses to students in the Schools of Medicine, Pharmacy and Nursing; and *graduate* courses and a program leading to the M.S. degree. Students wishing to major in Human Morphology must first secure the approval of the Department.

207 (301) *Gross Anatomy*. 27.192; 7 cr. A careful dissection and prosection of the entire body. Correlation of the structure and function of organs. Facts of topographic and regional anatomy applicable to the practice of medicine and surgery.

209 (303) *Basic Histology*. 34.48; 3 cr. Microscopic and ultrastructural appearances of tissues, relating structure to function.

246 *Anatomy-Physiology*. See Department of Physiology.

310-311 *Methods in Morphology*. 2 cr; annually. A guided laboratory course in methods used in morphologic research. Prerequisite: permission.

312 *Anatomy Tutorial*. 2 cr; annually. A guided literature review aimed at the formulation of a special research problem. Prerequisite: permission.

313 *Directed Reading and Research*. Credit hours variable. Reading and research assignments under supervision of an advisor, aimed at formulating an original research project.

314-315 *Seminar*. 1 cr; annually. Presentation and discussion of topics related to morphology. Prerequisite: permission.

316 *Advanced Electron Microscopy*. 16.96; 3 cr. Laboratory work and discussion of a research problem conducted by students under Staff supervision.

317 *Principles of Electron Microscopy*. 32.0; 2 cr. Lectures and demonstrations on principal technics of electron microscopy.

318 *Principles of Histochemistry*. 32.0; 2 cr. Lectures and demonstrations on principal technics of histochemistry.

397-398 *M.S. Thesis*. Credit hours variable. Original research under Staff supervision, leading to the M.S. degree.

Biology of Nerve and Muscle. See 309 in section on "Interdepartmental Teaching".

Cardiovascular System. See 202 in section on "Interdepartmental Teaching".

Metabolism. See 204 in section on "Interdepartmental Teaching".

Nervous System. See 208 in section on "Interdepartmental Teaching".

DEPARTMENT OF INTERNAL MEDICINE

Chairman: Tabbara, R.

Professors: Abu Feisal, K.; Abu Haydar, F.; Abu Haydar, N.; Afifi, A.; Antoun, F.; Azar, J.; Azzam, S.; Berbari, A.; Bridi, G.; Cortas, N.; Farah, F.; Faris, A.; Fuleihan, F.; Haddad, C.; Hajjar, J.J.; Hubaytar, R.; Kaid Bey, S.; Khachadurian, A.; Khalifeh, R.; Khuri, R.; Kurban, A.; Malak, J.; Manugian, A.; Moadie, J.; Mukheiber, N.; Puzantian, V.; Rahme, E.; Rayyis, S.; Rebeiz, J.; Rubeiz, G.; Sabra, F.; Salem, A.; Salem, Ph.; Salti, I.; Shahid, M.; Shamma'a, M.; Shediak, C.; Shehadeh, N.; Shwayri, E.; Touma, A.; Uthman, S.; Uwaydah, M.

Lecturers: Drooby, A.; Hayek, J.; Nasr, F.; Nasr, M.; Nasrallah, S.; Nassar, N.; Nucho, C.; Thaddeus, J.

Instructors: Chakhtoura, A.; Jabir, R.; Juljulian, H.; Jubran, F.; Yenikomshian, S.; Zeidan, M.

Associates: Atallah, B.; Atiyeh, M.; Hajj, M.; Rashdouni, M.; Saad, A.; Saadeh, B.

The Department of Internal Medicine offers *undergraduate* courses, clerkships and internships to medical students and a 3-year *residency* program for specialty training in Internal Medicine. Subspecialty training in some fields is also offered to selected candidates.

221-222 *Introduction to Medicine*. 98.196; 12 cr; annually over 19 weeks. A multidisciplinary and integrated approach to mechanism of disease based on the organ system including pathophysiology, laboratory methods (clinical pathology) and physical diagnosis.

227 *Psychopathology*. 16.32; 2 cr; annually. The student is introduced to abnormal psychological mechanisms in preparation for his courses in psychiatry. Lectures are correlated with patient demonstrations.

246 *Clinical Clerkship*. 120.640. 16 weeks.

(1) In hospital mornings and afternoons daily for 8 weeks, students are responsible for the history, physical examination, laboratory work and other clinical details of assigned hospital patients. Students in groups of 5 are assigned to a tutor.

(2) In OPD for 8 weeks in the mornings each student works up a new clinical patient in the General Medical Clinic and presents the patient to an attending physician. In the afternoons he attends daily specialty clinics and seminars.

247 *Dermatology and Syphilology*. 3rd year students in sections of 3 are assigned

for 3 weeks in the morning to the daily Dermatology Clinic.

248 *Medical Ethics*. 4.0.

249 *Health Education*. 48.0; 3 cr. Intended for undergraduate non-medical students. Fundamentals of health and disease stressing preventive aspects.

250 *Forensic Medicine*. 12.0.

225 and **265** *Psychiatry and Psychiatry Clinical Clerkship*. 25.0; 0.160. Lectures in the third year on the general principles of psychiatry: morbid psychology, true psychoses, child psychiatry, psychoneurosis, psychotherapeutic procedures. Fourth year students spend four weeks morning and afternoon daily in the Lebanon Hospital for Mental and Nervous Disorders. They are assigned cases and participate in the clinical demonstrations and discussions.

266 *Clinical Clerkship*. 0.480. 12 weeks. Mornings and afternoons daily students work as junior interns in the private service. They are on duty 2 nights a week and every 3rd weekend. Each student rotates also through the Coronary Care Unit and the Intensive Care Unit.

287 *Student Internship*. 0.780. The fifth year class spends 13 weeks in the Department of Internal Medicine of the University Hospital. Elective Student internship of 8-18 weeks is also offered.

288 *Straight Student Internship*. 0.2880. Fifth year students spend 48 weeks in the Department of Internal Medicine of the University Hospital.

Social and Preventive Medicine. See 206-207 in section on "Interdepartmental Teaching".

Weekly Conferences. Basic Medicine, Cardiology, Endocrinology, Gastroenterology, Medical Grand Rounds, Nephrology and Neurology. Medicine III, IV, V and Staff.

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

Chairman: Bickers, W.

Professors: Azoury, R.; Barakat, B.; Hajj, S.; Illiya, F.; Iskandar, G.; Karam, K.; Kirkwood, S.; Mroueh, A.; Mufarrij, I.; Nahhas, W.; Nasr, M.; Sahakian, J.

247 and **257** *Obstetrics and Gynecology*. 32.360. 9 weeks. Daily seminar in normal and abnormal obstetrics and gynecology during 9 weeks of clerkship. Grand Rounds, Noon Conference weekly, Clinical Clerkship in Hospital and O.P.D. Dystocia clinic in afternoons. Deliveries in delivery suite for 3 weeks. Gynecologic and prenatal examinations in Ras Beirut, Karaguezian and Mreiji clinics.

287 *Student Internship*. 0.240. 4 weeks. Operative obstetrics and gynecology. Research.

DEPARTMENT OF OPHTHALMOLOGY

Chairman: Matta, C.

Professors: Baghdassarian, S.; Diab, A.; Faris, B.; Halasa, A.; Khawwam, E.; Mamo, J.; Salamoun, S.

Instructor: Baloglou, P.

Associate: Sayegh, R.

247 *Introduction to Ophthalmology*. 12.0. Third year medical students.

267 *Clinical Clerkship and Seminars.* 0.120. 3 weeks. Fourth year medical students.

287 *Student Internship.* Elective 0.540. 9 weeks. O.P.D., Hospital wards and seminars.

Introduction to Medicine. See 221-222 in section on "Interdepartmental Teaching".

DEPARTMENT OF OTORHINOLARYNGOLOGY

Chairman: Diab, A.

Professors: Karam, F.; Nassif, R.I.; Salman, S.

Instructors: Barakat, N.; Nuwayhed, N.

Associates: Abu Jaudeh, C.; Harboyan, G.

The Department of Otorhinolaryngology offers courses, clerkships and internships to *undergraduate* students in the School of Medicine and a 4 year *residency* training program in otorhinolaryngology.

247 *Lectures on Otorhinolaryngology.* 16.0. Diseases of the ear, nose, throat and larynx and maxillofacial surgery.

267 *Clinical Clerkship.* 120. 3 weeks in the Department. Three mornings a week in O.P.D., all afternoons in the Department.

287 *Student Internship.* Elective. 0.540. 9 weeks. Work divided between O.P.D. and Hospital.

DEPARTMENT OF PATHOLOGY

Chairman: Noltinius, H.

Professors: Azoury, R.; Ghandur-Mnaymneh, L.; Nassar, V.; Rebeiz, J.; Tomb, J.

The Department of Pathology offers *undergraduate* courses for medical students and a *graduate residency* program of 3 years in the specialty of pathology.

229 *General Pathology.* 72.133. Undergraduate teaching of mechanisms of diseases (general pathology) and morphological and pathophysiological aspects of organ diseases (systemic pathology).

Introduction to Medicine. See 221-222 in section on "Interdepartmental Teaching".

Clinical Pathology Conferences. Medicine III, IV, V and Staff. On autopsy and surgical material.

Pathology Conferences. In collaboration with the Departments of Surgery, Internal Medicine, Pediatrics, Obstetrics and Gynecology, Radiology. Medicine III, IV, V and Staff.

DEPARTMENT OF PEDIATRICS

Chairman: Najjar, S.

Professors: Abu Feisal-Haddad, N.; Asfour, R.; Bitar, J.; Dabbous, I.; Der Kaloustian, V.; Firzli, S.; Ghandur, M.; Idriss, H.; Khazen, A.; Nachman, H.; Nassif, S.; Sinno, A.; Srouji, E.

Instructors: Ariss-Timani, M.; Ayyoub, C.; Sanjad, S.; Wahbeh, N.

Associates: Barakat, A.; Haddad, P.; Musallam, S.

The Department of Pediatrics offers courses to *undergraduate* students stressing

those aspects of the care of children considered to be important to any physician, including the management of the healthy and sick child, peculiarities of diseases in infancy, childhood and adolescence, nutrition, growth and development, and the importance of combining preventive with curative medicine. *Graduate* training is offered to physicians leading to specialization in pediatrics (Residency training program). Fellowships in social and preventive pediatrics are available mostly for trained pediatricians.

246 *Clinical Clerkship*. 35.360. 9 weeks. Daily work in the Hospital.

267 *Clinical Clerkship*. 0.320. 8 weeks. Daily work in O.P.D. and rotation in the emergency room and rural clinics.

287 *Student Internship*. 0.780. 13 weeks in the Hospital wards and newborn nursery.

288 *Straight Student Internship*. 0.2880. Fifth year students spend 48 weeks in the Department of Pediatrics of the University Hospital.

Weekly Conferences. 44 weeks. Ward Rounds, Pediatric X-ray Conference, Journal Club, Pediatric Grand Rounds, Chairman's Rounds and Specialty Rounds. Medicine III, IV, and V.

DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS

Chairman: Fawaz, G.

Professors: Cortas, N.; Simaan, J.

Instructor: Manougian, E.

Research Associate: Fawaz, E.

The field of Pharmacology embraces the knowledge of the history, source, physical and chemical properties, compounding, biochemical and physiological effects, mechanisms of action, absorption, distribution, biotransformation and excretion, and therapeutic and other uses of drugs. The Department of Pharmacology offers undergraduate and graduate programs. The *undergraduate* program is designed to meet the needs of students of Medicine and is offered during the second semester of the second year. The *graduate* program consists of a minimum of two year of didactic and practical training leading to the degree of Master of Science.

Note that in this Department numbers following course titles indicate hours per week.

228 (300) *Pharmacology and Toxicology*. 6.6; 9 cr. General course dealing with the effects of drugs on the various biological systems, with emphasis on therapeutic usefulness. A separate section deals with prescription writing and toxicology.

303 and **304** *Pharmacological Methods*. 3 cr each. Methods of animal surgery, bioassay and biochemistry. Prerequisite: Pharmacology 300 and permission.

305 and **306** *Enzymological Bioassays*. 3 cr each. Prerequisite: Biochemistry 211 and permission.

307 and **308** *Tutorial Pharmacology*. 3 cr each. Introduction to research. Prerequisite: permission.

309 and **310** *Pharmacology Seminar*. 1 cr. Prerequisite: permission.

DEPARTMENT OF PHYSIOLOGY

Chairman: Khuri, R.N.

Professors: Berbari, A.; Hajjar, J.J.; Jabbur, S.

The Department of Physiology offers three programs of study: (1) Medical Physiology, (2) Graduate Physiology, (3) Physiology for Pharmacy and Nursing.

The program in *Medical Physiology* provides the medical student with a minimum core of physiological knowledge and skills over a period of one academic year. The *graduate* program is a broad one leading to the degree of Master of Science. Students with a B.S. degree or its equivalent are eligible. This program includes basic courses in mathematics, biology, physics and chemistry in the Faculty of Arts and Sciences as well as courses in physiology.

The Departments of Physiology and Human Morphology jointly offer a course in human anatomy and physiology to Pharmacy III and Nursing Degree students.

210 *General Physiology and Introductory Biophysics.* 32.16; 2 cr; annually. Some aspects of biomathematics, biostatistics, biomechanics, radioactivity and, specially, membrane transport.

246 *Anatomy-Physiology for Pharmacy III and Nursing Degree Students.* 6 cr; annually. An integrated course in human physiology and anatomy giving the student an elementary knowledge of the gross and microscopic structure of the human body, and an understanding of the mechanisms governing the function of different organs.

305 *Biochemical Electronics.* 32.16; 3 cr; alternate years. Introductory course in electricity and electronics as applied to biology and medicine.

311-312 *Advanced Physiology.* 32.0; 2 cr; annually. A guided study (experimental and theoretical) of the literature of the major topics in physiology. Course conducted as a seminar.

313-314 *Physical Methods in Physiological Research.* 2 cr; alternate years. A guided laboratory course in the physical methods used in the major branches of physiology.

317 *Perspectives in the Physiological Sciences.* 32.0; 2 cr; annually. Selected readings and seminars in the history, philosophy and methodology of the physiological sciences, to give the student a broad view of the field of biology and its implication in everyday life.

390 *Directed Reading and Research.* Credit hours variable; annually. Assignments based on the research interests of the graduate student and the advisor, aimed at formulating an original research project.

397-398 *M.S. Thesis.* Credit hours variable. Original research under Staff supervision, leading to the M.S. degree.

Biology of Nerve and Muscle. See 309 in section on "Interdepartmental Teaching".

Cardiovascular System. See 202 in section on "Interdepartmental Teaching".

Homeostasis. See 200 in section on "Interdepartmental Teaching".

Metabolism. See 204 in section on "Interdepartmental Teaching".

Nervous System. See 208 in section on "Interdepartmental Teaching".

DEPARTMENT OF RADIOLOGY

Chairman: Melhem, R.

Professors: Balikian, J.; Brihi, E.; Issa, P.; Kabakian, H.; Kanaan-Atallah, N.; Rizk, G.

267 Teaching Seminar. 32.0. Weekly seminars are given to small sections of the class in which the various areas of the body are systematically studied.

287 Student Internship. Elective, 1, 2 3 or 4 months rotation in diagnostic or therapeutic radiology, for interns. Weekly seminars and group discussions.

Weekly Conferences. Clinico-Pathological, Medical, Pediatric X-ray, Surgical and Medical Grand Rounds, Radiology-Pathology Correlation, Tumor, Urology.

DEPARTMENT OF SURGERY

Acting Chairman: Dagher, I.

Professors: Abu Jamra, F.; Antypas, Ph.; Azoury, B.; Bulos, S.; Dagher, F.; Dagher, R.; Haddad, F.S.; Hemady, K.; Mishalany, H.; Mnaymneh, W.; Nassar, S.; Nsouli, A.; Obeid, S.; Shehadi, S.; Slim, M.; Yacoubian, H.; Yashruti, A.

Instructors: Barakat, N.; Bikhazi, K.; Nahra, Kh.; Najjar, F.

Associates: Abu Zahr, L.; Bakdash, H.; Kabbani, M.; Noujaim, S.; Pasha, N.; Rubeiz, M.; Shu'ayb, W.

267 Clinical Clerkship. 0.480. 12 weeks. One-fourth of the class is assigned in rotation to the Surgical Service. Duties are equally distributed between the out-patient (O.P.D. and Emergency Room) and in-patient services. The social and financial problems related to the patient's medical care are managed in consultation with Social Service and Public Health. Operating Room and minor surgery assignments are provided. Special teaching rounds and seminars are held to supplement the clinical activities.

The students rotate through the following disciplines in the Clinical Clerkship: general surgery, cardiovascular and thoracic surgery, neurosurgery, orthopedics, pediatric surgery, plastic and reconstructive surgery and urology.

287 Straight Internship. 7 months. Straight interns are accepted by the Department of Surgery on a competitive basis. Initial work-up and general care of patients are the major responsibilities of the intern who functions as an integral part of the resident staff. He rotates for one month through the Emergency Room and for one month through the Surgical Service at the Sidon Government Hospital. He rotates through all the disciplines in the Department of Surgery and performs minor surgical procedures under supervision. His active participation in the various rounds and teaching conferences listed below is a requirement. He spends the remaining 4 months of his internship in another one or two departments according to his selection and to the satisfaction of the Department.

288 Mixed or Rotating Internship The intern spends 2-4 months in the Department of Surgery. The duties are similar to those of the straight intern.

240 Lecture Series in Surgery. 32.0.

Residency training. The program lasts 4 years. Residency training in the Department of Surgery is recognized on an individual basis for an undetermined number of years towards eligibility for examination by the American Board of Surgery. The program is approved for the Part I examination of the fellowship of the Royal College of Surgeons (Eng.).

Weekly Conferences. Cardiac, Neurosurgical, Orthopedic Surgery, Pediatric Surgery, Plastic and Reconstructive Surgery, Surgical Grand Rounds, Surgical Pathology, Surgical Rounds at Sidon Government Hospital, Teaching Rounds for Clinical Clerks, Thoracic and Vascular, Urology.

NUTRITION RESEARCH PROGRAM

Director: McLaren, D.

Professors: Awdeh, Z.; Kanawati, A.

301 and 303 are courses for the Interfaculty Nutrition program. For the M.S. degree in Nutrition, see the chapter at the end of this catalogue entitled Graduate Study, page 252.

301 *Nutritional Biochemistry.* 32.0; 2 cr.

303 *Nutritional Biochemistry.* 0.32; 1 cr.

304 *Community Nutrition.* 32.32; 3 cr.

305 *Nutrition of the Pre-School Child.* 32.32; 3 cr.

306 *Clinical Nutrition and Hospital Dietetics.* 32.32; 3 cr.

PUBLIC HEALTH AND PREVENTIVE MEDICINE COURSES

Coordinator: Azar, J.

Professors: Abou Daoud, K.; Acra, A.; Churchill, C.; Haddad, N.; Harfouche, J.; McLaren, D.

Lecturer: Dajani, S.

Instructor: Zurayk, H.

The following courses in Public Health and Preventive Medicine are taught by Faculty members of the School of Public Health:

AM 204 *Public Health.* An elective course up to a period of four months, available to interns.

AM 206-207 *Social and Preventive Medicine.* See 206-207 in section on "Inter-departmental Training".

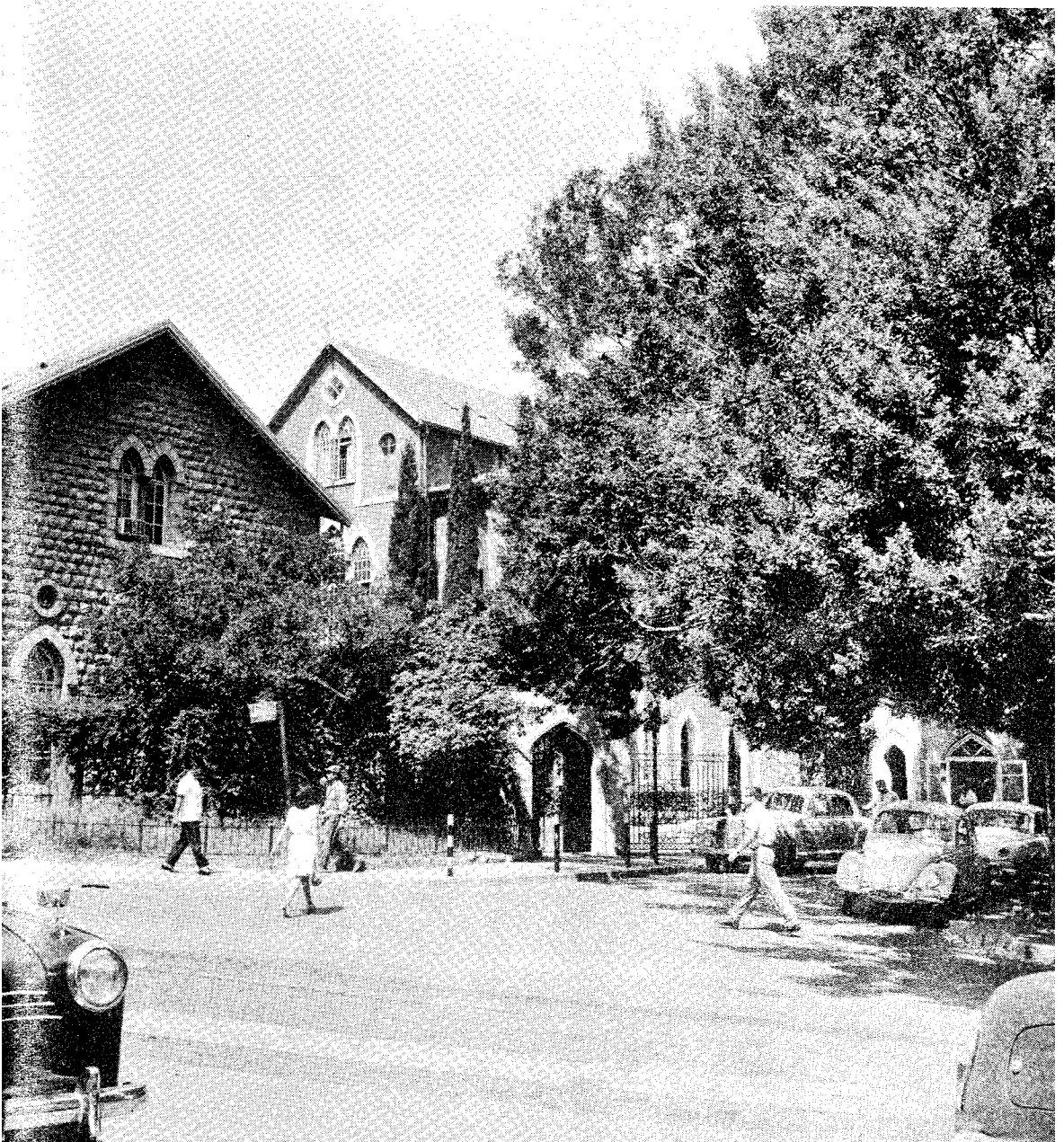
EB 225 *Medical Statistics.* 16.32; 2 cr.

EB 226 *Epidemiology.* 16.32; 2 cr.

EB 267 *Clerkship in Preventive Medicine and Public Health.* 0.70. 2 weeks.

TH 225 *Medical Parasitology and Mycology.* 12.21; 3 cr; first semester. Offered by faculty members of the Department of Tropical Health, for second year students.

SCHOOL OF PHARMACY



SCHOOL OF PHARMACY

Faculty List 1972-1973

Craig S. Lichtenwalner, M.D., M.P.H.; *Professor of Public Health Practice, Dean of the Faculties of Medical Sciences.*

Amin F. Haddad, M.S., Ph.C.; *Professor of Pharmacy, Director of the School of Pharmacy.*

Raif E. Nassif, M.D., M.P.H.; *Professor of Clinical Pathology, Associate Dean of the Faculties of Medical Sciences.*

Fuad S. Haddad, Ph.D.; *Associate Professor of Education, Registrar.*

PROFESSORS

* Abou-Char, Charles, Ph.D., University of Washington; *Pharmacognosy.*

* Haddad, Amin, M.S., Philadelphia College of Pharmacy and Science, Ph.C.; *Pharmacy.*

ASSOCIATE PROFESSORS

Banna. Nabil, Ph.D., University of Illinois; *Pharmacodynamics and Toxicology.*

* Dajani, Rashid, Ph.D., Wayne State University; *Pharmacy and Pharmaceutical Chemistry.*

* Vorperian, Edward, Ph.D., Ohio State University; *Pharmaceutical Chemistry.*

ASSISTANT PROFESSORS

Bikhazi, Anwar, Ph.D., University of Michigan; *Assistant Professor of Pharmacy.*

Dakkuri, Adnan, Ph.D., University of Illinois; *Assistant Professor of Pharmacy.*

Karamanukian, Levon, M.S., AUB; *Pharmacognosy.*

INSTRUCTORS, ETC.

Apkarian, Yeranouhi, M.S., AUB; *Pharmacy (Instructor).*

Kebabjian, Kevork, M.B.A., AUB; *Pharmacy Administration (Lecturer).*

Nassar, Tamer, *Human Morphology (Assistant Instructor).*

RESEARCH ASSISTANTS

Akil, Randa, B.S. in Pharmacy, AUB.

Jeha, Linda, B.S. in Pharmacy, University of Alexandria.

Shamlian, Sonia, B.S. in Pharmacy, AUB.

General Information

Objective

In planning its curriculum, the School of Pharmacy, established in 1871, aims at giving the student a thorough professional training as well as a basic scientific education, which will develop in him the ability to practice his profession in accordance with the highest possible standards and the generally accepted code of ethics, and to assume the responsibilities of citizenship befitting a professional man.

* On Tenure Appointment.

Through student-teacher contacts, in class and laboratory, and through student-directed extracurricular activities, the student is given the opportunity to develop and demonstrate the eagerness for learning, the spirit of cooperation with his fellow men, integrity, devotion to duty, unselfishness in service and other moral traits essential in a citizen who is to serve his community.

Students' Activities

In addition to participating in general University activities, students of the School of Pharmacy have their own professional society, the Pharmacy Students Society, and participate in the publication of *Campus*, the University yearbook.

Degrees Awarded

The School of Pharmacy offers two programs of study. The four year program, leading to the degree of Bachelor of Science in Pharmacy, is taken following the completion of the Freshman Science class of the Faculty of Arts and Sciences of this University or an equivalent program. In addition to the academic program, students complete during the summer vacations nine months of practical experience in an approved pharmacy. The second program, leading to the Master of Science degree, is offered to qualified candidates who are holders of pharmacy degrees from recognized institutions.

The School of Pharmacy is subject to the regulations of the Board of Regents of the State of New York where the University is incorporated. Graduates of the School are also qualified for licensure in the Middle and Near Eastern countries.

ADMISSION

For complete and detailed information regarding admission to the University, including certificates recognized, see pages 18 to 29 in the section on Admissions at the beginning of the catalogue.

Lebanese students are required to submit the Lebanese Baccalaureate, Part II, or its equivalent before admission to the School of Pharmacy.

Specific requirements for admission directly to First Year Pharmacy are found on pages 25 to 27, and to Graduate Work in the section on Admission in the chapter at the end of this catalogue entitled Graduate Study.

Students exempted from courses successfully completed before admission must take substitute courses from a list of approved electives available at the Director's Office. Such students cannot take less than 15 credit hours per semester.

GRADUATION REQUIREMENTS

To be eligible for the degree of Bachelor of Science in Pharmacy, a student must: complete satisfactorily the basic curriculum of the School of Pharmacy with a minimum of 138 semester credit hours over and above the completion of 30 semester credit hours in the Freshman Science class of the Faculty of Arts and Sciences (for which see page 53), or an equivalent program; attain an average considered satisfactory by the School, and complete nine months of practical experience in an approved pharmacy. (See section below on Practical Experience.) The degree is granted with *distinction* to students who complete the program with an average of 85 or above, who incur no academic delinquencies, who com-

plete at least three years in residence at the School of Pharmacy of this University and who are recommended by the Faculty of the School.

(For requirements for the degree of Master of Science in Pharmacy, see section below on Graduate Study.)

REGISTRATION

Students of the first, second, and third years take practical experience (see below, Practical Experience) during the summer and are registered on a 12 months basis which includes one month of vacation. The first nine months of this period (October to June) constitute the academic part of the course during which they take the curriculum outlined below. During the remaining three months (July to September) students complete the required period of practical experience (12 weeks) for that year.

Students of the fourth year are registered as students in the School of Pharmacy for the duration of the academic year only (October to June) during which they take the academic curriculum outlined below.

ACADEMIC RULES AND REGULATIONS

Attendance

Regular attendance is required at lectures, recitations, and laboratories. A student's absence from more than one third of the scheduled semester hours for a course will be considered by the appropriate Committee which decides on the measures to be taken.

Students may not absent themselves from announced examinations and quizzes unless excused by the Director's Office. If a student is absent on the day an announced quiz or examination is held, and can present a valid excuse, he will be allowed, subject to the discretion of the Department, to take a make-up examination. If no make-up examination is given, the quiz shall be ignored when determining the final grade for the course. If the student does not present a valid excuse, he will not be allowed a make-up examination and will receive a grade of zero for the quiz.

No student may be excused from laboratory requirements. All missed laboratory work must be made up by arrangement with the responsible professor.

Students taking courses in the Faculty of Arts and Sciences are required to follow the attendance and absence regulations of that Faculty.

Examinations

Final examinations are given at the end of each semester. In addition to these examinations, teachers having charge of courses hold quizzes during the semester to determine proficiency. These quizzes constitute a part of the student's rating as reported to the Registrar.

Grades and Promotion

In the School of Pharmacy the following grading system is used: 90-100 Excellent; 80-89 Good; 70-79 Fair; 60-69 Weak; below 60 Failing.

For promotion to the next higher class the student must pass all courses and must

attain a general average of 65 for first year and 70 for second, third and fourth years.

A student passing in all courses with a yearly average below that required for promotion will be asked to repeat the year. A student repeating a year is required to attain a minimum general average of 70 for first year, and 75 for second, third and fourth years, and to take a minimum of 15 credit hours per semester.

A student repeating a year may be exempted from courses in which he attained a grade of 75 or above, and must take substitute courses up to a minimum total of 15 credit hours per semester, chosen from a list of approved electives available in the Director's Office.

To be placed on the Dean's Honor List a student must: (a) have a minimum grade average of 80; (b) stand in the upper 15% of his class; (c) have no failure; (d) have no special condition for promotion; (e) not be repeating; (f) be taking courses equal to at least five-sixths of the credit hours of his class; (g) have no disciplinary action against him; and (h) be deemed worthy by the Director to be on the Honor List.

Failures and Deficiencies

Students failing courses taken in the Faculty of Arts and Sciences during the academic year will be required to repeat these courses.

Failure and deficiencies in courses taken in the Schools of Pharmacy, Medicine, and Public Health can be made up by re-examination provided the student meets the promotion standards for his class. These examinations are given at the end of the summer for all classes except fourth year students who are allowed to take them in June before graduation. No make-up examination is allowed if the failing grade is below 50, in which case the student will have to repeat the year.

A student failing a repeated course, failing to attain the required average at the end of the second semester, failing a summer course, or failing a course make-up examination is required to repeat the year.

Students repeating a year will be required to repeat all courses in which they have a grade below 75.

A student failing a course at the end of the first semester will be warned. A student failing in 12 credit hours at the end of the first semester, failing in 12 cumulative credit hours at the end of the second semester or at the end of the summer session, or failing to meet promotion or graduation standard after repeating a year will be dropped.

PRACTICAL EXPERIENCE

In addition to completing the academic requirements, students must also complete, before graduation, nine months (36 weeks of 30 hours each) of practical experience in an approved pharmacy.

A list of pharmacies in Lebanon approved for practical experience is available from the Director of the School of Pharmacy.

The practical experience is completed during the summer vacations. No exceptions will be permitted except by prior approval of the Faculty. Before June 1 each student must submit to the Director a special certificate form supplied by the School

and completed as required, indicating the name and address of the pharmacy in which he has been accepted to practice during the summer of the current year. No change of pharmacy will be allowed except by special authorization of the Director.

During their practical experience students must keep a record of their work according to the instructions given by the School. The record books and certificates of completed practice must be submitted to the Director of the School at the time of registration and will be subject to the approval of the appropriate Committee. Students who do not present certificates of practice and books at the time of registration will not be given credit for practical experience taken during that period.

Students taking practical experience during the summer may make up academic failures or deficiencies by taking courses during the summer session up to a maximum of 5 credit hours, provided prior approval of the Director is obtained and provided they are able to complete a minimum of 30 hours of practical experience each week.

GRADUATE STUDY

The M.S. in Pharmacy is a professional and scientific qualification, and therefore involves both the acquisition of a number of skills and the development of an explicit and disciplined awareness of a number of scholarly and critical problems. The M.S. program provides an opportunity for thought, wide reading and experimental research, so that the student may devote himself to the study of his choice selected from the four major areas of specialization, namely, pharmacy, pharmaceutical chemistry, pharmacognosy and pharmacodynamics. The program of each student, planned by his advisor and supervisory Committee, must include a minimum number of course credits and a thesis. General requirements for graduate study are found in the chapter at the end of this catalogue entitled Graduate Study.

Curriculum

	Lect. and Rec. Hours per Week		Laboratory Hours per Week		Semester Credit Hours
	Sem. I ³	Sem. II ³	Sem. I ³	Sem. II ³	
First Year ^{1,2}					
Biology 201 General Biology ⁴	3	–	3	–	4
Biology 202 General Biology ⁴	–	3	–	3	4
Chemistry 201 Chemical Principles I ⁴	3	–	–	–	3
Chemistry 202 Chemical Principles II ⁴	–	3	–	–	3
Chemistry 203 Introductory Experimental Chemistry	1	–	4	–	2
Chemistry 206 Quantitative Analysis	–	2	–	4	4
Pharmacy 205 Pharmacy Orientation I	1	–	–	–	1
Pharmacy 206 Pharmacy Orientation II	–	1	–	–	1
Pharmacy 207 Introduction to Physical Pharmacy	3	–	–	–	3
Physics 103 General Physics I ⁴	3	–	3	–	4
Physics 204 General Physics II ⁴	–	3	–	3	4
<i>Total</i>	14	12	10	10	33
Second Year ^{1,2}					
Chemistry 211 Organic Chemistry I ⁴	3	–	–	–	3
Chemistry 212 Organic Chemistry II ⁴	–	3	–	–	3
Chemistry 213 Organic Chemistry Lab. ⁴	–	1	–	8	4
Pharm. Chem. 225 Inorg. Pharm. Chem.	–	2	–	–	2
Pharm. Chem. 227 Pharm. Analysis I	3	–	6	–	6
Pharmacy 225 Processes & Preparations	3	–	4	–	5
Pharmacy 227 Physical Pharmacy I	4	–	–	–	4
Pharmacy 228 Physical Pharmacy II	–	3	–	2	4
Pharmacy 230 Pharm. Administration	–	3	–	–	3
<i>Total</i>	13	12	10	10	34
Third Year ^{1,2}					
Bacteriology 248 Medical Microbiology	–	3	–	4	5
Biochemistry 211 Basic Biochemistry	4	–	3	–	5
Pharm. Chem. 248 Pharmaceutical Analysis II	–	3	–	4	5
Pharmacognosy 245 Pharmacognosy I	3	–	7	–	6
Pharmacognosy 246 Pharmacognosy II	–	3	–	4	5
Pharmacy 242 Biopharmaceutics	–	3	–	–	3
Physiology 246 Anatomy-Physiology	5	–	5	–	7
<i>Total</i>	12	12	15	12	36

1. For courses given in other Faculties or Schools, see under Faculties or Schools concerned.

2. Students of first, second and third years must also complete during the summer 12 weeks of practical experience in an approved pharmacy. (See section on Practical Experience, p. 149.)

3. Sixteen weeks constitute one semester.

4. An elective is chosen instead if the student has taken the course or its equivalent previously and has been exempted from it by the advisor. A list of approved electives is available at the Director's Office.

	Lect. and Rec. Hours per Week		Laboratory Hours per Week		Semester Credit Hours
	Sem. I ²	Sem. II ²	Sem. I ²	Sem. II ²	
Fourth Year ¹					
Biochemistry 248 Biochemistry of Body Fluids and Tissues	–	1	–	3	2
Pharm. Chem. 261 Organic Medicinal and Pharm. Chem. I	2	–	–	–	2
Pharm. Chem. 262 Organic Medicinal and Pharm. Chem. II	–	2	–	–	2
Pharm. Chem. 270 Chemotherapy	–	3	–	–	3
Pharmacognosy 248 Pesticides	–	1	–	–	1
Pharm. and Tox. 267 Pharmacodynamics	3	–	3	–	4
Pharm. and Tox. 268 Pharmacodynamics and Toxicology	–	3	–	–	3
Pharmacy 270 Biological Products	3	–	–	–	3
Pharmacy 271 Dispensing Pharmacy I	4	–	4	–	5
Pharmacy 272 Dispensing Pharmacy II	–	4	–	4	5
Pub. Health HSA 310 Public Health and Emergency Medical Care	2	–	–	–	2
Pub. Health TH 204 Parasitology	–	3	–	2	4
<i>Total</i>	<u>14</u>	<u>17</u>	<u>7</u>	<u>9</u>	<u>36</u>

Courses

Numbers Preceding Course Titles

Courses in the School of Pharmacy are numbered as follows: First year courses 200-219; Second year courses 220-239; Third year courses 240-259; and Fourth year courses 260-279. Graduate courses are numbered 300-399. Numbers ending with odd figures designate courses normally given in the first semester and those ending with even figures designate courses normally given in the second semester.

Courses taught in the Faculty of Arts and Sciences and the Schools of Medicine and Public Health are numbered according to the systems used by the respective Faculty and Schools.

Numbers Following Course Titles

The first number following the title of course indicates the number of lecture and discussion hours given each week.

The second number indicates the laboratory hours required each week.

The third number indicates the semester credit hours for the course. Each hour of laboratory is considered 1/4 to 1/2 credit hour.

Course Descriptions

Detailed course descriptions are available for those requiring further information.

1. For courses given in other Faculties or Schools, see under Faculties or Schools concerned.

2. Sixteen weeks constitute one semester.

DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

225 *Inorganic Pharmaceutical Chemistry*. 2.0; 2 cr; second semester. Chemical study of inorganic compounds of known value in therapy.

227 *Pharmaceutical Analysis I*. 3.6; 6 cr; first semester. Type procedures used in the assay of pharmaceutical products. Emphasis on instrumental methods and modern techniques.

248 *Pharmaceutical Analysis II*. 3.4; 5 cr; second semester. Continuation of 227, which is prerequisite.

261 *Organic Medicinal and Pharmaceutical Chemistry I*. 2.0; 2 cr; first semester. Chemical study of groups of drugs with emphasis on synthesis and structure activity relationship.

262 *Organic Medicinal and Pharmaceutical Chemistry II*. 2.0; 2 cr; second semester. Continuation of 261. Neither part I nor part II of this course includes the chemotherapeutic agents and biological products of pharmaceutical interest.

270 *Chemotherapy*. 3.0; 3 cr; second semester. Study of chemotherapeutic agents such as anti-infectives, anti-parasitics, anti-neoplastic agents, antibiotics, etc.

311 *Advanced Organic Pharmaceutical Chemistry*. 3.0; 3 cr; first semester. Factors affecting the administered drug before, during and after it reaches the site of action are stressed. Model organic reactions having a parallel in biological systems are reviewed.

314 *Selected Topics in Pharmaceutical Chemistry*. 3.0; 3 cr; second semester. Advanced study of current problems dealing with the synthesis and mechanism of action of compounds of medicinal value.

322 *Enzymology*. 2.4; 4 cr; first semester. Introductory course.

326 *Pharmaceutical Quality Control I*. 2.6; 5 cr; first semester. Quality control of pharmaceuticals as practiced in pharmaceutical manufacturing and drug control laboratories.

327 *Pharmaceutical Quality Control II*. 2.6; 5 cr; second semester. Continuation of 326, which is prerequisite.

333 and **334** *Seminar*. 1.0; 1 cr; two semesters.

399 *M.S. Thesis*.

DEPARTMENT OF PHARMACODYNAMICS AND TOXICOLOGY

267 *Pharmacodynamics*. 3.3; 4 cr; first semester. Absorption, fate, mechanism action and biochemical and physiological effects of drugs. Biological assays where applicable.

268 *Pharmacodynamics and Toxicology*. 3.0; 3 cr; second semester. Continuation of 267. Principles of toxicology are also discussed.

333 and **334** *Seminar*. 1.0; 1 cr; two semesters.

399 *M.S. Thesis*.

DEPARTMENT OF PHARMACOGNOSY

- 245** *Pharmacognosy I.* 3.7; 6 cr; first semester. Drugs of natural origin, especially those containing alkaloids and glycosides.
- 246** *Pharmacognosy II.* 3.4; 5 cr; second semester. Drugs of natural origin including fermentation products and other drugs not included in 245.
- 248** *Pesticides.* 1.0; 1 cr; second semester. Household pesticides.
- 312** *Economic Pharmacognosy.* 1.6; 4 cr; first semester. Microscopic and chemical analysis of drugs of natural origin.
- 317** *Tutorial in Chemotaxonomy.* 1.6; 4 cr; second semester.
- 322** *Literature of Pharmacognosy.* 1.0; 1 cr; first semester.
- 326** *Biosynthesis of Plant Constituents.* 4.0; 4 cr; second semester. Biosynthesis of secondary products of plant metabolism.
- 333** and **334** *Seminar.* 1.0; 1 cr; two semesters.
- 399** *M.S. Thesis.*

DEPARTMENT OF PHARMACY

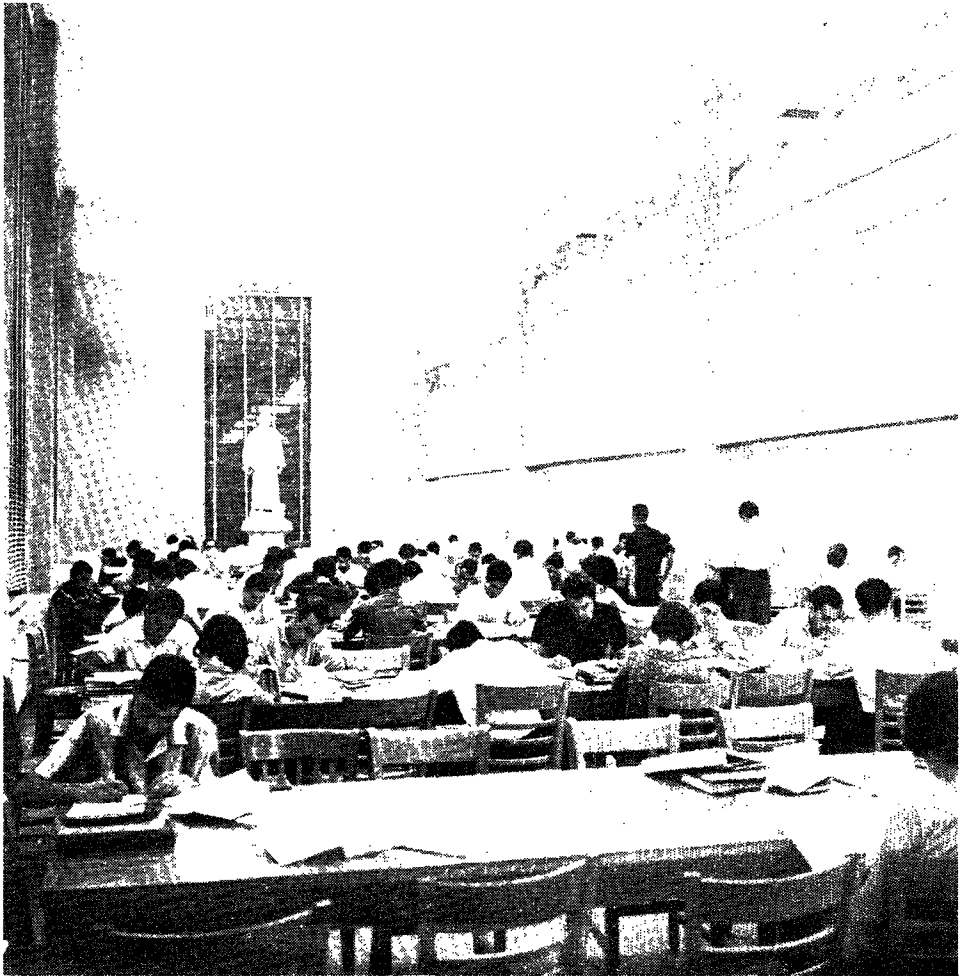
- 205** *Pharmacy Orientation I.* 1.0; 1 cr; first semester. Introduction to the profession.
- 206** *Pharmacy Orientation II.* 1.0; 1 cr; second semester. Continuation of 205.
- 207** *Introduction to Physical Pharmacy.* 3.0; 3 cr; first semester. Review of basic mathematical operations and their application to physical pharmacy.
- 225** *Pharmaceutical Processes and Preparations.* 3.4; 5 cr; first semester. Basic physico-chemical principles as applied to pharmaceutical processes and preparations.
- 227** *Physical Pharmacy I.* 3.2; 4 cr; first semester. Fundamental concepts of physical chemistry applied to pharmaceutical systems.
- 228** *Physical Pharmacy II.* 4.0; 4 cr; second semester. Continuation of 227.
- 230** *Pharmacy Administration.* 3.0; 3 cr; second semester. Introduction to the essentials of management, marketing, human relations with personnel administration, finance, banking, accounting and business laws.
- 242** *Biopharmaceutics.* 3.0; 3 cr; second semester. The relationship between the physicochemical properties of dosage forms and their biological availability.
- 270** *Biological Products.* 3.0; 3 cr; second semester. Vitamins, hormones, amino acids, sera, vaccines, enzymes, and proteins of therapeutic use.
- 271** *Dispensing Pharmacy I.* 4.4; 5 cr; first semester. Dosage forms in which medications may be administered.
- 272** *Dispensing Pharmacy II.* 4.4; 5 cr; second semester. Continuation of 271, which is prerequisite. Incompatibilities, drug stability and pharmacy laws.
- 307** *Selected Topics in Tablet Manufacturing.* 3.2; 4 cr; first semester.
- 308** *Parenteral Products.* 3.0; 3 cr; first semester.

311 *Selected Topics in Pharmacy*. 3.0: 3 cr, first semester. Principles and processes of pharmacy as applied to the manufacturing of dosage forms, excluding topics covered in 307 and 308.

315 *Biopharmaceutics and Pharmacokinetics*. 3.0: 3 cr, second semester. Biological and physico-chemical factors related to the biological availability and the fate of drugs and their dosage forms.

333 and **334** *Seminar*. 1.0: 1 cr, two semesters.

399 *M.S. Thesis*.



Main Reading Room at Jafet Library.

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SCHOOL OF NURSING



SCHOOL OF NURSING

Faculty List 1972-1973

Craig S. Lichtenwalner, M.D., M.P.H.; *Professor of Public Health Practice, Dean of the Faculties of Medical Sciences.*

Esther L. Moyer, B.S.N.E., M.A.; *Associate Professor of Nursing, Director of the School of Nursing.*

Raif R. Nassif, M.D., M.P.H.; *Professor of Clinical Pathology, Associate Dean of the Faculties of Medical Sciences.*

Fuad S. Haddad, Ph.D.; *Associate Professor of Education, Registrar.*

ASSOCIATE PROFESSORS

Moyer, Esther, B.S.N.E., M.A., Teacher's College, Columbia University; *Nursing.*
Shaya, Wadad, M.S.N.E., Syracuse University; *Nursing.*

ASSISTANT PROFESSORS

Khalaf, Wadad, M.S. in Nursing, Boston University School of Nursing; *Medical-Surgical Nursing.*

Sayegh, Juliette,* M.S. in Nursing, Boston University School of Nursing; M.S. in Public Health Nursing, University of North Carolina; *Maternal-Child Nursing.*

Sy, Magdalena, M.S. in Nursing, Case Western Reserve University; *Medical-Surgical Nursing.*

Thomas, Grace, M.S. in Medical-Surgical Nursing and Nursing Education, University of California; *Medical-Surgical Nursing.*

Yamine, Lorena, B.S., University of Kansas; *Maternal-Child Nursing.*

INSTRUCTORS

Balian, Sossi, B.S. in Nursing, AUB; *Maternal-Child Nursing.*

Geadah, Khanum,** B.S. in Nursing, AUB; *Mental Health and Psychiatric Nursing.*

Hashim, Nihad,* B.S. in Nursing, AUB; *Fundamentals of Nursing.*

Makarem, Salwa, M.S. in Nursing, Boston University School of Nursing; *Medical-Surgical Nursing.*

Panjarjian, Anahid, B.S. in Nursing, AUB; *Post-Basic Program in Administration and Teaching of Nursing.*

ASSISTANT INSTRUCTORS

Ayvazian, Elizabeth, A.B. in Psychology, Haigazian College, Beirut; Nursing Diploma, AUB; *Medical-Surgical Nursing.*

Bakkalian, Mary, B.S. in Nursing, AUB; *Maternal-Child Nursing.*

Beyhoum, Falak, B.A., AUB; *Recruitment Counselor.*

Deeb, Hera-Zanoyan,* B.S. in Nursing, AUB; M.Ed., University of Arizona; *Medical-Surgical Nursing.*

Fahoud, Leila, B.S. in Nursing, AUB; *Fundamentals of Nursing.*

* On Leave 1972-73.

** On Leave Spring, 1973.

- Sahakian, Rosalie, B.S. in Nursing, AUB; *Medical-Surgical Nursing*.
 Shnorhokian, Arpi, B.S. in Nursing, AUB; *Medical-Surgical Nursing*.
 Sweatman, Betty, B.S. in Nursing, University of Western Ontario; *Medical-Surgical Nursing*.
 Wakim, Hanneh, B.S. in Nursing, University of Tennessee; *Mental Health and Psychiatric Nursing*.
 Zacca, Elizabeth, B.S. in Nursing, Montana State University; *Medical-Surgical Nursing*.

AD HOC LECTURERS — PART-TIME

- Atiyeh, Maurice, M.D., AUB; *Anatomy and Physiology*.
 Kan'an, Munir, M.D., AUB; *Pharmacology and Therapeutics*.
 Kanafani, Uthman, Ph.C., AUB; *Chemistry*.
 Lanson, Marion, M.A., AUB; *English*.
 Lichtenwalner, Phyllis, B.A., Beirut College for Women; *Psychology*.
 Mugerditchian, Helen, M.S., AUB; *Nutrition*.
 Puzantian, Vahé, M.D., AUB; *Psychiatry*.

General Information

The School of Nursing, founded in 1905, was one of the first organized nursing schools in the Middle East. The five year Bachelor of Science in Nursing program established in 1936 was replaced October, 1964, with a four year program leading to the Bachelor of Science in Nursing degree. A post basic program in Administration and Teaching of Nursing has been offered since 1952.

The School of Nursing is one of the four schools in the Faculties of Medical Sciences. As a part of the University, the School is committed to the philosophy and purpose of the American University of Beirut: to educate men and women for creative, responsible lives in their own communities "who not only are technically competent in their professional fields, but who also have breadth of vision, a sense of civic and moral responsibility, and devotion to the fundamental values of human life".

The School of Nursing is on the list of schools approved by the Board of Nurse Examiners, State Education Department, New York University Board of Regents, as well as by the Lebanese Ministry of Education. Graduates of the diploma and degree programs are qualified for the licensing examination in Lebanon and in other countries having legislation for the licensure of professional nurses.

The Faculty believe that the School exists for the education of the student, and that the Faculty is directly responsible for providing the learning opportunities which will develop an individual who is effective in his or her personal, professional, social and civic life, both as a student and as a graduate nurse. We believe that nursing is a dynamic relationship with persons needing preventive, curative and rehabilitative services. This nurse-patient relationship is based upon utilization of principles from the natural, behavioral, medical and nursing sciences. It involves the ability of the nurse to identify needs, plan and give nursing care to individuals, independently and/or cooperatively as a member of the health team.

The School utilizes the libraries and general educational and cultural facilities of

the University. Clinical resources used in learning the nursing care of adults and children include the 420 bed hospital and out-patient clinics of the AUB Medical Center, the health centers operated by the School of Public Health and the Municipality of Beirut, the Government Hospital of Sidon, the Lebanon Hospital for Mental and Nervous Disorders, the Hamlin Hospital for Chest Diseases, and other health agencies.

Students whose homes are in Beirut live with their families; other students live in University residences on campus or in University-approved housing off campus. For specific information on student affairs, including housing, food service, health service, and University recreational and social programs, see the chapter on Student Life in this catalogue. Information on fees appears in the chapter on Fees, and a Fee List (available on request) provides information on students' purchase of uniforms and other School supplies.

Students participate in all University activities, and all Nursing students are members of the Nursing Students' Society.

ADMISSION

For complete and detailed information regarding admission to the University, including certificates recognized, see pages 18 to 29 in the chapter on Admissions at the beginning of this catalogue.

1. Diploma Program in Nursing

The specific requirements for admission to first year of the Diploma program in Nursing are found on page 29 of this catalogue. Lebanese students are required to meet the Lebanese Government requirements for admission to Nursing. The Baccalaureate, Part I, is required from October, 1973.

Graduates of this program are prepared for beginning staff nurse positions in hospitals and out-patient clinics. Study of preventive, curative, and rehabilitative aspects of nursing throughout the curriculum in hospitals, clinics, health centers, home visiting and health agencies provides the graduate with beginning skills to practice nursing in countries of the Middle East and elsewhere. The program aims to prepare young women and men with interests, attitudes and appreciations which will enable them to lead wholesome personal lives, realize their maximum potentialities through intellectual, social and personal growth, and contribute effectively as nurses and citizens in their communities.

2. Bachelor of Science in Nursing Program

The specific requirements for admission to first year are found on pages 21 to 25 and to second year on pages 25 to 27 of this catalogue. Applicants take the entrance examinations specified by the University for students seeking entrance to a Science program.

The program consists of four academic years and three summer sessions for those admitted to first year and three academic years and two summer sessions for those admitted to second year.

Graduates of this program will be able to perform nursing functions at a professional level of competence. After staff nursing experience, a graduate will be able to assume a leadership rôle in planning, providing, directing and evaluating nursing

care, as well as contributing to the development of health services in cooperation with other members of the health team. Individuals with special aptitude will be able to function as assistant teachers or supervisors after staff nurse experience and further in-service education. In addition to professional competence, graduates will possess ability to meet the responsibilities of professional people in their personal, professional and civic rôles. It is expected that a large number of graduates will pursue advanced studies, specializing in various clinical fields, in teaching, administration and research. Therefore, this program provides the foundation for graduate education.

Graduates of diploma programs in nursing enter the Bachelor of Science in Nursing program by matriculating in the same manner as other students. The graduate nurse may take written and practical examinations on selected nursing or nutrition courses offered early in the Bachelor of Science in Nursing program and, if successful, will be granted exemption credit. Further information on these validating (or challenging) examinations will be furnished on request. Part-time study may be pursued, but failure to complete requirements within seven years will result in a re-evaluation of credits and possible loss of credit.

3. Post Basic Program in Administration and Teaching of Nursing

This program is designed for graduates of diploma programs in nursing who desire preparation for positions in supervision, junior level of teaching or administration of a hospital nursing service.

The program of studies is planned to strengthen the student's knowledge and abilities in the preventive, curative and rehabilitative aspects of nursing, with emphasis on medical-surgical nursing, maternal-child nursing, or mental health and psychiatric nursing. In addition, courses in teaching, supervision and curriculum with related supervised practice are planned to prepare the graduate nurse for a beginning position in either teaching or supervision.

The program consists of two academic semesters and a summer session. Students are admitted each October.

Students lacking proficiency in English as determined by the AUB English entrance examination will be required to take either the summer University Orientation program (August and September) or the full year University Orientation program.

The applicant must submit evidence of graduation from an approved school of nursing together with references attesting to character and to aptitude for successful completion of the program. At least one year of successful staff nursing experience in a hospital or health agency is prerequisite. Proficiency in reading, writing and understanding technical and scientific materials in English is essential. Applications should be filed and the AUB English entrance examination taken in accordance with dates shown in the University calendar, or the TOEFL (Test of English as a Foreign Language) examination should be taken by March prior to the October in which admission is planned.

GRADUATION REQUIREMENTS

To be eligible for graduation, a student in the Nursing Diploma and Bachelor of Science in Nursing programs must complete satisfactorily the curriculum of the program, attain an average of 70 and be recommended by the Faculty.

Students who have completed their educational program with an average of 85 or above, and who are recommended by the Faculty of the School of Nursing and the Faculties of Medical Sciences, are awarded their diploma or degree *with distinction*.

Students in the Post Basic program are awarded a certificate upon satisfactory completion of the program. To be eligible for the certificate a student must have a minimum grade of 60 in each course, and be recommended by the Faculty.

REQUIREMENT FOR EMPLOYMENT AFTER GRADUATION

A year of work experience at the AUB Hospital is required following graduation of all students in the Nursing Diploma program. During this year the graduate is employed as a staff nurse and receives the same salary as all other staff nurses who begin employment at the Hospital. This year is in recognition of the education provided by the University. A student living in University housing and receiving board for one year during the first two years is obligated for an additional year of employment at the Hospital.

ACADEMIC RULES AND REGULATIONS

In the School of Nursing the following grading system is used: 90-100 Excellent; 80-89 Good; 70-79 Fair; 60-69 Weak; below 60 Failing.

Promotion is based upon academic attainment, ability in applying knowledge to nursing situations and evidence of a high level of personal responsibility. A grade of at least 60 is required in all courses except clinical nursing courses and the second course in English. In these courses a grade of 70 is required. The Faculty reserves the right to request the withdrawal of any student who in their judgment fails to show evidence of desirable levels of achievement.

For promotion to the next higher class, students in the *Degree program* must pass all courses and attain a general average of at least 65 for the first year in the program and 70 for subsequent years; and students in the *Diploma program* must pass all courses and attain a general average of at least 70. Upon Faculty action, a student may be allowed to remain in the School on probation or to repeat a semester or year of study. Probation must be removed prior to the last semester in the School, and in most cases removal will be required prior to beginning the senior year.

To be placed on the Dean's Honor List, a student must: (1) have a minimum grade average of 80; (2) rank in the upper 10% of his or her class; and (3) have no failures or course repetitions in the current semester.

Curricula¹

DIPLOMA PROGRAM IN NURSING

First Year

	Lect. Hours per Week	Lab. ¹ Hours per Week	Semester Credit Hours
<i>First Semester</i>			
Anat. 101 Anatomy and Physiology	3	2	4
Chem. 117 Chemistry	2	2	3
Eng. 117 English I	3	–	3
Nurs. 101 Orientation	1½	–	–
Nurs. 105 Fundamentals of Nursing	5	1	5
Psych. 101 Psychology	2	–	2
Phys. Educ. 001 (or 003) Freshman Athletics ³	–	2	–
			17
<i>Second Semester</i>			
Anat. 102 Anatomy and Physiology	3	2	4
Bact. 102 Microbiology for Nurses	2	2	3
Eng. 118 English II	3	–	3
Nurs. 106 Fundamentals of Nursing	4	10½	7
Pub. Health TH 102 Parasitology and Mycology for Nursing	1	1	1
Phys. Educ. 002 (or 004) Freshman Athletics ³	–	2	–
			18
<i>Summer Session</i>			
Nurs. 111 Medical-Surgical Nursing	4	10½	6
Nutr. 101 Nutrition	2	1	2
			8

Second Year

<i>First Semester</i>			
Nurs. 116 Medical-Surgical Nursing	8	14	12
Phys. 118 Physics for Nursing	3	2	4
Soc. 101 Sociology and Social Problems	3	–	3
			18
<i>Second Semester</i>			
Nurs. 136 Maternal-Child Nursing	6	21	12
<i>Summer Session</i>			
Nurs. 137 Maternal-Child Nursing	2	14	6

1. For courses given in other Faculties or Schools, see under Faculties or Schools concerned.

2. One credit hour of laboratory is the equivalent of two clock hours weekly per semester; one nursing laboratory hour is the equivalent of three and one half clock hours.

3. See page 168.

Third Year

	Lect. Hours per Week	Lab. ¹ Hours per Week	Semester Credit Hours
<i>First Semester</i>			
Nurs. 131 Mental Health and Psychiatric Nursing ²	3	21	9
Nurs. 140 Medical-Surgical Nursing ² (includes Sidon Hospital Experience)	2	28	10
Nurs. 151 Leadership and Management	2	—	2
Pub. Health CHP 201 Community Nursing	2	—	2
			<u>13-14</u>
<i>Second Semester</i>			
Nurs. 131 Mental Health and Psychiatric Nursing ²	3	21	9
Nurs. 140 Medical-Surgical Nursing ²	2	28	10
Nurs. 145 Foundations and Trends in Nursing	3	—	3
			<u>12-13</u>

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1. One credit hour of laboratory is the equivalent of two clock hours weekly per semester; one nursing laboratory hour is the equivalent of three and one half clock hours.
 2. One half of group is taking Nurs. 131 while the other is taking Nurs. 140.

BACHELOR OF SCIENCE IN NURSING PROGRAM

First Year

	Lect. Hours per Week	Lab. ² Hours per Week	Semester Credit Hours
<i>First Semester</i>			
Arab. 101 Studies in Arabic Language and Literature ¹	3	–	3
Chem. 101 General Chemistry	3	3	4
Eng. 103 (105) English Communication Skills	3	2	4
Math. 101 Introductory College Mathematics	3	–	3
Phys. Educ. 001 (or 003) Freshman Athletics ³	0	2	0
			<u>14</u>
<i>Second Semester</i>			
Arab. 102 Studies in Arabic Language and Literature	3	–	3
Biol. 201 General Biology	3	3	4
Chem. 102 General Chemistry	3	3	4
Elective in Humanities	3	–	3
Eng. 104 (106) English Communication Skills	3	2	4
Phys. Educ. 002 (or 004) Freshman Athletics ³	–	2	–
			<u>18</u>
<i>Summer Session</i>			
Math. 102 Calculus and Analytic Geometry I	4	–	4
Elective in Humanities	3	–	3
			<u>7</u>

Second Year

<i>First Semester</i>			
Chem. 201 Chemical Principles ⁴	3	–	3
Chem. 203 Introductory Experimental Chemistry ⁴	–	2	2
Cult. Stud. 201 Ancient, Medieval and Renaissance Culture	3	–	3
Eng. 201 Advanced English Communication Skills	3	–	3
Introduction to Library Use ³	1	–	–
Phys. 103 General Physics I ⁵	3	2	4
Psych. 201 General Psychology	3	–	3
			<u>18</u>

1. Required of all students. Non-Arabic speaking students study Arab. 203-204, 12 or hours, and eliminate first year electives.
2. One credit hour of laboratory is the equivalent of two clock hours weekly per semester; one nursing laboratory hour is the equivalent of three credit hours.
3. See page 169.
4. Students who hold the Baccalaureate II in Science or Mathematics, or have completed Chem. 101 and 102, elect a course replacement from the humanities.
5. Students who hold Baccalaureate II in Science, elect a science course replacement.

	Lect. Hours per Week	Lab ¹ Hours per Week	Semester Credit Hours
Second Semester			
Chem. 208 Brief Survey of Organic Chemistry	3	—	3
Chem. 209 Organic Chemistry	1	4	2
Cult. Stud. 202 Ancient, Medieval and Renaissance Culture	3	—	3
Phys. 204 General Physics II	3	3	4
Pub. Health EB 204 Introductory Biostatistics	1	2	2
Soc. 201 Introduction to Sociology <i>or</i> Anthrop. 210 Introduction to Anthropology	3	—	3
			<u>17</u>
Summer Session			
Psych. 218 Psychology of Learning	3	—	3
Nurs. 200 Introduction to Nursing as a Profession	2	—	2
Nutr. 200 Nutrition	2	2	3
			<u>8</u>
Third Year			
First Semester			
Bact. 237 Microbiology for Nursing	2	2	3
Nurs. 300 Nursing Care of Adults	5	6	7
Physiol. 246 Anatomy and Physiology	5	5	7
			<u>17</u>
Second Semester			
Ed. 212 Dynamics of Classroom Communication <i>or</i> Psych. 212 Social Psychology <i>or</i> Soc. 224 Social Interaction	1 3 3	2 — —	2 3 3
Nurs. 301 Nursing Care of Adults	5	15	10
Psych. 225 Psychology of Development	3	—	3
Pub. Health EB 202 Epidemiology	1	2	2
			<u>17-18</u>
Summer Session			
Nurs. 302 Mental Health and Psychiatric Nursing Care	3	9	6
Fourth Year			
First Semester			
Nurs. 400 Maternal-Child Nursing I	4	9	7
Elective in Humanities	3	—	3
Pub. Health CHP 206 Community Health Nursing	3	10	8
			<u>18</u>
Second Semester			
Nurs. 401 Maternal-Child Nursing II	3	12	7
Nurs. 403 Nursing Seminar	3	—	3
Nurs. 405 Advanced Nursing	3	12	7
			<u>17</u>

1. One credit hour of laboratory is the equivalent of two clock hours weekly per semester; one nursing laboratory is the equivalent of three credit hours.

POST BASIC PROGRAM IN ADMINISTRATION AND TEACHING OF NURSING

Administration and Teaching of Medical-Surgical Nursing

	Lect. Hours per Week	Lab. ² Hours per Week	Semester Credit Hours
<i>First Semester</i>			
Arab. 117 Arabic ¹	1	—	—
Nurs. 005 Medical-Surgical Nursing	6	14	10
Pub. Health EH 101 General Science	3	2	4
Pub. Health ID 203 Social and Psychological Foundations of Public Health	3	—	3
			<u>17</u>
<i>Second Semester</i>			
Arab. 118 Arabic ¹	1	—	—
Nurs. 045 Foundations and Trends in Nursing	3	—	3
Nurs. 055 Principles of Administration and Supervision	3	14	7
Nurs. 075 Principles and Methods of Teaching	3	4	5
Nurs. 065 Introduction to Curriculum Development I	2	—	2
			<u>17</u>
<i>Summer Session</i>			
Nurs. 011 Teaching of Medical-Surgical Nursing <i>or</i>	3	7	5
Nurs. 012 Administration of Medical-Surgical Nursing	1	14	5
Nurs. 066 Introduction to Curriculum Development II	2	—	2
			<u>7</u>

Administration and Teaching of Maternal-Child Nursing

<i>First Semester</i>			
Arab. 117 Arabic ¹	1	—	—
Nurs. 025 Maternal-Child Nursing	4	14	8
Pub. Health CHP 205 Growth and Development	1	2	2
Pub. Health EH 101 General Science	3	2	4
Pub. Health ID 203 Social and Psychological Foundations of Public Health	3	—	3
			<u>17</u>
<i>Second Semester</i>			
Arab. 118 Arabic ¹	1	—	—
Nurs. 045 Foundations and Trends in Nursing	3	—	3
Nurs. 055 Principles of Administration and Supervision	3	14	7
Nurs. 065 Introduction to Curriculum Development	2	—	2
Nurs. 075 Principles and Methods of Teaching	3	4	5
			<u>17</u>

1. Arabic conversation for non-Arabic speaking students. Prerequisite is forty hours of private instruction in conversational Arabic.

2. One credit hour of laboratory is the equivalent of two clock hours weekly per semester; one nursing laboratory hour is the equivalent of three and one half clock hours.

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>Summer Session</i>			
Nurs. 031 Teaching of Medical-Surgical Nursing <i>or</i>	3	7	5
Nurs. 032 Administration of Maternal-Child Nursing Care	1	14	5
Nurs. 066 Introduction to Curriculum Development II	2	—	2
			7

Administration and Teaching of Mental Health and Psychiatric Nursing

First Semester

Arab. 117 Arabic ¹	1	—	—
Nurs. 035 Mental Health and Psychiatric Nursing	3	14	7
Psych. Two Psychology courses to be scheduled on basis of need	6	—	6
Pub. Health ID 203 Social and Psychological Foundations of Public Health	3	—	3
			16

Second Semester

Arab. 118 Arabic ¹	1	—	—
Nurs. 045 Foundations and Trends in Nursing	3	—	3
Nurs. 055 Principles of Administration and Supervision	3	14	7
Nurs. 065 Introduction to Curriculum Development I	2	—	2
Nurs. 075 Principles and Methods of Teaching	3	4	5
			17

Summer Session

Nurs. 041 Teaching of Mental Health and Psychiatric Nursing <i>or</i>	3	7	5
Nurs. 042 Administration of Mental Health and Psychiatric Nursing	1	14	5
Nurs. 066 Introduction to Curriculum Development II	2	—	2
			7

Courses

The *first number* after the title of the course indicates the clock hours of lectures each week, the *second number* indicates the laboratory clock hours each week, and the *third number* indicates the credit hours per semester. Each hour of nursing laboratory is considered to be $\frac{1}{3}$ to $\frac{1}{4}$ credit hour; each hour in science laboratory is considered $\frac{1}{4}$ to $\frac{1}{2}$ credit hour. Courses are numbered as follows: 1-99 Post Basic certificate program in nursing, 100-199 Diploma program in nursing and 200-409 Degree program in nursing.

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1. Arabic conversation for non-Arabic speaking students. Prerequisite is forty hours of private instruction in conversational Arabic.
 2. One credit hour of laboratory is the equivalent of two clock hours weekly per semester; one nursing laboratory hour is the equivalent of three and one half clock hours.

DIPLOMA PROGRAM IN NURSING

Anat. **101** and **102** *Anatomy and Physiology*. 3.2; 4 cr each course.

Arab. **117** and **118** *Arabic*. 1.0; 0 cr each course. Colloquial Arabic to help non-Arabic speaking students communicate with patients and coworkers. Prerequisite: 40 hours of private instruction.

Bact. **102** *Microbiology for Nurses*. 2.2; 3 cr. Introduction to the characteristic activities of micro-organisms and their relation to disease prevention and control.

Chem. **117** *Chemistry*. 2.2; 3 cr. Fundamental principles of inorganic, organic, and physiological chemistry with emphasis on clinical aspects of chemistry and their application to nursing.

Eng. **117** and **118** *English*. 3.0; 3 cr each course.

Nurs. **101** *Orientation*. 1½.0; 0 cr. Designed to orient the student to effective methods of study, technics of parliamentary procedure, and social usage.

Nurs. **105** and **106** *Fundamentals of Nursing*. 5.1; 5 cr; first semester; 4.10½; 7 cr; second semester. The first course provides a broad overview of nursing as a community health service. Knowledge of health problems and resources acquired through lectures and observations in health agencies is utilized for development of concepts of the rôle of nurses and nursing in historical and contemporary settings. The second course assists the student in applying knowledge from natural and behavioral sciences to meet basic human needs in health and sickness. The impact of psycho-socio-economic factors and illness on personality is studied. Opportunities for development of beginning skills in meeting comprehensive nursing needs of people are provided in hospitals, out-patient clinics, and community health agencies.

Nurs. **111** and **116** *Medical-Surgical Nursing*. 4.10½; 6 cr; first course; 8.14½; 12 cr; second course. An integrated course designed to help the student understand the physiological, social and psychological needs of adults having medical or surgical health problems, and to acquire the knowledge, abilities and attitudes necessary to meet their preventive, curative, and rehabilitative nursing needs. Learning experiences in hospital (including operating room), clinics, home and community agencies are utilized.

Nurs. **131** *Mental Health and Psychiatric Nursing*. 3.21; 9 cr. Concepts of personality development and theories regarding psychological aspects of illness are used to develop sensitivity to reasons for human behavior, particularly in incipient or advanced mental disorders. Beginning skill in meeting patient needs and working with other health team members is provided through laboratory experience in general and psychiatric hospitals.

Nurs. **136** and **137** *Maternal-Child Nursing*. 6.21; 12 cr; first course; 2.14; 6 cr; second course. Basic understanding of maternal and child care. The aims of maternal and child health programs, their development and progress, the normal maternal cycle, the care of mothers with complications and care of the hospitalized child. The approach is family-centered and the nurse's rôle as health teacher is stressed. Care of selected patients in out-patient clinics, hospital and other maternal and child health agencies provides learning opportunities.

Nurs. **140** *Medical-Surgical Nursing*. 2.28; 10 cr. Application of advanced scien-

tific principles of care to meet the complex nursing problems of a medical or surgical nature.

Nurs. **145** *Foundations and Trends in Nursing*. 3.0; 3 cr. Historical development, practices and trends in nursing and health services as they affect the nurse's rôle.

Nurs. **151** *Leadership-Management Principles*. 2.0; 2 cr. Principles of leadership and management and their application in the nursing care of groups of patients, primarily in hospitals.

Nutr. **101** *Nutrition*. 2.1; 2 cr.

Phys. Educ. **001** (or **003**) and **002** (or **004**) *Freshman Athletics*. 0.2; 0 cr each course. A theory and performance approach toward appreciation and knowledge of athletics, body building and various sports.

Phys. **118** *Physics for Nursing*. 3.2; 4 cr. Basic principles of physics and their application in patient care situations.

Psych. **101** *General Psychology*. 2.0; 2 cr.

Pub. Health CHP **201** *Community Nursing*. 2.0; 2 cr. Principles of family health supervision, case finding, referral technics for continuity of care and the nurse's rôle.

Pub. Health TH **102** *Parasitology and Mycology for Nursing*. 1.1; 1 cr. Parasites and fungi of importance to man.

Soc. **101** *Sociology and Social Problems*. 3.0; 3 cr.

BACHELOR OF SCIENCE IN NURSING PROGRAM

Course descriptions for courses offered by the Faculty of Arts and Sciences, the School of Medicine and the School of Public Health appear in the respective chapters of this catalogue.

Arab. **101** and **102** *Studies in Arabic Language and Literature*. 3.0; 3 cr.

Bact. **237** *Microbiology for Nursing*. 2.2; 3 cr.

Biol. **201** *General Biology*. 3.1; 4 cr.

Chem. **101** *General Chemistry*. 3.3; 4 cr.

Chem. **102** *General Chemistry*. 3.3; 4 cr.

Chem. **201** *Chemical Principles I*. 3.0; 3 cr.

Chem. **203** *Introductory Experimental Chemistry*. 0.2; 2 cr.

Chem. **208** *Brief Survey of Organic Chemistry*. 3.0; 3 cr.

Chem. **209** *Organic Laboratory for Non-Majors*. 1.4; 2 cr.

Cultural Studies **201** and **202** *Ancient, Medieval and Renaissance Culture*. 3.0; 3 cr.

Educ. **212** *Dynamics of Classroom Communication*. 1.2; 2 cr.

Educ. **215** *Psychology of Education*. 3.0; 3 cr.

Eng. **103** and **104** *English Communication Skills*. 3.2; 4 cr.

Eng. **105** and **106** *English Communication Skills*. 3.2; 4 cr.

Eng. **201** *Advanced English Communication Skills.* 3.0; 3 cr.

Library Orientation. A short-term, non-credit course on the effective use of libraries and library materials. Usually taken in conjunction with Eng. 201, but exemption from Eng. 201 does not provide exemption from this course.

Math. **101** *Introductory College Mathematics.* 3.0; 3 cr.

Math. **102** *Calculus and Analytic Geometry I.* 4.0; 4 cr.

Nurs. **200** *Introduction to Nursing as a Profession.* 2.0; 2 cr.

Nurs. **300** and **301** *Nursing Care of Adults.* 5.6; 7 cr. and 5.15; 10 cr. The major adult health problem arising from pathophysiologic adaptations to illness, and the nursing care required by responses of individuals and therapeutic management.

Nurs. **400** and **401** *Maternal-Child Nursing I and II.* 4.9; 7 cr. and 3.12; 7 cr. A family-centered approach is utilized in assisting students to meet the normal psycho-social and physiological needs of mothers and infants during the maternity cycle, and in acquiring the abilities essential to the care of sick and well children.

Nurs. **403** *Nursing Seminar.* 3.0; 3 cr. Societal changes and their implications for nursing and the nursing practitioner. Research and implementation in nursing and nursing education.

Nurs. **405** *Advanced Nursing.* 3.12; 7 cr. Further development of abilities in assessing, planning, coordinating and improving nursing care of groups of patients, and developing leadership abilities.

Nutr. **200** *Nutrition.* 2.2; 3 cr.

Phys. Educ. **001** (or **003**) and **002** (or **004**) *Freshman Athletics.* 0.2; 0 cr each course. A theory and performance approach toward appreciation and knowledge of athletics, body building and various sports.

Phys. **103** *General Physics I.* 3.2; 4 cr.

Phys. **204** *General Physics II.* 3.3; 4 cr.

Physiol. **246** *Anatomy and Physiology.* 5.5; 7 cr.

Psych. **201** *General Psychology.* 3.0; 3 cr.

Psych. **218** *Psychology of Learning.* 3.0; 3 cr.

Psych. **225** *Psychology of Development.* 3.0; 3 cr.

Pub. Health CHP **328** *Community Health Nursing.* 3.10; 8 cr.

Pub. Health EB **204** *Introductory Biostatistics.* 1.2; 2 cr.

Pub. Health EB **226** *Epidemiology.* 1.2; 2 cr.

Soc. **201** *Introduction to Sociology.* 3.0; 3 cr.

Anthrop. **210** *Introduction to Anthropology.* 3.0; 3 cr.

POST BASIC PROGRAM IN ADMINISTRATION AND TEACHING OF NURSING

Arab. **117** and **118** *Arabic.* 1.0; 0 cr each course. Colloquial Arabic to help non-Arabic speaking students communicate with patients and coworkers. Pre-requisite: 40 hours private instruction.

Nurs. **005** *Medical-Surgical Nursing*. 6.4; 10 cr. Further develops the student's knowledge and ability to meet the total nursing needs of patients having medical and surgical health problems, as a basis for effective teaching or supervision. Principles and concepts from natural and social sciences, nutrition, medical science and nursing serve as the focus. A nursing problem approach is utilized.

Nurs. **011** *Teaching of Medical-Surgical Nursing*. 3.2; 5 cr. Theory and practice in teaching under guidance of experienced teachers.

Nurs. **012** *Administration of Medical-Surgical Nursing Care*. 1.4; 5 cr. Learning experiences are provided to further develop knowledge and abilities used in head nurse, supervisory, or junior administrative positions.

Nurs. **025** *Maternal-Child Nursing*. 4.4; 8 cr. The nurse's rôle and abilities essential for meeting needs of mothers throughout the maternity cycle, as well as sick and well children, are studied through a family-centered approach to health care.

Nurs. **031** *Teaching of Maternal-Child Nursing*. 3.2; 5 cr. Theory and practice in teacher-related activities under the guidance of experienced teachers.

Nurs. **032** *Administration of Maternal-Child Nursing*. 1.4; 5 cr. Learning experiences are provided to further develop the student's knowledge and abilities related to head nurse, supervisory, or junior administrative positions.

Nurs. **035** *Mental Health and Psychiatric Nursing*. 3.4; 7 cr. Theories and concepts of personality development and integration, and principles and methods of therapy, are utilized to further develop the student's ability to meet needs of people with mental health problems or psychiatric disorders, and to work effectively as a health team member.

Nurs. **041** *Teaching of Mental Health and Psychiatric Nursing*. 3.2; 5 cr. Theory and practice in teacher-related activities under the guidance of experienced teachers.

Nurs. **042** *Administration of Mental Health and Psychiatric Nursing*. 3.3; 5 cr. Learning experiences are provided to further develop the student's knowledge and abilities as related to head nurse, supervisory, or junior administrative positions.

Nurs. **045** *Foundations and Trends in Nursing*. 3.0; 3 cr. Historical development of nursing; trends in nursing and nursing education and their impact upon the nurse's rôle and responsibilities.

Nurs. **055** *Principles of Administration and Supervision*. 3.4; 7 cr. Principles of administration and their application in planning, directing, evaluating and improving nursing care, primarily in hospital nursing services.

Nurs. **065** and Nurs. **066** *Introduction to Curriculum Development*. 2.0; 2 cr each course. Principles of curriculum development and their implementation, primarily in nursing diploma and non-professional nurse level programs.

Nurs. **075** *Principles and Methods of Teaching*. 3.2; 5 cr. Introduction to the learning process, and the aims, methods and technics of teaching and evaluation.

Pub. Health CHP **205** *Growth and Development*. 1.2; 2 cr.

Pub. Health EH **101** *General Science*. 3.2; 4 cr.

Pub. Health ID **203** *Social and Psychological Foundations of Public Health*. 3.0; 3 cr.

SCHOOL OF PUBLIC HEALTH



SCHOOL OF PUBLIC HEALTH

Faculty List 1972-1973

Craig S. Lichtenwalner, M.D., M.P.H.; *Professor of Public Health Practice, Dean of the Faculties of Medical Sciences.*

Louis J. Verhoestraete, M.D., M.P.H.; *Professor of Maternal and Child Health, Director of the School of Public Health.*

Raif E. Nassif, M.D., M.P.H.; *Professor of Clinical Pathology, Associate Dean of the Faculties of Medical Sciences.*

Fuad S. Haddad, Ph.D., *Associate Professor of Education, Registrar.*

PROFESSORS

- * Azar, Joseph, M.D., AUB; D.T.M. & H., London School of Hygiene and Tropical Medicine; *Infectious Diseases and Epidemiology.*
- * Churchill, Charles, Ph.D., New York University; *Public Health Statistics.*
- * Edeson, John, A.R.C.Sc., B.Sc., University of London; M.B., Ch.B., M.D., University of Sheffield; D.P.H., University of Liverpool; *Tropical Health.*
- * Harfouche, Jamal, M.D., AUB; M.S. in Hyg., Dr.P.H., Harvard University; *Maternal and Child Health.*
- * Lichtenwalner, Craig, M.D., Long Island College of Medicine; M.P.H., Harvard University; *Public Health Practice.*
- * Stephen, Lorne, D.V.M., University of Toronto; D.A.P. & E., London School of Hygiene and Tropical Medicine; F.R.V.C.S., London; *Tropical Health and Protozoology.*
- * Sweatman, Gordon, Ph.D., McGill University; *Parasitology and Tropical Health.*
- * Verhoestraete, Louis, M.D., University of Louvain; M.P.H., Harvard University; *Maternal and Child Health.*

ASSOCIATE PROFESSORS

- * Abou-Daoud, Kamal,** M.D., AUB; D.T.M. & H., London School of Hygiene and Tropical Medicine; M.S. in Hyg., Harvard University; *Epidemiology.*
- * Acra, Aftim, Ph.C., AUB; M.P.H., University of North Carolina; *Sanitary Chemistry.*
- Haddad, Nadim, M.D., AUB; M.P.H., Harvard University; *Public Health Administration.*
- Najemy, Robert, M.S.W., Boston College; *Medical Social Work.*

ASSISTANT PROFESSORS

- Frayha, George, Ph.D., University of Massachusetts; *Parasitology and Tropical Health.*
- Hunt, Rita, M.S., University of California; *Public Health Nursing.*
- Ibrahim, Jack, M.P.H., University of California; *Environmental Health.*
- Khouri, Yvonne, M.S.H.A., Northwestern University; *Hospital Administration.*
- Merchant, Najmuddin, M.Sc. (Microbiology), University of Karachi; Dr.P.H., University of California; *Environmental Health.*
- Shamma, Aida Cotran, M.P.H., University of North Carolina; *Health Education.*

* On Tenure Appointment.

** On Furlough or Leave.

LECTURERS

- Atallah, Basil, M.D., AUB; *Community Health Practice*.
 Dajany, Said, M.D., D.P.H., AUB; *Public Health Administration*.
 Egee, David, M.S.H.A., Columbia University; *Hospital Administration*.
 Hasna, Shawki, B.A., D.P.H., AUB; *Public Health Education*.
 Hayek, Elias, M.D., Faculté Française de Médecine, Beirut; M.P.H., Harvard University; *Public Health Administration*.
 Mourad, Sah'l, M.D., Faculté Française de Médecine, Beirut; Dr.P.H., Tulane University; *Tropical Health*.
 Muzayyin, Muhammad, M.D., AUB; M.P.H., Harvard University; *Public Health Administration*.
 O'Brien, Nancy, Dip. Nursing, Selly Oak Hospital, Birmingham; Certificate in Midwifery Part I & II, Midwifery Tutor's Dip., Birmingham Maternity Hospital; *Midwifery* (Visiting).
 Sharif, Muhammad, M.B., B.S., University of Bombay; F.R.C.S.; *Public Health Administration*.
 Yaktine, Umayma, Ph.D., University of London; *Mental Health*.

INSTRUCTORS

- Abi-Yaghi, Marie José, M.D., Faculté Française de Médecine, Beirut; D.P.H., AUB; *Child Health*.
 Azouri, Laure, M.S., University of North Carolina; *Public Health Nursing*.
 Azzi, Donata, Nursing Dip., AUB; *Public Health Nursing*.
 Cortas, Asdghik, M.S., University of Maryland; *Public Health Statistics*.
 Koussa, Mtanios, M.T. (A.S.C.P.), School of Medical Technology, Washington; *Tropical Health*.
 Milki, Raif, B.S., AUB; D.E.S.T., Technological University, Delft; *Environmental Health*.
 Watfa, Nabil, M.S., London School of Hygiene and Tropical Medicine; *Occupational Hygiene*.
 Zurayk, Huda,** M.A., Harvard University; *Public Health Statistics*.

ASSISTANT INSTRUCTOR

- Zeidan, Mary, Nursing Dip., AUB; B.A., Beirut College for Women; *Public Health Nursing*.

RESEARCH ASSISTANTS

- Deurguerian, Seta, M.A., AUB; *Public Health Administration*.
 Lattouf, Elizabeth, B.A., AUB; *Public Health Administration*.
 Lorfing, Irene, M.A., AUB; *Public Health Statistics* (Senior Research Assistant).
 Razzouk, Helen, B.A., Beirut College for Women; *Community Health Practice* (Senior Research Assistant).
 Samara, Elham, M.A., AUB; *Community Health Practice*.
 Simaan, Lilian, M.P.H., AUB; *Health Education*.

* On Tenure Appointment.

** On Furlough or Leave.

General Information

The establishment of the School of Public Health in 1954 was the outgrowth of an expressed concern of AUB and its Trustees to provide technical and leadership training to persons required to staff ministries of health and public health services in newly emergent countries of the Middle East and Africa. The program of the University in public health in the intervening years has been patterned closely upon the immediate and often critical needs of most of these countries, for laboratory technicians, sanitarians, health educators, public health nurses and home visitors. At the same time, it was appreciated from the outset that the University had a longer-range responsibility to provide training in administrative techniques in health programming to medical officers of health who would be concerned with the institution and direction of community programs of disease prevention and control.

With the passage of time the School has seen its first graduates share in the creation of other national and regional training centers for health technicians. This heartening development now permits the School to concentrate its efforts and resources in increasing measure upon programs of leadership training for medical officers of health and other key members of the public health team, and also upon the development of research facilities necessary to train scientists in biomedical disciplines basic to the modern practice of public health.

The School of Public Health, one of four schools of the Faculties of Medical Sciences, consists of five Departments and the administrative office of the Director. The School also serves as a Department of Preventive Medicine for the School of Medicine.

Physically the School occupies one building adjacent to the Medical and Pharmacy Schools, as well as additional space in Van Dyck Hall, the Pathology Department, MedCent I and the Hospital compound (old Private Clinics). The School's Faculty and Staff participate with the municipality of Beirut and the Lebanese Public Health Association in operating Demonstration Health Centers. In addition, they participate with the municipalities of Mreiji (Mt. Lebanon), and with the Lebanese Red Cross in operating an experimental Family Health Care program at peri-urban and rural levels. Extension work is also being carried out at the Sidon Government Hospital. The Central (Jafet) and Medical Libraries are conveniently situated to the laboratories and classrooms of the School of Public Health. Vehicles are available for field studies and research activities in the community.

All students in the School of Public Health are members of the Public Health Students Society. This group fosters social and professional relationships between students. Election of officers is held in the first semester, and committee appointments are made at that time. The Public Health Students' Society sponsors such activities as tours, conferences, athletic events, social evenings, and *Campus*, the annual yearbook of the University.

Participation of students in the academic life of the School of Public Health is strengthened by the establishment of a Student-Faculty Committee and the participation of representatives of the student body in matters dealing with curriculum development and those of a disciplinary nature.

ADMISSION

1. GENERAL

Applicants for admission to the School of Public Health must be proficient in the

English language. An English examination will be administered to all students before admission, preferably prior to coming to Beirut. Exceptions may be made in the case of those students who have completed their basic work in English.

Applicants who have reached the age of 40 will be admitted only by special permission of the Director on recommendation of the Admissions Committee.

2. SPECIFIC PROGRAMS

a. Master of Public Health

Admission is limited to persons holding a graduate degree from an acceptable institution in a discipline relevant to public health, or a Bachelor's degree from an acceptable institution, with substantial knowledge in a discipline relevant to public health through either study or experience or a combination of both.

b. Bachelor of Science (Environmental Health)

To be eligible for admission to the program leading to the degree of Bachelor of Science (Environmental Health), candidates must have completed satisfactorily the Freshman Science program in the Faculty of Arts and Sciences, or an equivalent program, with a grade of 70 or more in at least 12 credit hours and an average of 70 or more in Chemistry or Mathematics, and must be accepted by the School of Public Health.

Lebanese students must present the Lebanese Baccalaureate Part II (Experimental Science or Mathematics) or its equivalent, and should be considered by the Registrar to be eligible for admission to Sophomore (Science) class.

Courses taken before the student is admitted to the B.S. program may be credited at the discretion of the Department of Environmental Health.

c. Diploma in Public Health Nursing

To be eligible for admission, a candidate must have completed a course of study in an approved school of nursing or in a combined nurse-midwife/home visitor school, to either of which an admission requirement is the completion of secondary school, or an equivalent matriculation, and must have had experience of at least one year in the field of nursing or public health or a related field.

d. Post Basic Program in Midwifery

To be eligible for admission, a candidate must have completed a course of study in an approved school of midwifery and be recognized as a midwife in her own country, and must have a minimum of one year's experience in midwifery or an acceptable associated area.

e. Certificate in Basic Laboratory Technique

To be eligible for admission, a candidate must have completed secondary school (11th or 12th grade) or matriculation at the secondary level and must have an adequate background in chemistry and mathematics. In general, this should consist of at least one year's course in each subject in secondary school. Applicants whose background has been entirely in arts and/or social sciences will not be accepted.

3. SPECIAL STUDENTS IN NON-DEGREE PROGRAMS

The School, in exceptional circumstances, may accept a limited number of special students who do not meet the formal entrance requirements. Each student will be considered on an individual basis. A special student is not a candidate for a degree, a diploma, or a certificate. At the completion of the period of study, the student will receive a letter signed by the Director of the School describing the content of his training program.

Students admitted as "Special" because of failure in the English entrance examination may be upgraded by vote of the Faculty to regular status if they meet the academic requirements for the first semester.

GRADUATION REQUIREMENTS

Recommendation for graduation of a student is made by vote of the Faculty of the School.

a. Master of Public Health

To be eligible for graduation in the M.P.H. program, a student must have passed all courses with minimum grades of 70, must have a weighted average of at least 75 at the end of the program and have a total of at least 30 credit hours. The program lasts normally for one academic year, but in exceptional circumstances students may complete it in two academic years.

b. Bachelor of Science in Environmental Health

To be eligible for the B.S. degree, a student must have completed satisfactorily the prescribed program of study in the School with a minimum of 100 semester credit hours plus the Freshman Science credits or equivalent, must have attained a cumulative general average of 70 and must have completed satisfactorily the assigned period of summer field training.

c. Diploma in Public Health Nursing

To be eligible for graduation in the Public Health Nursing program leading to a Diploma, a student must have passed all courses with a weighted average of 70, with credit hours totaling at least 30 for the two semesters, and must have completed satisfactorily the assigned period of summer field training.

d. Post Basic Program in Midwifery

To be eligible for graduation in the Post Basic Midwifery program leading to a Certificate, a student must have passed all courses with a weighted average of 60, with credit hours totaling 30 for the two semesters, and must have completed satisfactorily the assigned period of summer field training.

e. Certificate in Basic Laboratory Technique

To be eligible for the Certificate in Basic Laboratory Technique, a student must have passed all courses with a weighted average of 60, with credit hours totaling 30 for the two semesters, and must have completed satisfactorily the assigned period of summer field training.

GRADUATION WITH DISTINCTION

Graduation *with distinction* does not apply to graduate and certificate students. Diploma students may be awarded their diplomas with distinction based on excellent character and a weighted average of 85 or more. In addition, the B.S. degree may be granted with distinction, but only to students who have completed a minimum of two academic years of residence at the School. All proposed graduations with distinction must be approved by the Faculty of the School.

ACADEMIC RULES AND REGULATIONS

Grades

The numerical evaluation of the student's achievement will include his work in theory, practice, laboratory, seminars, final examinations and any other requirements.

Final evaluation of students takes place at the end of each semester (and summer period where applicable). Each Department chairman is responsible for furnishing the Director with grades and recommendations about students as necessary.

In the School of Public Health the following grading system is used: 90-100 Excellent; 80-89 Good; 70-79 Fair; 60-69 Weak; below 60 Failing (except in the M.P.H. program in which a grade of 70 is necessary for passing).

To be placed on the Dean's Honor List, a student must: (a) be taking 12 or more credit hours; (b) have a minimum weighted semester average of 85; (c) not be repeating; and (d) be recommended by the Director to the Dean of the Faculties of Medical Sciences.

Failures and Deficiencies

(a) A student with a semester weighted average of 70 (60 for certificate students) or more who is failing in not more than 6 credit hours in courses offered in the School of Public Health may at the discretion of the Faculty be allowed to repeat the courses, or to take make-up examinations.

(b) At the end of any academic year a student who has failed in 7-12 credit hours and has failed make-up examinations may be allowed to repeat the year, but only by vote of the Faculty.

(c) A student failing 13 credit hours or more at the end of an academic year will be dropped.

(d) A student passing in all courses, but with an annual weighted average below the requirement, may repeat the academic year if allowed to remain in the School by vote of the Faculty. In exceptional circumstances, he may be required by vote of the Faculty to pass a comprehensive examination in the year's work. However, the original grades will not be changed.

(e) A student repeating an academic year must attain a minimum yearly average of 75.

(f) A student will not be permitted to repeat a course or an academic year more than once.

(g) Any student who does not maintain the minimum weighted average and has any failures in required courses may, by vote of the Faculty, be:

- (1) dropped from the School;

- (2) placed on probation;
- (3) allowed to sit for make-up examinations; *or*
- (4) required to repeat the course(s).

Probation

- (a) A student may be placed on academic probation in accordance with paragraph g (2) above, or may be placed on disciplinary probation.
- (b) A student who is not able to remove academic or disciplinary probation after two semesters (summer session of 9 credit hours is considered as a semester) will be dropped from the School of Public Health.

Make-up Examinations

- (a) Make-up examinations for students who were absent for valid reasons, or who have been allowed by the Faculty to take make-up examinations, are given within two weeks after the beginning of the second semester for first semester courses and within two weeks after the final examinations for second semester courses. A student who does not take the make-up examinations in time will receive a grade of W/F 40 for the courses.
- (b) A make-up examination grade shall be substituted for a final examination grade in evaluating the student's final grade for the course. However, the original recorded grade will be used to compute the final weighted average of the semester. If the student has a passing grade after the make-up examination, the fact will be entered on the record as "make-up" passed.

Incomplete Grades

Incomplete grades of first semester courses must be completed by the student before the end of the second semester of that year. Incomplete grades of second semester courses must be completed before the beginning of the following academic year. A student who fails to complete his courses in time without reasons considered valid by the Academic Committee will lose credit for these courses. Exceptional cases will be considered by the Academic Committee.

Attendance

- (a) Regular attendance is required at all class sessions. A student, however, is allowed in each course a number of unexcused absences per semester which shall not exceed the number of sessions scheduled per week in that course.
- (b) In case of illness, a medical certificate from a physician in the University Health Service should be given promptly to the Director's Office by the student.
- (c) Any student who absents himself from all classes for two consecutive weeks without informing the Director's Office about his absence will be considered as having withdrawn, and will not be allowed to continue during that semester without special action of the Faculty.
- (d) Any student who absents himself during a semester from more than one-third the number of sessions of any course loses all credit for the course, regardless of what his excuse for absence may be. He shall be graded as W/F. For the purpose of averaging, W/F shall be considered as 40.
- (e) All excessive absences from class shall be reported by the instructor to the Director's Office for any action necessary.

Disciplinary Action

A student engaging in academic misconduct such as cheating in examinations or plagiarism shall be referred by the Department concerned to the Disciplinary Committee for final action. The usual procedure will be immediate dismissal of the student if he is found guilty. Any student who in the judgment of the Faculty of the School does not show academic or professional promise may be dropped at any time.

Explanatory Note

Any Faculty action in academic matters contained in this Policy statement shall take place after recommendations have been made to the Faculty by the Academic Committee. The Faculty, however, is the final authority for academic actions.

GRADUATE STUDY

General requirements for graduate study are found in the chapter at the end of this catalogue entitled Graduate Study.

Specific requirements for the M.P.H. degree are to be found under Curricula below, and for the M.S. degree in Parasitology under the section entitled Department of Tropical Health. The M.P.H. degree does not require a thesis.

Curricula

DEGREE OF MASTER OF PUBLIC HEALTH

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester</i>			
Core Courses			
ID 301 Human Ecology and Health	2	4	4
EB 301 Principles of Epidemiology	2	2	3
EB 303 Biostatistics I	2	3	3
HSA 301 Health Services Administration I	2	2	3
Group Required Courses			
CHP 301 Maternal and Child Health (for physicians and equivalent; B.S. nurses and nurse-midwives)	2	2	3
CHP Problems in Health Education (for health educators)	2	2	3
TH 301 Tropical Hygiene I (for medically qualified and equivalent)	2	2	3
<i>Second Semester</i>			
Group Required Courses			
CHP 316 Research Methods in Health Education (for Health educators)	2	3	3
CHP 326 Advanced Field Practice in Public Health Nursing (for nurses)	1	2	2
Elective Courses			
CHP 302 Child Health Practice	2	2	3
CHP 302 Nutrition	1	2	2
CHP 306 Population Dynamics and Family Health	2	2	3
CHP 308 School Health	1	2	2
CHP 318 School Health Education	1	2	2
CHP 320 Community Organization for Health Education	1	2	2
CHP 322 Audio-Visual Aids in Health Education	1	3	2
CHP 324 Communication Skills in Public Health Nursing	1	2	2
EB 302 Epidemiology of Infectious Diseases	1	2	2
EB 304 Epidemiology of Non-Infectious Diseases	1	2	2
EB 306 Prevention, Control and Eradication of Disease	1	2	2
EB 308 Biostatistics II	1	3	2
EB 310 Public Health Statistics	1	3	2
EB 312 Demography	1	2	2
EB 314 Computers and Computer Programming	1	2	1

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
EH 304 Water and Wastes	3	3	4
EH 306 Milk Sanitation	2	3	3
HSA 302 Health Planning	1	2	2
HSA 304 Introduction to Hospital Administration	1	2	2
HSA 306 Health Services Administration II	1	2	2
HSA 312 Comparative Study of Health Services Systems	1	2	2
HSA 314 Health Services Research and Evaluation	1	2	2
HSA 322 Hospital Organization and Management	1	4	3
HSA 324 Accounting and Financial Management	2	2	3
HSA 328 Principles of Administration	1	2	2
HSA 330 Human Relation and Personnel Management	2	1	2
HSA 332 Hospital Planning and Construction	1	2	2
TH 302 Introductory Microbiology and Parasitology (for non-medically qualified)	2	3	3
TH 304 Medical Entomology (for medically and non-medically qualified)	2	3	3
TH 306 Tropical Hygiene II (for medically qualified and equivalent). Prerequisite: TH 301	2	2	3
TH 308 Tropical Dermatology (for medically qualified)	1	2	2
TH 310 Tropical Nutrition (for medically qualified and equivalent)	1	2	2
Tutorial Courses			
CHP 310 Growth and Development			1-2
CHP 312 Family Health and the Special Problem Child			1-2
CHP 314 Research Methods in Community Health			1-2
EB 316 Tutorial			1-2
EH 308 Tutorial			1-2
HSA 308 Tutorial			1-2

DEGREE OF BACHELOR OF SCIENCE¹

This curriculum provides a broad education in basic sciences and a fundamental knowledge in environmental health.

It is intended to prepare students for professional careers in environmental health.

First Year	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester</i>			
Biology 201 General Biology	3	3	4
Physics 103 General Physics I	3	3	4
Psychology 201 General Psychology	3	0	3
Sociology 201 Introduction to Sociology	3	0	3
TH 201 Introduction to Microbiology and Parasitology	2	1	2
<i>Second Semester</i>			
Biology 202 General Biology	3	3	4
Chemistry 201 Chemical Principles I	3	0	3
Chemistry 203 Introductory Experimental Chemistry	1	4	2
English 201 Advanced English Communication Skills	3	0	3
Physics 204 General Physics II	3	3	4
Second Year			
<i>First Semester</i>			
CP 295 Pesticides	3	0	3
EH 205 Water and Sewage	2	3	3
EH 207 Industrial Health	2	3	3
PSPA 201 Introduction to Political Studies and Public Administration	3	0	3
Chemistry 208 Brief Survey of Organic Chemistry	3	0	3
<i>Second Semester</i>			
BV 248 Medical Bacteriology	3	4	5
Chemistry 209 Organic Chemistry Laboratory for non-majors	1	4	2
EH 204 General Sanitation	2	3	3
Sociology 272 Cultural Change	3	0	3
Electives			4-6
<i>Summer Session</i>			
Field Training			

1. For courses given in the Faculty of Arts and Sciences, see under Faculty of Arts and Sciences.

Third Year

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester</i>			
CHP 209 Public Health Education	1	2	2
EH 203 Food Hygiene	2	3	3
EH 209 Sanitary Analysis of Water and Sewage	2	3	3
EH 295 Environmental Health Project			1-3
HSA 201 Public Health Administration	1	2	2
Biochemistry 211 Basic Biochemistry	3	4	5
<i>Second Semester</i>			
EB 202 Introduction to Epidemiology	1	2	2
EB 204 Introductory Biostatistics	1	2	2
TH 204 Parasitology	3	2	4
TH 364 Medical and Veterinary Entomology	2	4	4
Economics 203 Survey of Economics	3	0	3
Electives in Public Health			2-3

DIPLOMA IN PUBLIC HEALTH NURSING

This program is designed for graduate nurses who will serve as public health nurses and who will provide generalized public health nursing services to individuals, families, and the community within the framework of the general public health program.

First Semester

CHP 205 Growth and Development	1	2	2
CHP 207 Public Health Nursing I	2	3	3
CHP 209 Public Health Education	1	2	2
HSA 201 Public Health Administration	1	2	2
TH 201 Introduction to Microbiology	2	1	2
ID 203 Social and Psychological Foundations of Public Health	3	0	3

Second Semester

CHP 204 Nutrition in Public Health	2	1	2
CHP 208 Public Health Nursing II	2	6	5
CHP 210 Public Health Nursing Teaching Functions	1	2	2
ID 212 Human Relations	2	0	2
EB 202 Introduction to Epidemiology	1	2	2
EB 206 Descriptive Statistics	½	1	1
EH 202 Introduction to Environmental Health	1	2	2

Summer Session

Eight weeks including supervised field work with correlated theoretical instruction as follows:

Supervision and Administration; Health Nursing	28 hrs.
First Aid	24 hrs.
Use of Audio-Visual Tools	16 hrs.
Public Health Nursing Seminar	32 hrs.
Supervision field instruction and project	100 hrs.

CERTIFICATE IN POST BASIC MIDWIFERY

This program is designed for graduates of approved schools of midwifery who wish preparation for positions in supervision, teaching or administration in a midwifery service.

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester</i>			
CHP 101 Midwifery I	3	4	5
CHP 103 Fundamentals of Nutrition	2	2	3
CHP 105 Introduction to Public Health Education	1	2	2
CHP 205 Growth and Development	1	2	2
ID 203 Social and Psychological Foundations of Public Health	3	0	3
HSA 201 Public Health Administration	1	2	2

Second Semester

CHP 102 Midwifery II	3	4	5
CHP 104 Principles and Methods of Teaching	3	1	3
CHP 106 Solving Community Health Problems	2	0	2
CHP 108 Introduction to Audio-Visual Aids	1	3	2
EB 202 Introduction to Epidemiology	1	2	2

Summer Session

Eight weeks including supervised field work with correlated theoretical instruction as follows:

Teaching and Supervision of the Indigenous Midwife	32 hrs.
Introduction to Research Methodology	32 hrs.
Midwifery Conferences	28 hrs.

CERTIFICATE IN BASIC LABORATORY TECHNIQUE

The program in Basic Laboratory Technique has been designed to meet the great need for laboratory workers in public health and clinical laboratories in the countries served by the School of Public Health.

The curriculum is specialized and is geared almost entirely to laboratory training. Because of this, applicants should have, in addition to English, a strong background in chemistry and mathematics.

		Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester</i>				
BV 15	Bacteriological Technique I	2	4	4
CP 11	Clinical Chemistry I	2	4	4
CP 17	Clinical Pathology I	1	3	2
CP 101	General Science	3	2	4
TH 103	Parasitological Technique I	1	2	2
<i>Second Semester</i>				
BV 16	Bacteriological Technique II	2	6	5
CP 12	Clinical Chemistry II	2	4	4
CP 18	Clinical Pathology II	2	4	4
TH 104	Parasitological Technique II	1	2	2

Courses

Numbers Preceding Course Titles

Initials preceding the number of a course refer to respective Departments of the School of Public Health, the School of Medicine or other Faculties of the University.

Numbers starting with 1 are courses for certificate level students. Numbers starting with 2 are courses for diploma and B.S. level students. Numbers starting with 3 are courses for graduate level students.

Numbers ending with an odd number are taught in the first semester. Those ending with an even number are taught in the second semester.

Numbers Following Course Titles

The *first number* after the course title indicates the didactic hours each week; the *second number* indicates the laboratory or practical hours each week; the *third number* indicates the credit hours per semester.

Course Descriptions

Detailed course descriptions are available in the individual Departments for those requiring further information. For courses given in other Faculties or Schools, see under Faculties or Schools concerned.

DEPARTMENT OF COMMUNITY HEALTH PRACTICE (CHP)

Chairman: Harfouche, J.

Professors: Hunt, R.; Najemy, R.; Shamma, A.

Lecturers: Atallah, B.; O'Brien, N. (Visiting); Hasna, S.; Yaktine, U.

Instructors: Abi-Yaghi, M.; Azouri, L.; Azzi, D.; Zeidan, M.

The Department of Community Health Practice consists of four programs of study offering courses in maternal and child health (MCH), nutrition, health education, public health nursing and midwifery. Students wishing to take courses in any of the above mentioned areas of study towards the M.P.H. degree, the Diploma in

Public Health Nursing and the Certificate in Post-Basic Midwifery, should meet the approval of the Department and the School admission requirements.

Maternal and Child Health (MCH) and Nutrition

The program in MCH and Nutrition offers to physicians working towards the M.P.H. degree a series of courses: group required, elective and tutorial. Holders of the B.S. degree in Nursing may be allowed to take the group required course in MCH, but not the elective and tutorial courses, which are intended for physicians only. In addition to lectures, seminars and field visits, courses provide experience in report writing, in library research, and in designing and conducting special studies in the fields of MCH, nutrition and community health practice. The program is also responsible for the coordination of the Experimental Family Health Center designed for service, training, and operational research in the delivery of total ambulatory health care.

CHP **301** *Maternal and Child Health. 2.2;* 3 cr.

CHP **302** *Child Health Practice. 2.2;* 3 cr.

CHP **304** *Nutrition. 1.2;* 2 cr.

CHP **306** *Population Dynamics and Family Health. 2.2;* 3 cr.

CHP **308** *School Health. 1.2;* 2 cr.

CHP **310** *Growth and Development. 1-2* cr.

CHP **312** *Family Health and the Special Problem Child. 1-2* cr.

CHP **314** *Research Methods in Community Health. 1-2* cr.

Postgraduate Refresher Courses UNICEF-WHO-AUB

The Department with the collaboration of the Departments of Pediatrics and Obstetrics-Gynecology of the School of Medicine offers annually three 12-day refresher courses to physicians (pediatricians, MCH officers, obstetricians and general practitioners) from various countries of the Middle East. These courses constitute a part of the UNICEF-WHO-AUB-sponsored Regional Training Program in Child Health and Midwifery. The courses are in three areas of study:

Refresher course in Child Health

Refresher course in School Health

Refresher course in Family Health and Population Dynamics.

Health Education

The Health Education program has two objectives: (1) it offers courses to M.P.H. candidates who wish to do intensive work in the field of health education and expect to work as health educators in governmental, non-governmental and international health agencies in school health programs, including college and university levels, and agricultural and industrial health extension programs. In addition to lectures and seminars, the courses provide experience in health education procedures, school health education, community organization, media of communication, investigation and report writing; (2) it offers general courses in health education to students in the B.S. Degree program in Environmental Health, the Diploma program in Public Health Nursing and the Post-Basic Certificate program in Midwifery. The objective of such courses is to introduce trainees to basic principles and procedures in health education and to integrate them with their future activities.

- CHP **105** *Introduction to Public Health Education.* 1.2; 2 cr.
 CHP **108** *Introduction to Audio-Visual Aids.* 1.3; 2 cr.
 CHP **209** *Public Health Education.* 1.2; 2 cr.
 CHP **305** *Problems in Health Education.* 2.2; 3 cr.
 CHP **316** *Research Methods in Health Education.* 2.3; 3 cr.
 CHP **318** *School Health Education.* 1.2; 2 cr.
 CHP **320** *Community Organization for Health Education.* 1.2; 2 cr.
 CHP **322** *Audio-Visual Aids in Health Education.* 1.3; 2 cr.

Public Health Nursing

The Public Health Nursing program is concerned with courses offered to three categories of students: (1) graduate nurses working towards the Diploma in Public Health Nursing; (2) holders of the B.S. degree in Nursing enrolled in the M.P.H. program; (3) Basic Nursing students (B.S. degree and Diploma programs).

- CHP **201** *Community Nursing.* 2.0; 2 cr.
 CHP **204** *Nutrition in Public Health.* 2.1; 2 cr.
 CHP **205** *Growth and Development.* 2.2; 2 cr.
 CHP **206** *Community Health Nursing.* 3.10; 8 cr.
 CHP **207** *Public Health Nursing I.* 2.3; 3 cr.
 CHP **208** *Public Health Nursing II.* 2.6; 5 cr.
 CHP **210** *Public Health Nursing Teaching Functions.* 1.2; 2 cr.
 CHP **324** *Communication Skills in Health Nursing.* 1.2; 2 cr.
 CHP **326** *Advanced Field Practice in Public Health Nursing.* 1.2; 2 cr.

Midwifery Program

The Midwifery program was established in 1971-72 as part of a UNICEF-WHO-AUB sponsored Regional Training Program in Child Health and Midwifery. Its aim is to prepare graduate midwives to teach in schools of midwifery and to administer midwifery services, with particular emphasis on the rôle of the midwife in relation to the total needs of the maternal and child health program. A total of 15 candidates are recruited each year by the Regional Office of the World Health Organization upon the recommendation of governments in various countries of the Middle East. Final acceptance requires the approval of the Department and the School Admissions Committee. Teaching cost and stipends are covered by UNICEF. Courses offered by the program lead to the Certificate in Post Basic Midwifery. In addition to theoretical and practical teaching during the academic year, students receive eight weeks of supervised summer field training.

- CHP **101** *Midwifery I.* 3.4; 5 cr.
 CHP **102** *Midwifery II.* 3.4; 5 cr.
 CHP **103** *Fundamentals of Nutrition.* 2.2; 3 cr.
 CHP **104** *Principles and Methods of Teaching.* 3.1; 3 cr.
 CHP **106** *Solving Community Health Problems.* 2.0; 2 cr.

DEPARTMENT OF ENVIRONMENTAL HEALTH (EH)

Chairman: Acra, A.

Professors: Ibrahim, J.; Merchant, N.

Instructors: Milki, R.; Watfa, N.

The Department of Environmental Health offers a three-year program in Environmental Health leading to the B.S. degree. This curriculum provides a broad education in basic sciences and a fundamental knowledge in environmental health. Emphasis is placed on evaluation and control of major environmental health problems in developing countries in such fields as water supplies, waste disposal, food hygiene, occupational health, radiation protection, air and marine pollution and control of disease vectors. Students in this program are also required to take Public Health courses in the fields of epidemiology, biostatistics, administration and public health education.

Developing countries are in great need of qualified personnel capable of planning and implementing programs for the improvement of the human environment. This provides great opportunities for graduates of this program.

The Department offers courses which are required of students in the M.P.H. program of the School of Public Health and cooperates with the Department of Civil Engineering of the Faculty of Engineering and Architecture by offering three courses required of candidates for the M.S. degree in Sanitary Engineering.

In view of the increasing interest in development and its impact on the human environment, a variety of courses offered by this Department is made available for students in other fields.

- EH **101** *General Science.* 3.2; 4 cr.
- EH **202** *Introduction to Environmental Health.* 1.2; 2 cr.
- EH **203** *Food Hygiene.* 2.3; 3 cr.
- EH **204** *General Sanitation.* 2.3; 3 cr.
- EH **205** *Water and Sewage.* 2.3; 3 cr.
- EH **207** *Industrial Health.* 2.3; 3 cr.
- EH **209** *Sanitary Analysis of Water and Sewage.* 2.3; 3 cr.
- EH **295** *Environmental Health Project.* 1-3 cr.
- EH **304** *Water and Wastes.* 3.3; 4 cr.
- EH **306** *Milk Sanitation.* 2.3; 3 cr.
- EH **308** *Tutorial.* 1-2 cr.
- EH **351** *Sanitary Chemistry and Microbiology.* 3.0; 3 cr.
- EH **353** *Analysis of Water and Waste Water.* 1.4; 3 cr.
- EH **358** *Water Quality Control.* 3.0; 3 cr.

DEPARTMENT OF EPIDEMIOLOGY AND BIOSTATISTICS (EB)

Chairman: Azar, J.

Professors: Churchill, C.; Abou-Daoud, K.

Instructors: Cortas, A.; Zurayk, H.

The Department of Epidemiology and Biostatistics offers courses in epidemiology and biostatistics to students in the Schools of Public Health and Medicine. Some students from the School of Nursing and the Faculty of Agricultural Sciences take course EB 204 Introductory Biostatistics. EB 303 Biostatistics I, is attended by graduate students in Sanitary Engineering. Another course, EB 305 Introduction to Biostatistics, is offered to graduate students in Tropical Health. While one course in epidemiology and one in biostatistics are available at the undergraduate level, the major offerings of the Department in the School of Public Health are in the form of core and elective courses to graduate students following the M.P.H. program. The teaching of preventive medicine and public health in the School of Medicine and the teaching of courses in the behavioral sciences in the School of Public Health are coordinated by members of the Department. Interested students in the field of epidemiology may apply for the Master of Science degree (M.S.) in Epidemiology.

- EB **202** *Introduction to Epidemiology.* 1.2; 2 cr.
- EB **204** *Introductory Biostatistics.* 1.2; 2 cr.
- EB **206** *Descriptive Statistics.* ½.1; 1 cr.
- EB **225** *Medical Statistics.* 2.2; 2 cr.
- EB **226** *Epidemiology.* 1.2; 2 cr.
- EB **301** *Principles of Epidemiology.* 2.2; 3 cr.
- EB **302** *Epidemiology of Infectious Diseases.* 1.2; 2 cr.
- EB **303** *Biostatistics I.* 2.3; 3 cr.
- EB **304** *Epidemiology of Non-Infectious Diseases.* 1.2; 2 cr.
- EB **305** *Introduction to Biostatistics.* 1.2; 2 cr.
- EB **306** *Prevention, Control and Eradication of Disease.* 1.2; 2 cr.
- EB **308** *Biostatistics II.* 1.3; 2 cr.
- EB **310** *Public Health Statistics.* 2.3; 2 cr.
- EB **312** *Demography.* 1.2; 2 cr.
- EB **314** *Computers and Computer Programming.* 1.2; 1 cr.
- EB **316** *Tutorial.* 1-2 cr.
- EB **330** *Epidemiology of Zoonoses.* 1.2; 2 cr.
- EB **366** *Statistical Methods in Epidemiology.* 2.2; 3 cr.
- EB **380** *Journal Club I.* 1.0; 1 cr.
- EB **381** *Journal Club II.* 1.0; 1 cr.
- EB **390** *Directed Reading and Research.* Credit hours variable.

EB **395** *Project in Public Health I*. Credit hours variable.

EB **396** *Project in Public Health II*. Credit hours variable.

EB **399** *M.S. Thesis*. Credit hours variable.

DEPARTMENT OF HEALTH SERVICES ADMINISTRATION (HSA)

Chairman: Haddad, N.

Professor: Khouri, Y.

Lecturers: Dajani, S.; Egee, D.; Hayek, E.; Muzayyin, M.; Sharif, M.

The Department offers courses in public health administration, health care administration, and hospital administration to students in the Schools of Public Health, Medicine, and Nursing. Courses are designed to give the student a general orientation to administration as applied in the field of health and to introduce him to basic principles of organization and administration including the nature of management, decision theory, planning, health manpower training, health economics, budgeting, evaluation and the treatment of a social system as a purposeful cybernetic system.

Diversification of the M.P.H. curriculum allows M.P.H. candidates an opportunity to choose health care administration or hospital administration as their major area of study.

Teaching, training, research, and service opportunities are also available in extension programs in collaboration with the University Division of Extension and Special Programs, the American University Hospital, the Lebanese Public Health Association, and the Beirut City Health Department.

HSA **201** *Public Health Administration*. 1.2; 2 cr.

HSA **204** *Elective Internship in Medical Care* (for Medicine V students).

HSA **310-279** *Public Health* (for Pharmacy students). 2.0; 2 cr.

HSA **301** *Health Services Administration I*. 2.2; 3 cr.

HSA **302** *Health Planning*. 1.2; 2 cr.

HSA **304** *Introduction to Hospital Administration*. 1.2; 2 cr.

HSA **306** *Health Services Administration II*. 1.2; 2 cr.

HSA **308** *Tutorial*. 1-2 cr.

HSA **312** *Comparative Study of Health Services Systems*. 1.2; 2 cr.

HSA **314** *Health Services Research and Evaluation*. 1.2; 2 cr.

HSA **322** *Hospital Organization and Management*. 1.4; 3 cr.

HSA **324** *Accounting and Financial Management*. 2.2; 3 cr.

HSA **328** *Principles of Administration*. 1.2; 2 cr.

HSA **330** *Human Relation and Personnel Management*. 2.1; 2 cr.

HSA **332** *Hospital Planning and Construction*. 1.2; 2 cr.

DEPARTMENT OF TROPICAL HEALTH (TH)

Chairman: Stephen, L.

Professors: Edeson, J.; Sweatman, G.; Frayha, G.

Lecturer: Mourad, S.

Instructor: Koussa, M.

The Department of Tropical Health offers courses in helminthology, protozoology, general parasitology, medical and veterinary entomology, mycology, microbiology, the physiology of parasites, acarology, biomedical research methods and parasitological methods for students in Nursing, Basic Laboratory Technique, Environmental Health, Medicine, and for graduate students in Public Health and in Tropical Health.

In addition to the above fields of study, courses are offered to medical veterinary and dental graduates studying for the M.P.H. degree, in tropical hygiene, medical entomology, tropical nutrition and tropical dermatology.

Most courses consist of lectures and practical laboratory sessions.

Nurses and laboratory technicians are normally enrolled in the Schools of Nursing and Public Health respectively. B.S. students other than Pharmacy students must have a satisfactory background in biology before they can be accepted.

TH **102** *Parasitology and Mycology for Nursing.* 1½.0; 1 cr.

TH **103** *Parasitological Technique I.* 1.2; 2 cr.

TH **104** *Parasitological Technique II.* 1.2; 2 cr.

TH **201** *Introduction to Microbiology and Parasitology.* 2.1; 2 cr.

TH **204** *Parasitology.* 3.2; 4 cr.

TH **225** *Medical Parasitology and Mycology.* 2.3½; 3 cr.

TH **301** *Tropical Hygiene I.* 2.3; 3 cr.

TH **302** *Introductory Microbiology and Parasitology.* 2.3; 3 cr.

TH **304** *Medical Entomology.* 2.3; 3 cr.

TH **306** *Tropical Hygiene II.* 2.2; 3 cr. Pre-requisite: TH 301 Tropical Hygiene I.

TH **308** *Tropical Dermatology.* 1.2; 2 cr.

TH **310** *Tropical Nutrition.* 1.2; 2 cr.

Master of Science (M.S.) Program

Students holding a Bachelor of Science degree with an adequate background in biological subjects and with a cumulative average of 80 in the major may apply for admission to the M.S. program in the Department. Exceptionally, students whose average falls between 75 and 79 may be considered for admission *on probation*. Final decision for entrance rests with the Graduate Committee of the Faculties of Medical Sciences.

The program normally requires two full years (11 months each) for a student to graduate, and involves the acquisition of a number of skills; the development of a critical and scholarly approach to problems; and demonstration of ability to complete a laboratory research project and write a thesis in an acceptable scientific form.

The following courses are offered by the Department, but students are encouraged to take courses in other Departments and Faculties such as Anatomy, Physiology, Biochemistry, Biology and Agricultural Sciences, depending on their requirements and field of interest. Courses 351, 352, 354, 360 and 361 are given when a suitable number of students elect to take them.

TH **331** *Biology of Protozoa*. 2.3; 3 cr; alternate years.

TH **332** *Biology of Parasitic Helminths*. 3.4; 5 cr; alternate years.

TH **350** *Biomedical Research Methods*. 1.2; 2 cr; alternate years.

TH **351** *Parasitological Methods I*. 1.2; 2 cr.

TH **352** *Parasitological Methods II*. 1.2; 2 cr.

TH **354** *Physiology and Biochemistry of Parasites*. 2.2; 3 cr.

TH **360** *Medical Zoology*. 1.2; 2 cr.

TH **361** *Acarology*. 2.3; 3 cr.

TH **364** *Medical and Veterinary Entomology*. 2.4; 4 cr; alternate years.

TH **380** *Journal Club I*. 1.0; 1 cr.

TH **381** *Journal Club II*. 1.0; 1 cr.

TH **390** *Directed Reading and Research*. Credit hours variable.

TH **399** *M.S. Thesis*. Credit hours variable.

INTER-DEPARTMENTAL COURSES (ID)

ID **203** *Social and Psychological Foundations of Public Health*. 3.0; 3 cr.
(Najemy)

ID **212** *Human Relations*. 2.0; 2 cr. (Churchill)

ID **301** *Ecology and Health*. 2.4; 4 cr. (Churchill and Acra)

ID **206-207** *Social and Preventive Medicine*. 2.4; 4 cr. (Haddad)

ID **267** *Clerkship in Preventive Medicine and Public Health*. 2 weeks, 70 hrs.
(Azar)

FACULTY OF ENGINEERING AND ARCHITECTURE



FACULTY OF ENGINEERING AND ARCHITECTURE

Faculty List 1972-1973

Raymond S. Ghosn, M.S., M.Arch.; *Professor of Architecture, Dean.*
Robert W. Sloane, Ph.D.; *Professor of Engineering Sciences, Assistant Dean.*
Fuad S. Haddad, Ph.D.; *Associate Professor of Education, Registrar.*

PROFESSORS EMERITI

Weidner, C. Ken, F.A.S.C.E., M.A.S.M.E., S.M.I.E.E.E.; *Emeritus Dean.*
Hope, Edward, M.S., Massachusetts Institute of Technology; Ed.D., Columbia University; *Civil Engineering.*
Yeramian, Khosrof, B.A. (Civil Eng'g), AUB; B.Sc., Lafayette College; *Architectural Engineering.*

PROFESSORS

- * Deeb, Sulayman, Ph.D., University of Birmingham; M.I.Mech.E.; *Mechanical Engineering.*
- * Ghosn, Raymond, M.S., M.Arch., Massachusetts Institute of Technology; *Architecture.*
Gillie, Francis Blaise, C.B., M.A., University of Cambridge; *Town & Regional Planning (Visiting).*
- * Hanania, Jack, Ph.D., University of Leeds; M.I.E.E.; *Electrical Engineering.*
- * Iliya, Raja, Ph.D., University of Texas; *Civil Engineering.*
- * Kano, Kanaan, D.Eng., Yale University; *Electrical Engineering.*
Malouf, Khalil, Ph.D., University of London; *Civil Engineering (Associate of the Faculty).*
- Manasseh, Nicolas, M.E., University of California; *Civil Engineering, Professor in charge of Post-degree Programs.*
Nasser, Essam, Dr.Eng., Technische Universität, West Berlin; *Electrical Engineering.*
Nasser, Jack, Ing.Dr., University of Paris; *Civil Engineering (Part-time).*
- * Sakkal, Fateh, Ph.D., University of Manchester; M.I.Mech.E., *Mechanical Engineering.*
- * Sloane, Robert, Ph.D., University of Glasgow; F.I.E.E.; *Engineering Sciences.*
Stump, Harold, B.Arch., University of California; *Architecture (Visiting).*

ASSOCIATE PROFESSORS

- Abboud-Klink, Sami, Ph.D., Rensselaer Polytechnic Institute; *Civil Engineering.*
- Abdul-Baki, Assad, Ph.D., Oklahoma State University; *Civil Engineering.*
- Abi-Rached, George, B.Sc., Fuad I University, Cairo; *Mechanical Engineering (Part-time).*
- * Avedissian, Yeghishe, Ph.D., Purdue University; *Civil Engineering.*
- * Azoury, Pierre, Ph.D., University of London; *Mechanical Engineering.*
Chahine, Moustafa, ** Ph.D., University of California; *Mechanical Engineering.*
Chmielewski, Jerome, Ph.D., Michigan State University; *Mechanical Engineering (Visiting).*

* On Tenure Appointment.

** On Furlough or Leave.

- * Contavelis, George, M.Arch., University of Texas; *Architecture*.
- * Ingleasis, Constantine, M.S., Colorado State University; *Civil Engineering*.
- * Jouzy, Neddy, Ph.D., Purdue University; *Civil Engineering*.
- Kalayan, Haroutune, B.S., AUB; *Civil Engineering (Part-time)*.
- al-Khatib, Mounir, M.S., University of Michigan; *Civil Engineering (Part-time)*.
- Khoury, Shahwan, Ph.D., Carnegie Institute of Technology; *Electrical Engineering*.
- al-Khuri, Samir, M.S., Lehigh University; *Civil Engineering (Associate of the Faculty)*.
- * Kuran, Albert, M.E., Yale University; *Mechanical Engineering*.
- * Madany, Henry, Ph.D., Queen's University, Belfast; M.I.E.E.; *Electrical Engineering*.
- * Makhlouf, Hanna, Ph.D., Carnegie Institute of Technology; *Civil Engineering*.
- * Ragette, Friedrich, Dr.Tech.Sc., Technische Hochschule, Vienna; *Architecture*.
- * Regier, Frank,** Ph.D., Yale University; *Electrical Engineering*.
- Sabah, Nassir, Ph.D., State University of New York; *Electrical Engineering*.
- Salaam, Assem, B.A.Arch., University of Cambridge; *Architecture (Part-time)*.
- Yarid, Anis, M.S., University of Texas; *Civil Engineering (Part-time)*.

SENIOR LECTURES

- Alami, Zuheir, Ph.D., University of Texas; *Civil Engineering*.
- Papazian, Hratch, Ph.D., Ohio State University; *Civil Engineering*.

ASSISTANT PROFESSORS

- Ayoub, George, Ph.D., University of London; *Civil Engineering*.
- Clumpner, Joseph, Ph.D., Yale University; *Mechanical Engineering*.
- Khairallah, Samir, B.A.Arch., University of California; *Architecture (Part-time)*.
- Khouri, Kamal,** B.S., AUB; *Civil Engineering (Part-time)*.
- McGlothin, Gerald, Ph.D., Arizona State University; *Electrical Engineering*.
- Mukaddam, Mohammad, Ph.D., University of California; *Civil Engineering*.
- Searle, Terence, Ph.D., University of Salford; *Civil Engineering*.
- Seeger, John, Ph.D., Ohio State University; *Electrical Engineering*.
- Sfeir, Abdallah, Ph.D., University of California; *Mechanical Engineering*.
- Shammas, Nazih, Ph.D., University of Michigan; *Civil Engineering*.

LECTURERS

- Abdous-Samad, Usama, Ph.D., Purdue University; *Urban Planning (Part-time)*.
- Barhumi, Muhamed, B.E., AUB; *Electrical Engineering (Part-time)*.
- Chaiban, Claude, Docteur en Droit, University of Lyon; *Engineering Law (Part-time)*.
- al-Khalil, Ali, Ph.D., American University, Washington, D.C.; *Cultural Development (Part-time)*.
- Khouri, Khalil, Dip. d'Architecture, Académie Libanaise des Beaux-Arts; *Architectural Presentation (Part-time)*.
- Kirkwood, Grace, M.A. in Landscape Architecture, Smith College; *Landscape Design (Honorary Lecturer – Part-time)*.
- Klat, Samir, Ph.D., University of London; *Mechanical Engineering (Part-time)*.

* On Tenure Appointment.

** On Furlough or Leave.

Moussalli, Simon-Pierre, B.Arch.Eng., AUB; Dip. d'Urbanisme, University of Paris; *Urban Design* (Part-time).
Suidan, Mubadda, Ph.D., University of Illinois; *Civil Engineering* (Part-time).

INSTRUCTORS

Hawa, Nur Abdu, Dip., College of Aeronautical Engineering, London; M.I.Prod. E.; *Mechanical Engineering*.
Khouri, Toni, B.A.Arch., Pratt Institute; *Architecture* (Part-time).
Kul-Sahagian, Raweh, B.E., AUB; *Electrical Engineering*.
Mahmassani, Malik, M.Arch., University of Pennsylvania; *Architecture* (Part-time).
Tomey, George, M.S., University of Washington; *Electrical Engineering* (Part-time).
Yeramian, Viken, M.Arch., University of California; *Architecture* (Part-time).

ASSISTANT INSTRUCTOR

Khalaf, Robert, Dip. Topographie Générale, Mouthany Commercial and Technical Institute, Beirut; *Mechanical Engineering*.

General Information

As early as 1913 the University recognized the need for engineering education and training in the Arab East and courses were offered in the School of Arts and Sciences. By 1944, sufficient additional courses had been added to permit the granting of the degree of Bachelor of Science in Civil Engineering. The last class in this program graduated in June 1954. In 1951 a separate School of Engineering was established and curricula were initiated in Civil Engineering, Mechanical Engineering, Electrical Engineering and Architectural Engineering. The years 1951-1954 were a transitional period of continuous development toward the new curricula, established in 1954. In 1963, a program leading to the degree of Bachelor of Architecture was introduced, replacing the Bachelor of Architectural Engineering program, the last class of which graduated in June 1966. In 1966, the School was renamed the Faculty of Engineering and Architecture.

The engineering curricula evolved from 1954 without any major change in structure until October 1970, when new curricula were introduced for students entering Term I. The last class following the old curricula will graduate in 1973. In the new curricula, there is an increase in the number of courses in pure sciences and, in keeping with the development of the profession in the area, students choose their major subject earlier and concentrate more on that subject.

The objective of the Faculty of Engineering and Architecture is to graduate well-qualified engineers and architects who have received a modern engineering or architectural education of the highest standard, and who at the same time have particular knowledge of and training in the needs and problems of the Middle East. In addition to these technical qualifications every effort is made to present and instil the ideals of honesty, personal integrity and service to mankind. Degrees in Engineering are granted only after the student publicly subscribes to the ideals of the profession as set forth in its oath and canons of ethics.

The Faculty reserves the right to make such changes in the curriculum, course contents and regulations as it may deem appropriate and without prior notice.

Degrees Awarded

The Faculty of Engineering and Architecture offers programs of study leading to the degree of Bachelor of Engineering (B.E.) with Majors in Civil Engineering, Electrical Engineering or Mechanical Engineering, the degree of Bachelor of Architecture (B.Arch.), the degree of Master of Engineering (M.E.) with Majors in Civil Engineering, Electrical Engineering, Mechanical Engineering or Sanitary Engineering and the degree of Master of Architecture (M.Arch.) with a Major in Urban Planning and Urban Design.

Undergraduate Programs

The curriculum for the degree of Bachelor of Engineering is divided into 11 terms (8 16-week semesters and 3 9-week summer terms), totalling 155 weeks. This is equivalent to 5 academic years, but is completed in 4 calendar years. For the degree of Bachelor of Architecture, the curriculum occupies 14 terms (10 16-week semesters and 4 9-week summer terms). This total of 196 weeks is equivalent to 6 academic years, but is completed in 5 calendar years because the summers are used.

There is a short break after each term and a one-month vacation between Summer and Fall Terms.

Classes are designated by their year of graduation.

In order to develop the total personality of the Engineering and Architecture student, the Faculty provides for a wide variety of extra-curricular activities, participation in which is greatly encouraged. Also, students in Terms I and II are required to take part in a physical development program and, within the curriculum, there is a sequence of courses designed to broaden the student's cultural interests.

ADMISSION

For complete and detailed information regarding admission to the University, including certificates recognized, see pages 18 to 29 in the section on Admissions at the beginning of the catalogue. All candidates for admission to the Faculty of Engineering and Architecture must have satisfied University entrance requirements, including proficiency in the English language.

Admission is by selection of the most promising eligible applicants.

To be eligible for admission to First Year of the Faculty of Engineering and Architecture a student must have completed the pre-professional educational requirements of his country and must have completed the Freshman Science program, including chemistry, mathematics and physics, in the Faculty of Arts and Sciences of this University or a program recognized as equivalent.

Lebanese candidates must hold the Lebanese Baccaalaureate, Part II (Mathematics) or its legal equivalent. For Architecture, the Baccaalaureate, Part II (Mathematics or Experimental Science) is acceptable. Candidates with a Baccaalaureate, Part II (Philosophy) may be considered for admission to the Architecture program after they have completed the Freshman Science year.

Detailed requirements for admission *directly* to First Year Engineering and Architecture are found on pages 25 to 27.

To be accepted, a candidate must satisfy the Faculty of Engineering and Architecture on personal as well as academic grounds.

GRADUATION REQUIREMENTS

To be eligible for graduation with the degree of Bachelor of Engineering or the degree of Bachelor of Architecture a student must have passed all the courses assigned, must have satisfied promotion requirements throughout the program and the same requirements for the final 2 terms, including the removal of any probation, and must have satisfied the Faculty as to the adequacy of his professional development. Engineering students must also have taken the Undergraduate Record examination. Architecture students must also have a grade of at least 70 in Architectural Design VIII in the final term.

Students who have completed the Fall and Spring terms of the last two years with a general average of 85 or above may be recommended by the Faculty for graduation *with distinction*, but are not necessarily so recommended.

ACADEMIC RULES AND REGULATIONS

Grades

1. In the Faculty of Engineering and Architecture the following grading system is used: 90-100 Excellent; 80-89 Good; 70-79 Fair; 60-69 Weak; below 60 Failing; I Incomplete; W Withdrew; S Satisfactory; WF Withdrew Failed.

2. WF (Withdrew Failed) will be counted as 40 for the purpose of averaging and will be recorded if (1) the student fails to take the final examination without a valid excuse, or (2) absences, excused or unexcused, exceed one third of the sessions of a course, or (3) an unexcused absence occurs after two warnings for absences.

3. A student must complete the program of required courses for which he registers at the beginning of any term. If he withdraws from the program without permission, all courses are recorded as failures and the student cannot be readmitted. If, for medical reasons, a student is given permission to withdraw from the program, the record will show "withdrew". If the withdrawal is not for medical reasons, and permission to withdraw from the program is given, the record will show "withdrew" in those courses where his work up to that time is passing, and "withdrew failed" in those courses where it is failing. No applications for withdrawal will be considered within two weeks from the start of final examinations, except for medical reasons. In the case of an elective course, or a course taken in addition to the required program, a student may be given permission to withdraw from the course; and the record will show "withdrew" or "withdrew failed" depending on whether his work up to that time is passing or failing. Students are not allowed to withdraw from a course within two weeks from the start of final examinations.

4. A student who is absent from a quiz without a valid excuse will be given zero for that quiz.

5. The term average in per cent will be computed at the end of each term for all the required courses covered during that term.

To be placed on the Dean's Honor List, a student must: (a) have been promoted with no failures or probation; (b) have carried at least three quarters of the full-term load and not have been repeating the term, and (c) either (1) have a minimum term average of 85, or (2) have a minimum term average of 80 provided he ranked in the approximate top 10% of his Engineering or departmental class.

Engineering Honors are awarded to students who in addition to maintaining high academic standing have also exhibited a broad and active interest and participation in student and community activities.

Promotions and Failures

1. A student will be promoted clear at the end of a spring term provided:
 - (a) he has not failed any course during the preceding three terms (two terms at the end of Term II);
 - (b) he has attained an average of at least 70 (68 at the end of Term II) for all courses taken during the terms specified in 1(a);
 - (c) beginning with Term III, he has attained an average of at least 70 in all courses taken in his major Department since the end of the previous spring term. In Architecture, the major course requirement is an average of 70 in Architectural Design courses.
2. A student who has fulfilled requirements 1(b) and 1(c) but has failed not more than one course (of 5 credits or less) per term, during the terms specified in 1(a), may be promoted on probation.
3. At the end of any summer or fall term, a student will be allowed to continue provided he has not more than one failure in that term in a course of 5 credits or less, but at the end of Term I a student with one failure must have an average of at least 65 to continue in Term II.
4. A student promoted on probation must repeat all failed courses within the following three terms, in addition to the normal program.
5. A student not promoted, or not permitted to continue, may be allowed to repeat the term or terms in which he has failed, provided he was taking the term or terms for the first time and provided that such permission has not been granted on more than one previous occasion since the student joined the Faculty.
6. When repeating a term, a student may be exempted from repeating Associated Studies courses and Shop courses in which he has attained a grade of 70 or more and any other Engineering courses in which he has attained a grade of 75 or more.
7. A student permitted neither to continue nor to repeat will be dropped.
8. A student who at the end of a spring term, has an average of less than 60 in all required courses taken during the terms specified in 1(a) will be dropped.

GRADUATE STUDY

The programs leading to the degrees of Master of Engineering, with Majors in Civil, Electrical, Mechanical and Sanitary Engineering, and Master of Architecture, with a Major in Urban Planning and Urban Design, were established to help meet the growing demands for advanced engineering education and for physical planning to serve social ends.

Requirements

The requirements for the Master's degrees in this Faculty are those set out for the Master's degree in the chapter at the end of this catalogue entitled Graduate Study, with the following interpretations or additions:

- (a) the grades which are averaged for the admission requirement are the grades of all courses in the applicant's last two undergraduate years;
- (b) a student admitted on probation must register for and complete a minimum of six credits in his first term and must attain an average of 80 in all the work of his first term;
- (c) the course work required is a minimum of 24 credits in the Engineering programs and 30 credits in the Urban Planning and Urban Design program;
- (d) the restriction on the number of credits which may be transferred from another institution does not apply to students in the Exchange Program with the University of Pittsburgh.

Curricula and Courses

The common Terms I and II of the Engineering Departments appear on page 207. Under each Department are shown:

- (a) Teaching staff;
- (b) Curricula;
- (c) Undergraduate courses;
- (d) Graduate courses.

With the introduction of new curricula the following course numbering system was adopted for *undergraduate* courses:

Each course number is prefixed by the initials of the Department. Two pairs of digits follow. The first pair indicates the term. Of the second pair, the first digit indicates the sequence and the second the number of the course in the sequence, e.g. A 07 63 is offered by the Department of Architecture in Term VII and is the third course in sequence 6 which is concerned with Construction.

Exceptions are:

- (a) CE courses with five-digit numbers. The additional digit, á 1, indicates that the course, though offered by the Department of Civil Engineering, is for Architecture students.
- (b) Courses designated ET. These are Shop courses. The number is simply a serial number. The term is not indicated because different students take these courses in different terms. Descriptions of ET courses will be found listed between undergraduate courses and graduate courses of the Department of Mechanical Engineering, page 222.
- (c) Courses designated AS under the heading Associated Studies. Here too the term varies and is not indicated. The Mathematics courses in Term IV and V are described in the Associated Studies section.

Detailed course descriptions are available in the individual Departments for those requiring further information.

For courses given in the Faculty of Arts and Sciences, see under Faculty of Arts and Sciences.

DEPARTMENT OF ARCHITECTURE

Chairman: Ghosn, R.

Professors: Contavelis, G.; Khairallah, S.; Ragette, F.; Salaam, A.; Stump, H.

Lecturers: Khouri, Kh.; Kirkwood, G.; Moussalli, S.

Instructors: Abdous-Samad, U.; Khouri, T.; Mahmassani, M.; Yeramian, V.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ARCHITECTURE

Class of 1976 and Hereafter

	Credit Hours
<i>Term I (Fall)</i>	
A 01 11 Perception and Communication I	2
A 01 21 Architectural Communication I	4
A 01 31 Basic Design I	4
Math. 201 Calculus and Analytic Geometry II	4
ET 1 Shop I	1
AS 13 History of Architectural and Engineering Works I	3
	18

Term II (Spring)

A 02 12 Perception and Communication II	2
A 02 22 Architectural Communication II	3
A 02 32 Basic Design II	4
A 02 41 Methodology I	2
ET 2 Shop II	2
CE 02 111 Statics	2
AS 14 History of Architectural and Engineering Works II	3
	18

Term III (Summer)

CE 03 71 Geodetic Studies	4
A 03 61 Materials	3
Elective (Painting <i>or</i> Photography <i>or</i> Introduction to the Visual Arts)	3
	9

Term IV (Fall)

A 04 13 Perception and Communication III	2
A 04 23 Architectural Communication III	2
A 04 51 Architectural Design I	6
CE 04 121 Mechanics of Materials	3
ET 3 Shop III	1
Elective (Sociology <i>or</i> other Social Science Course)	3
	17

202 – ENGINEERING AND ARCHITECTURE

	Credit Hours
<i>Term V (Spring)</i>	
A 05 42 Methodology II	2
A 05 52 Architectural Design II	6
A 05 62 Building Construction I	3
CE 05 131 Structures I	2
AS 11 Man's Cultural Evolution	3
	<u>16</u>

<i>Term VI (Summer)</i>	
A 06 53 Regional Architecture	6
CE 06 411 Engineering Geology	1
Math. 209 Digital Computer Programming I	1
AS 21 Music Appreciation	2
	<u>10</u>

<i>Term VII (Fall)</i>	
A 07 43 Methodology III	2
A 07 54 Architectural Design III	6
A 07 63 Building Construction II	3
CE 07 141 Structures II	2
Elective (European Literature <i>or</i> Sociology)	3
	<u>16</u>

<i>Term VIII (Spring)</i>	
A 08 44 Methodology IV	2
A 08 55 Architectural Design IV	6
A 08 71 Environmental Control I	2
CE 08 321 Concrete I	3
AS 15 History of Art	3
	<u>16</u>

<i>Term IX (Summer)</i>	
A 09 64 Execution Drawings	10
	<u>10</u>

<i>Term X (Fall)</i>	
A 10 56 Architectural Design V	7
A 10 72 Environmental Control II	3
CE 10 331 Concrete II	2
CE 10 341 Steel	1
A 10 84 Evolution of Modern Architecture	3
	<u>16</u>

<i>Term XI (Spring)</i>	
A 11 45 History of Urban Forms and Planning	3
A 11 57 Architectural Design VI	7

	Credit Hours
A 11 73 Environmental Control III	1
CE 11 431 Soil Mechanics and Foundations	2
AS 44 Engineering Economy	<u>3</u>
	15

Term XII (Summer)

Approved Professional Practice

Term XIII (Fall)

A 13 46 Introduction to Urban Planning	3
A 13 58 Architectural Design (Urban Design)	8
A 13 59 Research for Final Project	–
A 13 74 Environmental Control IV	3
CE 13 151 Structures III	<u>2</u>
	16

Term XIV (Spring)

A 14 47 Architectural Professional Practice	2
A 14 59 Architectural Design VIII	10
A 14 65 Specifications and Quantity Surveying	<u>3</u>
	15

Class of 1975

Term X (Fall)

A 13 07 Visual Fundamentals III	2
A 10 66 Architectural Design V	7
A 10 72 Environmental Control II	3
CE 10 331 Concrete II	2
CE 10 341 Steel	1
A 10 84 Evolution of Modern Architecture	<u>3</u>
	18

Term XI (Spring)

A 04 13 Perception and Communication III	2
A 11 45 History of Urban Forms and Planning	3
A 11 57 Architectural Design VI	7
A 11 73 Environmental Control III	1
CE 11 431 Soil Mechanics and Foundations	2
AS 44 Engineering Economy	<u>3</u>
	18

Term XII (Summer)

Approved Professional Practice

Term XIII (Fall)

A 13 46 Introduction to Urban Planning	3
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	Credit Hours
A 13 58 Architectural Design VII	8
A 13 74 Environmental Control IV	3
CE 13 151 Structures III	2
	<hr style="width: 100%; border: 0.5px solid black;"/>
	18
 <i>Term XIV (Spring)</i>	
A 14 47 Architectural Professional Practice	2
A 14 59 Architectural Design VIII	10
A 14 65 Specifications and Quantity Surveying	3
	<hr style="width: 100%; border: 0.5px solid black;"/>
	15
 Class of 1974	
<i>Term XIII (Fall)</i>	
A 13 46 Introduction to Urban Planning	3
A 13 58 Architectural Design VII	8
A 13 74 Environmental Control IV	3
CE 13 151 Structures II	2
	<hr style="width: 100%; border: 0.5px solid black;"/>
	16
 <i>Term XIV (Spring)</i>	
A 14 47 Architectural Professional Practice	2
A 14 59 Architectural Design VIII	10
A 14 65 Specifications and Quantity Surveying	3
	<hr style="width: 100%; border: 0.5px solid black;"/>
	15

UNDERGRADUATE COURSES

A01 11 *Perception and Communication I.* 2 cr. Freehand representation of form in pencil, charcoal, pen and ink.

A01 21 *Architectural Communication I.* 4 cr. Introduction to the different media used for architectural communication: projections, intersections and developments.

A01 31 *Basic Design I.* 4 cr. Exercises in creative form, structure and space. Color, its dynamics and its relationships within two-dimensional organizations. The aim is toward design in general and architectural expressions in particular.

A02 12 *Perception and Communication II.* 2 cr. Continuation of A01 11, with the use of painting and water color.

A02 22 *Architectural Communication II.* 3 cr. Continuation of A01 21, including construction of shades and shadows, perspective, and rendering.

A02 32 *Basic Design II.* 4 cr. Study of and experimentation with the elements of design (points, line, direction, texture, proportion, value) in two-dimensional expression. Experimentation with graphic tools in the integration of these elements in two-dimensional organization.

A02 41 *Methodology I.* 2 cr. Introductory outline course to architectural design principles. Factors that constitute and affect the handling of design elements, and introduction to the principles of programming for architectural problems.

A03 61 *Materials.* 2 cr. Engineering materials. Useful properties, and relationships between properties and molecular, crystalline, grain or fibre structure.

- A04 13** *Perception and Communication III.* 2 cr. Sculpture. Study and experimentation with three-dimensional media of expression. Three-dimensional organization: plastic movement and balance equilibrium, proportion, rhythm.
- A04 23** *Architectural Communication III.* 2 cr. Continuation of A02 22. Emphasis on rendering and presentation using more than one medium.
- A04 51** *Architectural Design I.* 6 cr.
- A05 42** *Methodology II.* 2 cr. Continuation of A02 41. Emphasis on problems of architectural design for complex buildings.
- A05 52** *Architectural Design II.* 6 cr. Introduction into the methods of research. Design of simple building types, with consideration of physical and social surroundings.
- A05 62** *Building Construction I.* 3 cr. Lecture and design course. Study of the various elements of the structures of buildings.
- A06 53** *Regional Architecture.* 6 cr. Research in the traditional architecture of the area. Students work individually and in teams.
- A07 43** *Methodology III.* 2 cr. Landscape design and site planning. Introductory lecture course on principles of design for outdoor spaces either private or public. Historical development.
- A07 54** *Architectural Design III.* 6 cr.
- A07 63** *Building Construction II.* 3 cr. Lecture and design course. Continuation of A05 62; all remaining elements and finishes of buildings.
- A08 44** *Methodology IV.* 2 cr. Lecture course on interior design and its historical development, including contemporary expression in furniture design.
- A08 55** *Architectural Design IV.* 6 cr.
- A08 71** *Environmental Control I.* 2 cr. Fundamentals of sanitary engineering, including public and individual water supply and purification methods; plumbing and sewer systems; sewage treatment; sewage and refuse disposal.
- A09 64** *Execution Drawings.* 10 cr. Preparation of a complete set of architectural working drawings following usual office practice.
- A10 56** *Architectural Design V.* 7 cr. Design course partly on interior architecture and partly on the design of outdoor spaces private or public.
- A10 72** *Environmental Control II.* 3 cr. Introduction to the different types of heating, ventilation and air conditioning. Load calculations and psychometrics.
- A10 84** *Evolution of Modern Architecture.* 3 cr.
- A11 45** *History of Urban Forms and Planning.* 3 cr. The growth of towns and the planning of new towns from primitive times to the present day.
- A11 57** *Architectural Design VI.* 7 cr. Extension of acquired design experience to problems of larger scope.
- A11 73** *Environmental Control III.* 1 cr. Architectural acoustics. Acoustical theory, sound reflective and absorptive materials, special sound absorptive construction, principles of room acoustics and noise control, for private and public buildings.

A13 46 *Introduction to Urban Planning*. 3 cr. Current urban problems. The planning approach to urban phenomena.

A13 58 *Architectural Design VII*. 8 cr. Investigation and study of problems in urban design. Students work in teams.

A13 59 *Research for Final Project*. 0 cr.

A13 74 *Environmental Control IV*. 3 cr. Principles of electrical technology. Lighting fundamentals and design. Electrical distribution in buildings. Electrical materials and equipment.

A14 47 *Architectural Professional Practice*. 2 cr. The local practice and organization of the architectural and engineering profession. The architect and the community.

A14 59 *Architectural Design VIII*. 10 cr. Final project. Comprehensive studies in the totality of architecture. Programs are selected by the students in consultation with and with the approval of the Faculty.

A14 65 *Specifications and Quantity Surveying*. 3 cr. Preparation of specifications and bills of quantities for new buildings and architectural engineering and industrial works, including taking off, abstracting, costing and billing.

GRADUATE COURSES

The program for the degree of Master of Architecture in Urban Planning and Urban Design consists of the courses described below and one 3 credit elective. Prerequisites for the program are A11 45, A13 46, A13 58 and Math. 209 or the equivalent.

UP50 11 *Planning Theory and Methods*. 3 cr. Introduction to the basic intellectual processes of planning.

UP50 12 *Elements of Regional Planning*. 2 cr. Reasons for the evolution of regional planning; its scope. Rural planning.

UP50 13 *Social Problems in relation to Planning*. 3 cr. Social questions basic to planning. Migration. Planning aspects of education and other social services.

UP50 15 *Transport Planning*. 3 cr. Transport and land use. Forms of transport, public and private. Transport and urban renewal.

UP50 16 *The Analysis Process—Statistical and other*. 3 cr. Planning data: their sources and how to use them.

UP50 17 *Law and Administration in relation to Planning*. 2 cr. Forms of law involved. Roles of central and local authorities. Problems of organization.

UD50 21 *Urban Design I*. 4 cr. Urban design problems resulting from planning. Urban renewal.

UD50 22 *Urban Design II*. 4 cr. Continuation of UD50 21.

Economics 308 *Urban Economics*. 3 cr. Scope and objectives of urban economics, major problems of towns (housing, transportation, employment, welfare, etc.), public expenditure criteria and project evaluation, financing urban development.

DEPARTMENTS OF CIVIL, ELECTRICAL AND MECHANICAL ENGINEERING

Common First Year

	Credit Hours	Credit Hours
<i>Term I (Fall)</i>		
AS 11 Man's Cultural Evolution	3	
CE 01 11 Statics	3	
Math. 201 Calculus and Analytic Geometry II	4	
	<u>10</u>	
<i>and group A</i>		
ME 01 11 Engineering Drawing	3	
Physics 211 Introductory Physics III	3	
	<u>6</u>	
		<u>16</u>
<i>or group B</i>		
Chemistry 201 Chemical Principles I	3	
Chemistry 203 Introductory Experimental Chemistry	2	
Math. 209 Digital Computer Programming I	1	
ET 1 Shop I	1	
	<u>7</u>	
		<u>17</u>
<i>Term II (Spring)</i>		
AS 13 History of Architectural and Engineering Works I	3	
Math. 202 Calculus and Analytic Geometry III	4	
ME 02 21 Dynamics	3	
	<u>10</u>	
<i>and group B</i>		
	7	
		<u>17</u>
<i>or group A</i>		
	6	
		<u>16</u>

DEPARTMENT OF CIVIL ENGINEERING

Chairman: Iliya, R.

Professors: Abboud-Klink, S.; Abul-Baki, A.; Avedissian, Y.; Ayoub, G.; Inglessis, C.; Jouzy, N.; Kalayan, H.; al-Khatib, M.; Khouri, K.; al-Khuri, S.; Makhlof, H.; Malouf, Kh.; Mukaddam, M.; Nasser, J.; Searle, T.; Shamma, N.; Yarid, A.

Lecturers: Alami, Z.; Papazian, H.; Suidan, M.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING; MAJOR, CIVIL ENGINEERING

For *Terms I* and *II*, see Common First Year above.

	Credit Hours
<i>Term III (Summer)</i>	
CE 03 71 Geodetic Studies	4
EE 03 71 Electrical Engineering	3
Physics 212 Introductory Physics IV	3
	<u>10</u>
<i>Term IV (Fall)</i>	
CE 04 12 Mechanics of Materials	3
CE 04 31 Science of Materials	3
E 13 04 Mathematics III*	4
ET 2 Shop II	2
ME 04 31 Thermodynamics I	3
Elective*	3
	<u>18</u>
<i>Term V (Spring)</i>	
CE 05 13 Structures I	3
CE 05 41 Engineering Geology	3
CE 05 51 Fluid Mechanics	4
E 13 05 Mathematics IV*	4
Elective*	3
	<u>17</u>
<i>Term VI (Summer)</i>	
AS 21 Music Appreciation*	2
CE 06 52 Applied Fluid Mechanics	3
CE 06 72 Transportation I	3
	<u>8</u>
<i>Term VII (Fall)</i>	
CE 07 14 Structures II	3
CE 07 32 Concrete I	4
CE 07 53 Hydrology	3
CE 07 61 Sanitary Engineering I	4
Elective*	3
	<u>17</u>
<i>Term VIII (Fall)</i>	
CE 07 14 Structures II	
AS 44 Engineering Economy*	3
CE 08 33 Concrete II	4
CE 08 42 Soil Mechanics	3
CE 08 62 Sanitary Engineering II	4
CE 08 73 Transportation II	4
	<u>18</u>
<i>Term IX (Summer)</i>	
Approved Experience	

* See Associated Studies section below.

	Credit Hours
<i>Term X (Fall)</i>	
CE 10 43 Soil Mechanics and Foundation	3
Elective	3
Elective	3
Elective	3
Elective	3
	15

Electives of Term X:

- A 05 62 Building Construction I
- CE 10 15 Structures III
- CE 10 16 Engineering Analysis
- CE 10 54 Hydraulic Structures
- CE 10 74 Pavement Design
- CE 10 91 Specifications and Quantity Surveying
- Mathematics*

Term XI (Spring)

CE 10 34 Steel	3
Elective	3
Elective	3
Elective	3
Elective	3
	15

Electives of Term XI:

- A 13 46 Introduction to Urban Planning
- AS 42 Law and Contracts
- CE 11 36 Bridges
- CE 11 63 Waterworks and Sewageworks Design
- CE 11 75 Traffic Engineering
- CE 11 92 Engineering Management
- CE 60 31 Prestressed Concrete
- Mathematics

UNDERGRADUATE COURSES

CE01 11 Statics. 3 cr. Review of vector algebra. Forces; moments; couples. Free body diagrams. Bemas; frames; arches; plane trusses; space trusses. Center of gravity. Friction. Virtual work.

CE02 111 Statics (Architecture students). 2 cr.

CE03 71 Geodetic Studies. 4 cr. Plane surveying; topographic mapping; location surveys. Geodetics. Field astronomy. Triangulation. Elements of photogrammetric and aerial surveying.

CE04 12 Mechanics of Materials. 3 cr. Tension; compression; shear and bending moment diagrams; torsion. Stress-strain relationship; stresses in beams; columns; combined stresses; strain energy and impact; Mohr circle.

CE04 121 Mechanics of Materials (Architecture students). 3 cr.

* See Associated Studies section below.

CE04 31 *Science of Materials*. 3 cr. Atomic structure, order and disorder; elastic, plastic, viscoelastic behavior; multiphase materials; strengthening processes; mechanical failures; service stability and materials systems.

CE05 13 *Structures I*. 3 cr. Influence lines, trusses and beams. Cables. Deflection of beams and frames by double integration methods, singularity function approach, area moment theorems, conjugate beam, and conjugate structure. Introduction to indeterminate structures.

CE05 131 *Structures I* (Architecture students). 2 cr. Reactions, shears and moments in beams. Trusses. Three-hinged arches. Three-dimensional frameworks. Cables. Approximate analysis of statically indeterminate structures.

CE05 41 *Engineering Geology*. 3 cr. Field identification of common rock types. Interpretation of topographic and geological maps and their use in site locations. Application of geology to engineering practice.

CE05 51 *Fluid Mechanics*. 4 cr. Fluid properties; fluid statics; kinematics of fluid flow; energy and momentum considerations in fluid flow; similitude and dimensional analysis; fluid resistance; elementary hydro-dynamics.

CE06 411 *Engineering Geology* (Architecture students). 1 cr. Rock types and formations. Use of geological information in civil engineering.

CE06 52 *Applied Fluid Mechanics*. 3 cr. Fluid flow in pipes; flow in open channels; fluid measurements; hydraulic machinery; unsteady flow.

CE06 72 *Transportation I*. 3 cr. Principles of geometric design of highways. Highway location. Volume counts; capacity analysis; vertical curves; superelevation; design of intersections, rotaries, and interchanges.

CE07 14 *Structures II*. 3 cr. Energy theorems and applications to trusses, beams and frames. Slope-deflection equations. Moment distribution. Influence lines for indeterminate structures.

CE07 141 *Structures II* (Architecture students). 2 cr. Deflection of structures. Analysis of statically indeterminate structures.

CE07 32 *Concrete I*. 4 cr. Mechanics and behavior of reinforced concrete. Working stress and ultimate strength theories in flexure, shear, and bond; applications to beams and one-way slabs.

CE07 53 *Hydrology*. 3 cr. The hydrologic cycle including precipitation, streamflow, evapo-transpiration and groundwater. Runoff cycle. Hydrograph analysis. Unit hydrographs. Streamflow routing.

CE07 61 *Sanitary Engineering I*. 4 cr. Quantities of public and individual water supplies, with methods of collection, transportation and distribution. Sources, quantities and collection of sanitary and storm sewage. Solid waste collection and disposal.

CE08 321 *Concrete I* (Architecture students). 3 cr. Structures and materials. Mechanics and behavior of concrete, steel and reinforced concrete. Analysis of reinforced concrete structures. Design of sections under normal stresses.

CE08 33 *Concrete II*. 4 cr. Ribbed slabs; two-way slabs; flat slabs. Columns by working stress and ultimate strength theories. Foundations. Stairways. Cantilever retaining walls.

CE08 42 *Soil Mechanics*. 3 cr. Soil classification; soil hydraulics; consolidation.

Stress-deformation and strength characteristics; failure theories. Laboratory testing.

CE08 62 Sanitary Engineering II. 4 cr. Quality and methods of treatment of water supply and disposal of sewage.

CE08 63 Environmental Control I. 2 cr. Fundamentals of sanitary engineering, including public and individual water supply and purification methods; plumbing and sewer systems; sewage treatment; sewage and refuse disposal.

CE08 73 Transportation II. 4 cr. Fundamentals of transportation engineering. Railroads; pipelines; airports; harbors. Grading operation and compaction. Construction practices.

CE10 15 Structures III. 3 cr. Introduction to matrix algebra. Displacement methods; force method; application and comparison of both methods. Solutions using the computer.

CE10 16 Engineering Analysis. 3 cr. Linear algebra and linear transformations; ordinary and partial differential equations; complex variables and contour integration. Applications to structural problems.

CE10 331 Concrete II (Architecture students). 2 cr. Design of sections under tangential stress. Slabs. Columns under combined axial compression and bending.

CE10 341 Steel (Architecture students). 1 cr. Design of members under simple and combined stresses. Connections.

CE10 43 Soil Mechanics and Foundations. 3 cr. Excavating and stabilization. Stresses in soil and settlement analysis. Bearing capacity. Foundations on sand; foundations on clay; pile foundation. Retaining walls.

CE10 54 Hydraulic Structures. 3 cr. Design of channels; rigid bed channels, stable channels. Design of conveyance structures. Design of concrete, earth and rockfill dams. Design of spill-ways. Hydraulic models.

CE10 74 Pavement Design. 3 cr. Highway and airport pavement design—flexible and rigid. Pavement types and wheel loads; stresses in flexible and rigid pavements; pavement behavior under moving loads; pavement pumping; soil stabilization.

CE10 91 Specifications and Quantity Surveying. 3 cr. Preparation of specifications and bills of quantities for new buildings and architectural engineering and industrial works, including taking off, abstracting, costing and billing.

CE11 34 Steel. 3 cr. Design of tensile and compressive members, rolled and built-up. Design of beams and members under combined bending and axial load. Design of connections, welded and riveted.

CE11 36 Bridges. 3 cr. Theory and design of highway bridges, abutments and piers. Application of theory to problems during the design period.

CE11 431 Soil Mechanics and Foundations (Architecture students). 2 cr. Identification, sampling, testing and properties of soils. Stability of slopes. Foundations on various uniform and non-uniform soils.

CE11 63 Water and Sewageworks Design. 3 cr. Design of water and sewage-works schemes, including design report and literature research on developments of conventional processes.

CE11 75 Traffic Engineering. 3 cr. Volume, density, speed, travel time, delay, intersection performance, capacity, accidents, traffic demand; termination, parking, traffic and control devices.

CE11 92 *Engineering Management*. 3 cr. Management of an engineering enterprise. Basic concepts. Purpose of management. Centralization and decentralization.

CE13 151 *Structures III* (Architecture students). 2 cr. Structural systems. Thick and thin shells. Some types of linear structural systems. Tall structures.

GRADUATE COURSES

CE60 11 *Advanced Structural Analysis*. 3 cr. Deformation due to shear. Applications of matrix methods for analysis of arches, and long span structures. Introduction to analysis of structures subjected to dynamic loading systems and to elastic stability of structures.

CE60 12 *Applied Elasticity*. 3 cr. Analysis of stress and strain; stress-strain relations; energy principles; plane strain and plane stress problems. Torsion. Bending of solid-section beams. Beams on elastic foundations.

CE60 13 *Plates and Shells I*. 3 cr. Pure bending of plates of various shapes and different edge conditions. Plates on elastic foundations. Large deflection of plates.

CE60 14 *Plates and Shells II*. 3 cr. Elements of differential geometry. Membrane theory for shells of revolution and for shells of general shape. Bending theory of closed and open circular cylindrical shells.

CE60 15 *Structural Dynamics I*. 3 cr. General introduction to sinusoidal vibrations. Numerical analysis of simple systems. Rigorous analysis of one-degree systems. Lumped parameter systems. Distributed mass systems.

CE60 16 *Structural Dynamics II*. 3 cr. Dynamic properties of materials. Earthquake analysis and design; blast resistant design; dynamic effects of wind load. Beams subjected to moving loads. Dynamics of bases and foundations.

CE60 17 *Stability of Structures*. 3 cr. Flexural-torsional buckling of columns. Analysis of frames in the plastic range. Stability calculations by numerical methods. Critical examination of interaction equations. Buckling of arches, plates and shells.

CE60 18 *Experimental Mechanics*. 3 cr. Experimental methods for analyses of stress, strain and displacements. Theory and application of strain gages. Photo-elastic methods for determining stresses in models.

CE60 19 *Finite Element Method*. 3 cr. Finite element method as a generalization of structural theory. Survey of applications in structural mechanics. Plane stress problems, triangular element and rectangular element.

CE60 31 *Prestressed Concrete*. 3 cr. Introduction. Materials and prestressing systems. Losses and friction in prestressed members. Analysis and design of sections for flexure. Shear, bond, partial prestress. Design of continuous beams and slabs. Compression members. Special topics.

CE60 32 *Concrete III*. 3 cr. Advanced reinforced concrete. Special topics.

CE60 41 *Advanced Soil Mechanics I*. 3 cr. Slope stability and analysis. Stabilization of slopes and remedial measures. Soil strength. Pore pressure parameters. Lateral pressures.

CE60 42 *Advanced Soil Mechanics II*. 3 cr. Analysis of bulkheads in cohesive and non-cohesive soils. Seepage through soils. Flow nets.

CE60 43 *Advanced Foundation Engineering*. 3 cr. Beams on elastic foundations.

Pile foundations subject to moments and horizontal forces. Radial consolidation. Loads on buried conduits and tunnel linings. Stresses in storage bins. Damage caused by vibrations.

CE60 51 *Advanced Hydrology*. 3 cr. Rainfall runoff relations. Hydrologic characteristics of large storms. Flood routing. Frequency duration studies. Occurrence and movement of ground water. Hydraulics of wells.

CE60 52 *Hydraulics of Open Channels*. 3 cr. Steady flow in open channels; uniform flow; gradually and rapidly varied flow. Flow through channels of non-linear alignment. Unsteady flow in open channels.

CE60 53 *Advanced Hydraulic Engineering*. 3 cr. Ideal flow; flow nets; nomography. Turbulent flow in closed and open conduits. Principles of sedimentation and sediment transportation. Waterfront structures. Hydraulic machinery.

CE60 58 *Water Resources Development*. 3 cr. Factors involved in water resources planning, design, and development. Water reclamation. Management of water schemes.

CE60 61 *Water Pollution Control Processes*. 3 cr. Fundamental theories and affecting parameters in water pollution control processes. Application to water and waste water treatment.

CE60 62 *Advanced Sanitary Engineering*. 3 cr. Theories of non-conventional treatment methods in water and sewage works, with special reference to the most recent developments.

CE60 64 *Waste Disposal*. 3 cr. Waste water and solid waste disposal methods and their effect on environment. Methods for reclamation of liquid and solid wastes.

CE60 65 *Industrial Wastes*. 3 cr. Study of the water quality and quantity supplied to industry. Methods of treatment and disposal of industrial wastes.

CE60 66 *Marine Pollution*. 3 cr. Nature and effects of marine pollutants. Analytical measurements and concepts used in marine pollution control processes.

CE60 71 *Advanced Transportation Design*. 3 cr. Reconnaissance. Photogrammetry and airphoto interpretation. Soil survey. Design speed; design volume; capacity.

CE60 72 *Highway Planning and Economics*. 3 cr. Highway planning survey, classification, needs studies. Sufficiency ratings. Economic feasibility studies; economics of locations; advance planning and programming; highway finance; highway administration.

CE60 73 *Urban Transportation Planning*. 3 cr. Land-use planning, travel desires, basic urban transportation studies, including origin and destination surveys; comprehensive parking studies; transit studies; transit planning.

CE60 75 *Traffic Engineering Operations and Controls*. 3 cr. Traffic laws and ordinances, speed regulation, curb parking regulations, through controls, one-way streets, right-of-way regulation, design and application of signs, markings, lighting, and traffic engineering administration.

CE60 76 *Theory of Traffic Flow*. 3 cr. Study and evaluation of various qualitative and quantitative descriptions of the complex phenomenon of traffic flow.

CE60 77 *Engineering Uses of Aerial Photography*. 3 cr. Airphoto interpretation

and application to engineering surveys, with emphasis on interpretation of land forms and their influence on location studies.

CE60 78 Airport Planning and Design. 3 cr. Aircraft characteristics; air traffic control; site selection; airport configuration; geometric design of landing area; planning and development of terminal areas; lighting; design of heliports.

DEPARTMENT OF ELECTRICAL ENGINEERING

Chairman: Kano, K.

Professors: Hanania, J.; Khoury, Sh.; Madany, H.; McGlothlin, G.; Nasser, E.; Regier, F.; Sabah, N.; Seeger, J.

Lecturer: Barhumi, M.

Instructors: Kul-Sahagian, R.; Tomey, G.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING; MAJOR, ELECTRICAL ENGINEERING

For *Terms I and II*, see Common First Year, page 207

	Credit Hours
<i>Term III (Summer)</i>	
CE 03 39 Science of Materials	2
EE 03 11 Electric Circuits I	3
ET 2 Shop II	2
Physics 212 Introductory Physics IV	3
	10
<i>Term IV (Fall)</i>	
E 13 04 Mathematics*	4
EE 04 12 Electric Circuits II	3
EE 04 21 Electronics I	4
ME 04 31 Thermodynamics I	3
Elective*	3
	17
<i>Term V (Spring)</i>	
E 13 05 Mathematics IV*	4
EE 05 22 Electronics II	4
EE 05 31 Magnetic Circuits and Machines	4
ME 05 41 Fluid Mechanics I	3
Elective*	3
	18
<i>Term VI (Summer)</i>	
AS 21 Music Appreciation*	2
EE 06 13 Electrical Measurements	2
EE 06 14 Engineering Analysis	2
ME 06 31 Heat Power	3
	9

* See Associated Studies section below.

	Credit Hours
<i>Term VII (Fall)</i>	
AS 44 Engineering Economy*	3
EE 07 15 Transmission Lines	3
EE 07 23 Electronics III	4
EE 07 32 Energy Conversion I	4
EE 07 41 Field Theory I	3
	<u>17</u>
<i>Term VIII (Spring)</i>	
EE 08 16 Introduction to Linear System Theory	3
EE 08 24 Electronics IV	3
EE 08 33 Energy Conversion II	4
EE 08 42 Field Theory II	3
ET 4 Shop III	1
Elective*	3
	<u>17</u>
<i>Term IX (Summer)</i>	
Industrial Training	
<i>Term X (Fall)</i>	
EE 10 25 Pulse Circuits and Techniques	4
EE 10 26 Microwaves	3
EE 10 34 Power Transmission	3
EE 10 61 Project	4
Elective*	3
	<u>17</u>
<i>Term XI (Spring)</i>	
AS 43 Engineering Management*	3
EE 11 51 Feedback Controls	4
EE 11 62 Project	5
Elective*	3
Elective*	3
	<u>18</u>

UNDERGRADUATE COURSES

EE03 11 Electric Circuits I. 3 cr. Basic analysis of linear circuits and networks. Use of loop and nodal method in the steady-state response of circuits. Time domain analysis. Transient response of simple circuits.

EE03 71 Electrical Engineering (CE Students). 3 cr. Single-phase and three-phase circuits. Fundamentals of generators, motors and transformers. Principles of power distribution. Illumination.

EE04 12 Electric Circuits II. 3 cr. Sinusoidal steady-state techniques. Series and parallel resonance. Nonsinusoidal waves. Fourier and Laplace transforms. Two-terminal pair network relationships.

* See Associated Studies section below.

EE04 19 *Electric Circuits (ME students)*. 2 cr. Basic linear circuit analysis. Solution of DC, AC and transient problems. Thevenin, Norton and maximum power transfer theorems. Resonance. Circuit analogues of mechanical systems.

EE04 21 *Electronics I*. 4 cr. Elements of wave mechanics. Energy band structure and energy distribution. Emission of electrons from metals. Vacuum devices. Gaseous processes and devices. Semiconductors and carrier processes. PN junction and tunnel diodes. Properties and applications of diodes.

EE05 22 *Electronics II*. 4 cr. Junction and FET transistors; characteristics, equivalent circuits and biasing. Small signal, low-frequency analysis and design. Multiple-transistor and RC-coupled amplifiers. Power amplifiers.

EE05 31 *Magnetic Circuits and Machines*. 4 cr. Physical aspects of electric machinery. Interaction of magnetic fields. DC generators and motors. Polyphase systems. Three-phase induction motors. Transformers.

EE06 13 *Electrical Measurements*. 2 cr. Units of basic electrical quantities. Classification and features of electrical instruments. Errors in electrical measurements. Electronic instruments, potentiometers and bridges.

EE06 14 *Engineering Analysis*. 2 cr. Integration of fundamental physical laws with mathematical methods of analysis in their applications to simple dynamic systems in electrical, mechanical, thermal and fluid systems.

EE07 15 *Transmission Lines*. 3 cr. Differential equations of transmission lines with distributed constants, traveling wave and standing wave solution. Impedance matching. High frequency effects.

EE07 23 *Electronics III*. 4 cr. Properties of negative feedback and negative feedback amplifiers. Tuned amplifiers; class C amplifiers.

EE07 32 *Energy Conversion I*. 4 cr. Principles of electro-mechanical energy conversion. Transformers. Generalized torque and voltage production in rotating machines. Analysis of DC and synchronous machines in the steady state.

EE07 41 *Field Theory I*. 3 cr. Coulomb's law; Gauss's law. Electrostatic potential. Mapping. Laplace's equation and solution. Ampère's and Biot-Savart's laws. Magnetic potential. Faraday's law; Maxwell's equations.

EE08 16 *Introduction to Linear System Theory*. 3 cr. Basic linear algebra fundamental to analysis of linear systems including vector spaces, basis and dimension, matrices and linear operators.

EE08 24 *Electronics IV*. 3 cr. Phase shift, negative resistance and tuned circuits oscillators. Noise in amplifiers. Amplitude modulation systems and frequency modulation systems.

EE08 33 *Energy Conversion II*. 4 cr. Steady-state analysis of induction motors. Solid-state motor control. Dynamics and transients in DC and AC machines. FHP motors.

EE08 42 *Field Theory II*. 3 cr. Electromagnetic diffusion equation. Skin effect. Wave equation and solution. Reflection and refraction. Waveguides and resonators. Radiation and antennas. Anisotropic media.

EE10 25 *Pulse Circuits and Techniques*. 4 cr. Wave shaping networks. Clipping, clamping, comparator, and switching circuits. Pulse transformers and transmission lines. Multivibrators and time-base generators. Binary logic and circuits.

EE10 26 *Microwaves*. 3 cr. Transmission lines and waveguides. Antennas. Microwave resonators. Microwave devices and microwave amplifiers and oscillators.

EE10 29 *Electronics* (ME students). 3 cr. Semiconductor and vacuum diodes. Junction transistors. Multielectrode tubes. Rectifiers and amplifiers. Feedback and oscillators.

EE10 34 *Power Transmission*. 3 cr. Transmission with AC and DC; line parameters; inductance, capacitance and resistance of lines, skin and corona effects; voltage-current relations, per unit calculations, generalized line constants, graphical solutions.

EE10 61 *Project*. 4 cr. Design, construction and testing of an electrical system.

EE11 51 *Feedback Controls*. 4 cr. Mathematical models of systems. Characteristics, performance, and stability of linear control systems as analyzed by root-locus and frequency response methods.

EE11 62 *Project*. 5 cr. Design, construction and testing of an electrical system.

GRADUATE COURSES

EE70 14 *Logic and Digital Systems*. 3 cr. Boolean algebra. Number systems. Fundamentals of logic design. Basic computer architecture: memory; arithmetic units; input/output units. Programming.

EE70 15 *Pulse and Digital Circuits*. 3 cr. Semiconductor devices as switches. The concept of charge control. Regenerative and nonregenerative switching circuits. Binary logic. Passive and active logic circuits.

EE70 16 *Process Control*. 3 cr. Review of computer principles and control theory. Computer control; supervisory systems; bit pusher control. Computer configuration. Computer applications.

EE70 21 *Network Analysis*. 3 cr. Network elements. Topological analysis and graph theory. State-variable approach to network analysis. Stability of linear and nonlinear circuits. Scattering matrix applications.

EE70 22 *Network Synthesis*. 3 cr. Realizability theory. Unconditional stability. Canonic two-element synthesis. Darlington synthesis. Use of negative resistance in synthesis. Driving point and transfer function synthesis.

EE70 23 *Electromagnetic Field Theory*. 3 cr. Maxwell's stresses; Green's function; Huygen's principle; Fresnel diffraction. Propagation through anisotropic media. Variational and perturbation techniques.

EE70 24 *System Theory*. 3 cr. Fundamental system concepts of input, output and state linearity and time invariance. State space theory and stability of time-varying and time-invariant linear differential systems.

EE70 25 *State Variable Methods*. 3 cr. State representation and state equations of continuous and discrete time dynamical systems. Vector spaces and solution of vector differential equations.

EE70 31 *Basic Semiconductor Theory*. 3 cr. Principles of quantum mechanics and statistical mechanics. Crystal momentum and effective mass; concept of the hole. Band theory of solids. Semiconductors and transport phenomena.

EE70 32 *Semiconductor Devices*. 3 cr. Semiconductor diodes, varactors, tunnel

and Zener diodes. Bipolar and FET transistors. Integrated circuits. Gunn effect and avalanche devices. Miscellaneous semiconductor devices.

EE70 41 *Power Systems Analysis*. 3 cr. System modeling and load flow analysis. Principles of optimum dispatch. Symmetrical and unsymmetrical short circuit analysis. Transient stability analysis.

EE70 42 *Dielectrics and Energy Systems*. 3 cr. Insulation coordination; transients and protection; gaseous dielectrics, ionization and deionization; motion of charged particles in gases; breakdown, corona, plasmas, glow and arc discharges, arresters and breakers.

EE70 44 *High Voltage DC Transmission*. 3 cr. Comparison of transmission with AC and DC; concepts of DC transmission; rectifier and inverter parameters and characteristics; compounding and regulation; faults and protections. System components.

EE70 51 *Optimal Control*. 3 cr. Statement of optimal control problem. Necessary and sufficient conditions for optimality. The minimum principle. Structure and properties of time and fuel optimal systems.

EE70 61 *Biomedical Instrumentation*. 3 cr. Physiological origins of biomedical signals. Electrodes, transducers and measurement techniques. Instruments and systems. Biomedical equipment.

EE70 62 *Selected Topics in Bionics*. 3 cr. Generation and propagation of the nerve impulse; semiconductor analog. Signal processing in neuronal networks and in computers. The mammalian motor system; artificial limbs and manipulators. Pattern recognition in the visual and auditory systems and by machines. Artificial intelligence.

DEPARTMENT OF MECHANICAL ENGINEERING

Chairman: Deeb, S.

Professors: Abi-Rached, G.; Azoury, P.; Chahine, M.; Chmielewski, J.; Clumpner, J.; Kuran, A.; Sakkal, F.; Sfeir, A.

Lecturer: Klat, S.

Instructor: Hawa, N.

Assistant Instructor: Khalaf, R.

CURRICULUM FOR THE DEGREE OF BACHELOR OF ENGINEERING; MAJOR, MECHANICAL ENGINEERING

For *Terms I and II*, see Common First Year, page 207.

	Credit Hours
<i>Term III (Summer)</i>	
CE 04 31 Science of Materials	3
ET 2 Shop II	2
ME 03 01 Introduction to Mechanical Engineering	2
Physics 212 Introductory Physics IV	3
	10

	Credit Hours
<i>Term IV (Fall)</i>	
CE 04 12 Mechanics of Materials	3
E 13 04 Mathematics III*	4
EE 04 19 Electric Circuits	2
ET 5 Shop III	1
ME 04 31 Thermodynamics I	3
Elective*	3
	<u>16</u>
<i>Term V (Spring)</i>	
E 13 05 Mathematics IV*	4
EE 05 31 Magnetic Circuits and Machines	4
ME 05 32 Thermodynamics II	3
ME 05 41 Fluid Mechanics I	3
Elective*	3
	<u>17</u>
<i>Term VI (Summer)</i>	
AS 21 Music Appreciation	2
EE 06 13 Electrical Measurements	2
ME 06 22 Engineering Analysis	2
ME 06 23 Mechanics	3
	<u>9</u>
<i>Term VII (Fall)</i>	
AS 44 Engineering Economy	3
ME 07 12 Machine Drawing	2
ME 07 24 Dynamics of Machines	3
ME 07 42 Fluid Mechanics II	4
ME 07 34 Heat Power I	4
	<u>16</u>
<i>Term VIII (Spring)</i>	
ME 08 25 Engineering Vibrations	4
ME 08 41 Mechanical Design I	4
ME 08 61 Heat Transfer I	4
ME 08 71 Metallurgy	4
Elective*	3
	<u>19</u>

* See Associated Studies section below.

Term IX (Summer) Credit
 Approved Experience Hours

<i>Term X (Fall)</i>	
EE 10 29 Electronics	3
ME 10 35 Heat Power II	4
ME 10 52 Mechanical Design II	4
Me 10 81 Heating, Air Conditioning and Refrigeration I	4
Elective	3
	18

Electives of Term X:
 ME 10 36 Chemical Engineering I
 ME 10 62 Heat Transfer II
 ME 10 90 Industrial Processes

<i>Term XI (Spring)</i>	
CE 11 69 Sanitary Engineering	2
ME 11 54 Feedback Controls	4
ME 11 82 Heating, Air Conditioning and Refrigeration II	3
ME 11 91 Industrial Plant Design	3
Elective	3
	15

Electives of Term XI:
 AS 43 Engineering Management
 ME 11 93 Chemical Engineering II
 Other, with approval of Chairman

UNDERGRADUATE COURSES

ME01 11 *Engineering Drawing.* 3 cr. Orthographic drawing. Isometric, oblique, and perspective drawing. Auxiliaries. Sections. Intersections and developments. Size description.

ME02 21 *Dynamics.* 3 cr. Kinematics; fixed and moving axes. Kinetics of particles and rigid bodies; work and energy, impulse and momentum. Conservation laws.

ME03 01 *Introduction to Mechanical Engineering.* 2 cr. Steam generation; draft in boilers. Indicator diagrams. Flywheels; governors. Fans, blowers and pumps.

ME04 31 *Thermodynamics I.* 3 cr. Definitions and units, first and second laws of thermodynamics, entropy, and ideal gases. Applications.

ME05 32 *Thermodynamics II.* 3 cr. Availability; analysis of thermodynamic cycles: thermodynamic relations; real gases; gas mixtures; combustion.

ME05 41 *Fluid Mechanics I.* 3 cr. Fundamentals. Stress tensor. Fluid statics. Equations of continuity and motion. Irrotational incompressible flow. The stream and potential functions.

ME06 22 *Engineering Analysis.* 2 cr. Vector analysis: the “del” operator. Complex analytic functions: Cauchy’s integral theorem; zeroes and singularities; conformal mapping.

ME06 23 *Mechanics*. 3 cr. Linkages; constrained motion; number synthesis; cams; computing mechanisms; dimensional synthesis.

ME06 31 *Heat Power*. 3 cr. Fuels and combustion. Steam generators. Power plant cycles, equipment and selection; power plant economy.

ME07 12 *Machine Drawing*. 2 cr. Machine elements. Drawings of welded parts, gears, cams and piping. Drawings and the shop. Fundamentals of design. Working drawings.

ME07 24 *Dynamics of Machinery*. 3 cr. Gears and geartrains; velocity, acceleration, and force analysis; balancing; gyroscopic forces.

ME07 34 *Heat Power I*. 4 cr. Internal combustion engines; engine performance. Centrifugal and axial compressors. Gas turbines. Propulsion systems.

ME07 42 *Fluid Mechanics II*. 4 cr. Introduction to viscous flows and boundary-layer theory. Compressible, steady, one-dimensional flow; shock waves; Prandtl-Meyer expansion.

ME08 25 *Engineering Vibrations*. 4 cr. Single-mass systems: energy methods, transient and steady state forced vibrations. Influence of friction. Undamped multi-degree-of-freedom systems.

ME08 51 *Mechanical Design I*. 4 cr. Stress analysis; theories of failure; dynamic stresses and fatigue; design of various machine elements.

ME08 61 *Heat Transfer I*. 4 cr. Conduction: one- and two-dimensional heat flow. Convection: black bodies, Planck's and Kirchhoff's laws. Solar radiation.

ME08 71 *Metallurgy*. 4 cr. Metals and alloys; structure, properties, and production. Heat treatment. Working of metals. Powder metallurgy.

ME10 35 *Heat Power II*. 4 cr. Steam equations and tables. Steam prime-movers. Generators, condensers and accessories. Steam pipe design. Power plant economy.

ME10 36 *Chemical Engineering I*. 3 cr. Analysis of industrial chemical processes, with emphasis on calculations involving material and energy balances and chemical equilibrium.

ME10 52 *Mechanical Design II*. 4 cr. Group design project of a complete machine. Creative design problems. Case studies.

ME10 62 *Heat Transfer II*. 3 cr. Theory and design of heat exchangers. Simultaneous convective and radiative heat transfer. Extended surfaces. Two-phase heat transfer.

ME10 81 *Heating, Air Conditioning and Refrigeration I*. 4 cr. Heat load calculations. Heating systems. Pipe sizing. Heating equipment. Design problems.

ME10 90 *Industrial Processes*. 3 cr. Materials and processes in manufacturing: foundry, hot and cold working, plastics, powder metallurgy, heat treatment; related design considerations.

ME11 37 *Chemical Engineering II*. 3 cr. Distillation, liquid extraction and other industrial separation processes.

ME11 54 *Feedback Controls*. 4 cr. System representation. Steady and transient states. Root-locus, frequency-response and analog methods. Hydraulic, pneumatic and electrical systems.

ME11 82 *Heating, Air Conditioning and Refrigeration II.* 3 cr. Air conditioning calculations. Refrigeration; equipment. Cooling towers. Insulation. Design problems.

ME11 91 *Industrial Plant Design.* 3 cr. Preparation and development of a plant layout. Plant services. Economic analysis.

ET 1 *Shop I.* 1 cr. Bench work. Selection and care of tools. Common woodwork joints. Identification of common timbers. Metal cutting, threading, riveting and fitting.

ET 2 *Shop II.* 2 cr. Machine shop: welding and sheet metal.

ET 3 *Shop III* (Architecture students). 1 cr. The use of wood working machines, architectural wood details and finishes.

ET 4 *Shop III* (Electrical Engineering students). 1 cr. Wiring. Conduit assembly. Circuits for incandescent and discharge lamps. Metering of current, voltage, power and energy.

ET 5 *Shop III* (Mechanical Engineering students). 1 cr. Motor vehicle technology: engine unit. Lubrication, cooling, fuel, and electric systems. Clutches, transmissions, and differentials. Transformers and armature winding.

GRADUATE COURSES

ME80 11 *Hydrodynamics and Viscous Flow.* 3 cr. The complex potential. Conformal mapping. N.S. equations: analytical solutions and boundary-layer theory.

ME80 12 *Gas Dynamics.* 3 cr. Equations of flow of compressible fluids. Shock waves. One-dimensional steady and unsteady flows; supersonic flows.

ME80 21 *Advanced Thermodynamics.* 3 cr. Generalized thermodynamic relations, chemical equilibrium and chemical reactions, ideal and real gases and gas mixtures. Applications to special systems.

ME80 31 *Industrial Engineering I.* 3 cr. Costing; capital budgeting. Project evaluation. Replacement studies; depreciation and obsolescence. Forecasting.

ME80 32 *Industrial Engineering II.* 3 cr. Production planning and control. Time and motion studies. Plant layout. Mathematical models. Financial management.

ME80 41 *Advanced Engineering Vibrations.* 3 cr. Basic theory. Shock, sound and noise isolation. Design of isolators. Theory of equipment design.

ME80 51 *Optimum Design of Mechanical Elements.* 3 cr. Optimum choice of method. Considerations for factor of safety. Optimum design. Applications.

ME80 61 *Systems Analysis.* 3 cr. Linear systems. Feedback. Stability criteria. Discrete systems. Non-linear controls. Optimization, controllability and observability.

ME80 71 *Turbomachinery.* 3 cr. Application of fluid-dynamic principles to the design of axial, radial and mixed flow machines. Performance principles of pumps, fans, compressors, and turbines.

ME80 81 *Thermal Conduction and Radiation.* 3 cr. Steady and unsteady heat conduction; thermal radiation; conservation principles. Techniques for analytical, analog and numerical solutions.

ME80 82 *Convective Heat Transfer*. 3 cr. Solutions of the momentum, continuity and energy equations for both natural and forced convection. Applications to laminar and turbulent flows.

ME80 91 *Advanced Engineering Mathematics I*. 3 cr. Linear algebra. Vector spaces. Linear programming. Complex analysis: conformal mapping, potential theory.

ME80 92 *Advanced Engineering Mathematics II*. 3 cr. Higher dimensional calculus. Partial differential equations of elliptic, parabolic and hyperbolic types. Topics in numerical analysis.

ASSOCIATED STUDIES

AS11 *Man's Cultural Evolution*. 3 cr. A survey of history, with emphasis on technological progress, political ideals and practices, and some emphasis on literature and the arts.

AS13 *History of Architectural and Engineering Works I*. 3 cr. A survey of the architectural and engineering works of all periods and their relation to important movements of the Fine Arts.

AS14 *History of Architectural and Engineering Works II*. 3 cr. Continuation of AS 13.

AS15 *History of Art*. 3 cr. The world history of art taught chronologically from the Renaissance to the present day, with special emphasis on the interrelationship of history and visual thought.

AS21 *Music Appreciation*. 2 cr. A survey of the various forms of music composition.

AS42 *Law and Contracts*. 3 cr. Law. Elements of contracts including: parties, subject matter, consideration, consent, offer, acceptance and discharge.

AS43 *Engineering Management*. 3 cr.

AS44 *Engineering Economy*. 3 cr. Basic economic principles essential to the decision making process; business managerial tools for optimizing engineering decisions; elements of feasibility studies.

E13 04 *Mathematics III*. 4 cr. Sequences and series; tests for convergence; Taylor's theorem and applications; introduction to ordinary differential equations; gamma and beta functions; solution of differential equations by infinite series.

E13 05 *Mathematics IV*. 4 cr. Fourier series; introduction to partial differential equations; differentiation under the sign of integration; Laplace transforms; introductory numerical analysis; calculus of variations.

Electives in Terms IV, V, and VII or VIII are intended to give students the opportunity to broaden their interests. The electives will normally be chosen from among Arts courses. The choice requires the approval of the advisor.

FACULTY OF AGRICULTURAL SCIENCES



FACULTY OF AGRICULTURAL SCIENCES

Faculty List 1972-1973

Stanley Swenson, Ph.D., *Professor of Agriculture, Dean.*

James Cowan, Ph.D., *Professor of Nutrition, Associate Dean.*

Fuad S. Haddad, Ph.D., *Associate Professor of Education, Registrar.*

PROFESSORS

- * Asmar, Joseph, D.V.M., École Vétérinaire de Lyon; Ph.D., University of California; *Veterinary Medicine.*
- * Bray, Donald, Ph.D., Oregon State University; *Plant Breeding and Genetics.*
- * Cowan, James, Ph.D., Pennsylvania State University; *Nutrition.*
- * Henderson, Harry, Ph.D., University of Minnesota; *Agricultural Engineering.*
- * Khalidy, Ramzi, Ph.D., University of California; *Subtropical Horticulture.*
- * Macksoud, Salim, D.E., University of California; *Irrigation.*
- * Swenson, Stanley, Ph.D., University of Minnesota; *Agriculture.*
- * Talhouk, Abdul Munim, Dr.rer.nat., University of Munich; *Economic Entomology.*
- Weltzien, Heinrich, Dr.rer.nat., University of Bonn; *Plant Pathology.*

ASSOCIATE PROFESSORS

- * Abu Shakra, Salah, Ph.D., Oregon State University; *Seed Technology.*
- Anderson, W. Richard, Ph.D., Pennsylvania State University; *Dairy Science.*
- * Atallah, Nicola, D.E., University of California; *Irrigation.*
- * Barnard, Enos, Ph.D., University of Wisconsin; *Horticulture.*
- Bhattacharya, Asok, Ph.D., Virginia Polytechnic Institute and State University; *Animal Nutrition.*
- * Dagher, Nuhad, Ph.D., Iowa State University; *Poultry Science.*
- * al-Haj, Fawzi, Ph.D., University of Wisconsin; *Extension Education.*
- Hallab, Abdul Hamid, Ph.D., Louisiana State University; *Food Technology.*
- * Kawar, Nasri, Ph.D., Pennsylvania State University; *Entomology.*
- * Saad, Adib, Ph.D., University of Wisconsin; *Plant Pathology.*
- * Saghir, Abdur Rahman, Ph.D., University of California; *Weed Science.*
- * Sayegh, Antoine, Ph.D., Oregon State University; *Soils.*
- * Tannous, Raja, Sc.D., Massachusetts Institute of Technology; *Food Technology.*

SENIOR LECTURERS

Chaudhry, S., Ph.D., Washington State University; *Taxonomy.*

Mameesh, Mustafa M., Ph.D., University of Illinois; *Nutrition.*

Raza, Muhammad, Ph.D., Cornell University; *Rural Sociology.*

ASSISTANT PROFESSORS

Akrabawi, Salim, Ph.D., University of California; *Nutrition.*

Batal, Kheireddin, Ph.D., Iowa State University; *Horticulture.*

Bolton, Clinton G., M.A., Michigan State University; *Agricultural Mechanization.*

Greene, Brooke, Ph.D., Cornell University; *Agricultural Economics.*

Nasr, Hikmat, Ph.D., University of Wisconsin; *Plant Breeding and Genetics.*

* On Tenure Appointment.

Nightingale, Ray, Ph.D., Cornell University; *Agricultural Economics*.
 Paeth, Robert, Ph.D., Oregon State University; *Soil Conservation*.
 Schwulst, Frank, Ph.D., University of Nebraska; *Animal Breeding*.
 Stickley, S. Thomas, Ph.D., Ohio State University; *Agricultural Economics*.

INSTRUCTOR

Gaiser, David, B.A., Whitman College; *Agriculture*.

VISITING RESEARCH ASSOCIATES

Faust, Edgar, Dipl. Landw., University of Hohenheim; *Plant Pathology*.
 Mamluk, Omar, Ph.D., University of Bonn; *Plant Pathology*.

RESEARCH ASSISTANTS

Fares, Ramona, B.S., University of Toledo; *Animal Production and Protection*.
 Hasbani, Marlene, B.S., AUB; *Soils and Irrigation*.
 Kazma, Nuha, M.S., AUB; *Crop Production and Protection*.
 Khatchadurian, Hovsep, M.S., AUB; *Food Technology and Nutrition*.
 Meneshian, Rita, M.S., AUB; *Food Technology and Nutrition*.
 Mihranian, Armig, B.S., AUB; *Soils and Irrigation*.
 Muhtar, Hanibal, B.S. in Agriculture, AUB; *Crop Production and Protection*.
 Rifka, Ghada, B.S. in Pharmacy, AUB; *Crop Production and Protection*.
 Salji, Joseph, M.S., AUB; *Food Technology and Nutrition* (Senior Research Assistant).
 Shadarevian, Sossy, B.S. in Pharmacy, AUB; *Food Technology and Nutrition* (Senior Research Assistant).
 Silahian, Alexander, B.S. in Pharmacy, AUB; *Soils and Irrigation*.
 Studt, Heinz, Dipl. Landw., University of Hohenheim; *Plant Pathology* (Visiting Research Assistant).
 Uwayjan, Michel, B.S., AUB; *Animal Production and Protection* (Senior Research Assistant).

General Information

The Faculty of Agricultural Sciences was established in 1952 in recognition of the need for a modern institution to train leaders for agricultural development in the Middle East.

The Faculty offers programs of study leading to professional degrees in the Agricultural Sciences. Major fields for *undergraduates* are: agricultural economics and rural sociology, animal production and protection, crop production and protection (agronomy), crop production and protection (horticulture), food technology and nutrition, soils and irrigation, and general agriculture. In *graduate* study leading to the M.S. degree, the majors include: agricultural economics, agricultural mechanization, agronomy, animal pathology, animal production, entomology, extension education, food technology, horticulture, irrigation, nutrition,* plant pathology, poultry production, rural sociology, and soils. The Faculty offers the Doctor of Philosophy degree in Agronomy. Both the undergraduate and graduate programs provide

* Under the Interfaculty Nutrition Program (see the chapter at the end of this catalogue entitled Graduate Study, page 252).

training for students who wish to practice agriculture professionally as well as those who wish to pursue further graduate study and a career in research. Emphasis is on food and agriculture in the Middle East.

The academic programs are administered by the Dean's Office in accordance with policies established by the Faculty and the Academic Affairs Committee. This Committee, which is advisory to the Dean, is composed of elected and appointed members of the Faculty with the Dean as Chairman. In addition to its function of establishing admission and curricular requirements, the Committee decides on all cases of admission, academic probation, promotion, and dismissal of students from the Faculty.

ADMISSION

For complete and detailed information regarding admission to the University, including certificates recognized, see pages 18 to 29 in the section on admission at the beginning of the catalogue.

For admission directly to first year Agriculture, Lebanese students must present the Lebanese Baccalaureate, Part II (Mathematics or Experimental Science) or its official equivalent. Lebanese who hold the Baccalaureate (Philosophy) will be required to pass entrance examinations in Chemistry and Mathematics at the Sophomore entrance level.

Non-Lebanese students, to be eligible for admission to first year Agriculture, must have completed satisfactorily the Freshman Science program in the Faculty of Arts and Sciences of this University or an equivalent program with a grade average of 70 or more in at least 12 credit hours and an average of 70 or more in Chemistry or Mathematics or Physics.

All applicants must be accepted by the Academic Affairs Committee, which will consider academic qualifications, character and physical fitness.

GRADUATION REQUIREMENTS

To be eligible for graduation with the degree of Bachelor of Science (in Agriculture) and the Ingénieur Agricole Diploma, a student must pursue one of the prescribed programs of study, must complete a minimum of 126 semester credit hours after being admitted to Agricultural Sciences, must achieve an overall minimum grade average of 70, and must be approved for graduation by the Faculty. For students who transfer to Agricultural Sciences from another Faculty, course credits pertinent to the agricultural curriculum may be transferred at the discretion of the Academic Affairs Committee.

Students who complete the second and third years with a general average of 85 or above and who are recommended by the Faculty of Agricultural Sciences, are awarded their degree *with distinction*.

ACADEMIC RULES AND REGULATIONS

Classification and Promotion

Normally, for promotion from one class to the next, a student must complete satisfactorily all the required courses.

For purposes of classification, Agriculture I students can be promoted to Agricul-

ture II status only after having completed satisfactorily 40 credit hours from the date of entrance into the Faculty. For promotion to Agriculture III, the satisfactory completion of 85 credit hours is required.

Grades, Failures and Probation

In the Faculty of Agricultural Sciences the following grading system is used: 90-100 Excellent; 80-89 Good; 70-79 Fair; 60-69 Weak; below 60 Failing. No grade below 40 is reported. All final course grades are expressed in multiples of 5 (100, 95, 90 . . . 45, 40).

To be placed on the Dean's Honor List, a student must: (a) be full time; and (b) have a minimum grade average of 80. Only approximately 10% of each class may be placed on the Honor List except when more than 10% of the students in a class have an average of 85 or above.

A student who receives an incomplete grade during the first semester should complete the course before the end of the second semester, and a student who receives an incomplete grade during the second semester or summer session should complete the course before the beginning of the following academic year. Normally, a student who fails to complete the requirements for a course within the specified period will lose credit and receive a grade of 40. With the approval of the Faculty advisor, any course can be dropped before the end of the tenth week of a regular semester or before the end of the sixth week of summer session.

A student may repeat any course with the approval of his advisor; all required courses failed must be repeated. When a course is repeated, the grade obtained the first time the course was taken will not be considered in the calculation of the cumulative average.

At the end of each semester and summer session, the complete academic record of each student is reviewed by the Academic Affairs Committee. In general, a student will be placed on academic probation if:

- (a) one-third or more of the total credits are failed in any one semester or summer session;
- (b) the total cumulative average falls below 65 in the first year or 70 in the second year or third year;
- (c) in the opinion of the Academic Affairs Committee, his academic performance is unsatisfactory, even though he has the required average.

Action to remove the academic probation of a student at the end of a semester or summer session will be taken normally if the student has:

- (a) achieved a minimum cumulative average of 65 in the first year or 70 in the second or third year;
- (b) passed all courses during the semester or summer session in question;
- (c) been approved for such action by the Academic Affairs Committee.

Any student who, in the judgment of the Academic Affairs Committee, does not show academic or professional promise or does not demonstrate behavior commensurate with the norms expected of a university student may be dismissed at any time.

Attendance and Guidance

Students are required to attend all classes, including laboratory sessions. If a student

is absent from any class, he is required to present an excuse acceptable to the professor in charge of the course.

Each professor is urged to announce at the beginning of each course his policy on attendance. He may record attendance and develop his own form of encouragement for continued attendance. The professor may ask the student to withdraw from a course if the student has repeatedly been absent and, in the opinion of the professor, has missed a major portion of the course.

Any student who is absent for more than one third of the total number of sessions in any course will lose all credit for the course, regardless of the reason.

Students in Agriculture are expected to develop qualities of leadership and acquire technical competence in agriculture. Consequently, informal and constant contacts are encouraged between faculty members and students.

Each student will be assigned to a Faculty advisor who will assist in choosing his field of specialization, selecting elective courses, and be his counselor on academic work.

GRADUATE STUDY

General requirements for graduate study at the University are found in the chapter at the end of this catalogue entitled Graduate Study. Specific information concerning requirements for the Faculty of Agricultural Sciences are found in the *Graduate Study Manual*, available on request from the Office of the Dean, Faculty of Agricultural Sciences, American University of Beirut.

AGRICULTURAL RESEARCH AND EDUCATION CENTER (AREC)

The Agricultural Research and Education Center, located 80 kilometers from Beirut in the Bekaa Valley, includes a research farm, staff residences, classrooms, a small library, laboratories, a dormitory, dining room, and recreational facilities. The facilities of the 100 hectare farm are used for teaching, research and demonstration on: fruits, vegetables, and field crops; dairy, beef, mutton, and poultry production; milk and food processing.

Under the provisions of the undergraduate curriculum, each student spends one semester and summer session successively in residence at the AREC. Courses taken during this period are mainly of a practical nature, and offer the student a unique opportunity to observe and participate in a wide range of farming operations.

Curriculum

The undergraduate program leading to the degree of Bachelor of Science (in Agriculture) and the Ingénieur Agricole Diploma covers a period of six semesters and two summer sessions. To qualify for graduation, a student must complete successfully a minimum of 126 credits of course work including:

1. 90-91 credits of courses specified as Core Requirements including 9 credits of Humanities or Social Sciences (see schedule below);
2. 29-30 credits in a selected major;
3. 6 credits of free electives.

Included in the 9 credit hours of Humanities or Social Sciences in the Core Requirements are Sociology 201 (3 credits), plus an introductory course in Economics (3 credits). The remaining three credits must be selected with the approval of the

student's advisor from among the following Departments or Programs in the Faculty of Arts and Sciences: Cultural Studies, Education, Economics, Fine and Performing Arts, History and Archaeology, Mass Communications, Literature, Philosophy, Political Science and Public Administration, Psychology, Religious Studies, and Sociology and Anthropology.

Majors

By the end of the second semester of the Agriculture II Year, each student will select a major from the following:

Departmental Majors: Agricultural Economics and Rural Sociology, Animal Production and Protection, Crop Production and Protection (Agronomy), Crop Production and Protection (Horticulture), Food Technology and Nutrition, Soils and Irrigation.

Non-Departmental Major: General Agriculture.

In addition to the Core Requirements a Departmental major will consist of the following:

1. Farm Practices (major-oriented), 2 credits;
2. at least 15 credits of courses in the Department, in addition to Farm Practices;
3. at least 12 credits in supporting and related courses selected from within or outside the Department in consultation with the student's advisor;
4. 6 credits of free electives selected by the student.

The major in General Agriculture will comprise, in addition to the Core Requirements:

1. Farm Practices (summer session, second year), 2 credits;
2. a minimum of 24 credits including one course in each of the following areas: agricultural economics, agronomy, animal production, animal *or* plant breeding, agricultural machinery, food science, horticulture, plant protection, soils *or* irrigation;
3. 3 credits of additional courses selected in accordance with the student's interest and objectives;
4. 6 credits of free electives selected by the student.

CORE REQUIREMENTS

First Year

	Lect Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester (Beirut)*</i>			
Agric. 201 Agricultural Orientation	2	—	2
Biol. 201 General Biology	3	3	4
Chem. 201 General Chemistry	3	—	3
Econ. 203 Survey of Economics	3	—	3
SI 215 Introductory Soils	3	3	4
			16

* For courses given in the Faculty of Arts and Sciences, see under Faculty of Arts and Sciences.

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>Second Semester (Beirut)*</i>			
AES 212 Agricultural Economics	3	–	3
Biol. 202 General Biology	3	3	4
Chem. 208 Survey of Organic Chemistry	3	–	3
Chem. 206 Quantitative Analysis	2	4	4
Soc. 201 Principles of Sociology	3	–	3
			<u>17</u>
<i>Summer (Beirut)*</i>			
Biol. 274 Microbiology	3	6	4
CP 211 Agricultural Mechanics	–	6	2
FTN 219 Introductory Agricultural Biochemistry	5	–	3
			<u>9</u>
Second Year			
<i>First Semester (Beirut)*</i>			
AES 225 Rural Sociology	3	–	3
Biol. 243 Genetics	3	–	3
CP 221 Applied Entomology	2	3	3
CP 223 Principles of Plant Pathology	2	3	3
FTN 221 Basic Nutrition	3	–	3
Elective (Humanities or Social Sciences)	3	–	3
			<u>18</u>
<i>Second Semester (AREC)</i>			
Agric. 222 Farm Practices (General)	–	6	2
AP 222 General Livestock Production	3	3	4
AP 226 Poultry Production	2	3	3
CP 222 Principles of Agronomy	3	4	4
CP 224 General Horticulture	2	3	3
CP 226 Agricultural Machinery	1	6	3
			<u>19</u>
<i>Summer (AREC) (Students select major field of interest)</i>			
Agric. 223 Farm Practices (emphasis on major interest)	–	10	2
SI 228 Irrigation Principles and Practices	3	6	3
Electives Subjects of major interest			6
			<u>11</u>

* For courses given in the Faculty of Arts and Sciences, see under Faculty of Arts and Sciences.

Third Year

	Lect. Hours per Week	Lab. Hours per Week	Semester Credit Hours
<i>First Semester (Beirut)</i>			
Agric. 295 Current Topics in Agr. Sciences*	1	—	—
AES 235 Extension Education	3	—	3
Electives Subjects of major interest			12
Elective Free elective			3
			<u>18</u>
<i>Second Semester (Beirut)</i>			
Agric. 296 Current Topics in Agr. Sciences*	1	—	1
Elective Introductory Statistics**	1	—	2-3
Electives Subjects of major interest			11-12
Elective Free elective			3
			<u>18</u>
	Total Credits		126

Courses

Following is a brief statement and course listing for each Department and Program of the Faculty of Agricultural Sciences. Undergraduate courses are numbered 200-299, and graduate courses 300-399.

Numbers Following Course Titles

The first number following the course title indicates the number of lecture hours per week.

The second number indicates the laboratory hours required per week.

The third number indicates the semester credit hours for the course.

Course Descriptions

Detailed course descriptions are available for those requiring further information.

DEPARTMENT OF AGRICULTURAL ECONOMICS AND SOCIOLOGY

Chairman: al-Haj, F.

Professors: Greene, B.; Nightingale, R.; Stickley, S.

Senior Lecturer: Raza, M.

The major functions of the Department of Agricultural Economics and Sociology (AES) (including Extension Education) are teaching and research oriented toward the agricultural, social and economic problems of the area. Also, the Department offers special programs, such as summer short courses, and engages in extension activities.

* One-year course; credit to be given after completion of course in second semester.

** Students may elect one of the following: (Arts and Sciences) Educ. 227, 3 cr; Math. 207, 3 cr; (Public Health) EB 360, 2 cr.

The Department offers a number of advanced *undergraduate* courses which provide a basis for a major at the B.S. level in *Agricultural Economics and Sociology* including extension. Introductory courses in these subjects are required of all undergraduate students in the School of Agriculture, as specified in the Core Requirements.

Graduate programs leading to the M.S. degree are offered in: (a) *Agricultural Economics*, with options in agricultural development, farm credit and cooperatives, farm management and production, and marketing and prices; (b) *Rural Sociology*, with emphasis on community development and technological change; (c) *Extension Education*, with emphasis on program development and administration.

212 *Agricultural Economics*. 3.0; 3 cr. Application of principles of economics to the agricultural sector of the economies of the countries of the region. Prerequisite: Econ. 203, or consent of instructor.

225 *Rural Sociology*. 3.0; 3 cr. Examination of sociological problems of rural areas; influence of rural social institutions on rural development. Prerequisite: Soc. 201, or consent of instructor.

235 *Extension Education*. 3.0; 3 cr. Comparative study of extension philosophy, objectives and adaptation to developing countries; principles and methods of extension and adult teaching.

241 *Farm Management*. 3.0; 3 cr. Prerequisite: 212, or consent of instructor.

243 *Agricultural Marketing*. 3.0; 3 cr. Marketing services required for advancement of agricultural production and food consumption. Prerequisite: consent of instructor.

282 *Adoption of Innovations*. 3.0; 3 cr. The process of accepting new farming ideas and the factors affecting their adoption.

284 *Rural Leadership*. 3.0; 3 cr. The setting, principles and techniques of lay leadership in rural development; leadership practice in selected programs.

286 *Agricultural Development*. 3.0; 3 cr. Interdisciplinary essentials for agricultural development.

299 *Undergraduate Tutorial*. 1-3 cr. Directed study. Prerequisite: third year standing.

300 *Tutorial*. 1-3 cr. Special problem. Prerequisite: consent of instructor.

311 *Planning Extension Programs*. 3.0; 3 cr. Approaches to planning extension programs; relative theories and research findings; case studies.

312 *Supervision of Extension Personnel*. 3.0; 3 cr. Principles and functions of supervision in recruitment, training, appraisal and planning of extension work.

313 *Extension Administration*. 3.0; 3 cr. Administrative theories and application to extension; function of the administrator; case studies.

314 *Evaluation in Extension Work*. 3.0; 3 cr. The place and types of evaluation in extension; preparation and uses of evaluation plan.

322 *Advanced Farm Management*. 3.0; 3 cr. Prerequisites: 212 and 241, or consent of instructor.

325 *Agricultural Economic Statistics*. 3.0; 3 cr. Fundamentals of matrix algebra; introduction to nonparametric statistics; time series analysis and index numbers. Prerequisite: Math. 203, Econ. 213, or consent of instructor.

- 326** *Economics of Agricultural Production and Resource Use.* 3.0; 3 cr. Prerequisites: Econ. 211 and Math. 101, or consent of instructor.
- 331** *Farm Credit.* 3.0; 3 cr. Prerequisites: 212 and Econ. 212 and 227, Bus. Admin. 227, or consent of instructor.
- 342** *Farmer Cooperative Societies.* 3.0; 3 cr. Organizing farmers for higher income through improved resource use and competitive position. Prerequisite: consent of instructor.
- 352** *Advanced Agricultural Marketing.* 3.0; 3 cr. Behavior of marketing firms, technological innovation and the marketing development process. Prerequisite: consent of instructor.
- 353** *International Agricultural Trade.* 3.0; 3 cr. Resource endowments, product specialization and promotion, facilitating institutions and trade documentation. Prerequisite: consent of instructor.
- 355** *Agricultural Price Analysis.* 3.0; 3 cr. Market data assembly and analysis; marketing management; government regulation and policy. Prerequisite: consent of instructor.
- 361** *Land Economics.* 3.0; 3 cr. Natural resource use; land reform; land tenure. Prerequisite: 212.
- 372** *Agricultural Policy.* 3.0; 3 cr. Governmental programs and policies for agriculture and the food industry; implications for modernization. Prerequisite: consent of instructor.
- 373** *Economics of Agricultural Development.* 3.0; 3 cr. Extensive readings in agricultural development. Prerequisites: 286, Econ. 211, 212 and 237, or consent of instructor.
- 381** *The Rural Community and its Development.* 3.0; 3 cr. Meaning and nature of the "community"; characteristics of the community development process and the principles involved in it.
- 382** *Applied Rural Sociology.* 3.0; 3 cr. Relationship of change agents to the client system; introduction of change.
- 383** *Continuity and Change in Rural Society.* 3.0; 3 cr. Social and cultural resistance to change in rural areas; theories of change and their implications for rural development programs.
- 384** *Sociological Aspects of Migration and Land Settlement.* 3.0; 3 cr. Factors influencing migration and land settlement schemes, with emphasis on Bedouin settlement in the Middle East.
- 389** *Research Methodology in Agricultural Social Sciences.* 3.0; 3 cr. Methods for preparing research proposals for field studies.
- 391-392** *Current Problems in Agricultural Social Sciences.* 3.0; 3 cr.
- 395, 396, 397,** and **398** *Seminar in Agricultural Social Sciences.* 1.0; 1 cr each. Current topics in the agricultural social sciences.
- 399** *M.S. Thesis.*

DEPARTMENT OF ANIMAL PRODUCTION AND PROTECTION

Chairman: Asmar, J.

Professors: Anderson, W.; Bhattacharya, A.; Dagher, N.; Schwulst, F.

The Department of Animal Production and Protection (APP) offers *undergraduate* courses for students registered for the B.S. degree in Agriculture or in related fields. Undergraduate Agriculture students electing to major in APP will, in addition to the Core Requirements, take 29-30 credits of advanced courses offered in the Department as well as in Food Technology and Nutrition, Biology, Tropical Health or Bacteriology.

Graduate programs leading to the M.S. degree are offered in the following majors: *Animal Production, Animal Pathology, Poultry Production* and *Nutrition* (under the Interfaculty Nutrition program described on page 252 of this catalogue).

222 *General Livestock Production.* 3.3; 4 cr. Modern principles and practices in beef, sheep and dairy production.

226 *Poultry Production.* 2.3; 3 cr. Modern principles and practices in poultry production.

241 *Principles of Dairying.* 3.4; 3 cr. Management, housing, feeding, breeding and record keeping in dairy production. Prerequisite: 222.

242 *Beef and Sheep Production.* 2.3; 3 cr. Breeding, feeding and management of cattle and sheep. Prerequisite: 222.

244 *Meats and Meat Processing.* 2.3; 3 cr. Slaughtering, cutting and storage of beef, mutton and lamb.

271 *Ruminant and Non-Ruminant Nutrition.* 4.0; 4 cr. Structure and functioning of digestive systems of livestock and poultry. Bioenergetics, nutritional deficiencies and nutrient requirements of farm animals. Prerequisite: FTN 221.

274 *Anatomy of Domestic Animals.* 3.6; 2 cr.

275 *Physiology of Domestic Animals.* 3.3; 4 cr.

276 *Feeds and Feeding.* 1.3; 2 cr. Characteristics, conservation and preparation of feeds. Feeding various classes of livestock. Prerequisite: FTN 221.

277 *Animal Breeding.* 2.0; 2 cr. Prerequisite: Biology 243, or consent of instructor.

280 *Diseases of Domestic Animals.* 3.0; 3 cr. Etiology, prevention and control, economic and public health significance of diseases of domestic animals. Prerequisite: Biology 274.

299 *Undergraduate Tutorial.* 1-3 cr. Library or laboratory research in a specialized topic. Prerequisites: third year standing and consent of instructor.

300 *Graduate Tutorial.* 1-3 cr. Special problem.

301 *Feed Analysis.* 1.3; 2 cr. Standard analysis of feed and use of analytical data in feed evaluation. Prerequisite: Chemistry 201.

302 *Vitamins and Minerals in Animal Nutrition.* 3.0; 3 cr. Chemistry, metabolism, requirements and interrelationship of vitamins and minerals in domestic animals. Prerequisite: FTN 221.

310 *Mammalian and Avian Immunology.* 3.3; 4 cr. Physiologic, cellular and mole-

cular aspects. Immunological procedures in biological research. Prerequisites: 274, 275, FTN 261, 263, 391, or consent of instructor.

314 *Advanced Animal Breeding*. 3.0; 3 cr. Prerequisite: 277.

331 *Physiology of Reproduction*. 2.3; 3 cr. The reproductive process in mammals, including endocrinology, gametogenesis, fertilization and sterility. Prerequisite: 277, or consent of instructor.

334 *Advanced Poultry Nutrition*. 2.3; 3 cr. Recent developments in poultry nutrition. Design and implementation of poultry nutrition experiments. Prerequisite: 271.

335 *Advanced Avian Physiology*. 2.3; 3 cr. Relationships between physiological factors and performance in avian species. Prerequisites: 226 and Biol. 216, or consent of instructor.

336 *Ruminant Nutrition*. 3.0; 3 cr. Recent advances in the nutrition of cattle and sheep. Prerequisite: 271.

395, 396, 397 and **398** *Special Seminar in Animal Science*. 1.0; 1 cr each. Reports and discussion of selected topics in animal science.

399 *M.S. Thesis*.

DEPARTMENT OF CROP PRODUCTION AND PROTECTION

Chairman: Henderson, H.

Professors: Abu Shakra, S.; Barnard, E.; Batal, K.; Bolton, C.; Bray, D.; Khalidy, R.; Nasr, H.; Saad, A.; Saghir, A.; Talhouk, A.; Weltzien, H.

Senior Lecturer: Chaudhry, S.

Instructor: Gaiser, D.

The Department of Crop Production and Protection (CPP) offers courses in five areas: Agronomy, Entomology, Horticulture, Mechanization and Plant Pathology. At least one course from each of these areas is required for all *undergraduate* students in the School of Agriculture. The Department offers majors at the B.S. level in *Agronomy* and *Horticulture*. At the *graduate* level, curricula are available for majors in *Agricultural Mechanization*, *Agronomy*, *Entomology*, *Horticulture* and *Pathology* for the M.S. degree, and a major in *Agronomy* for the Ph.D. degree.

211 *Agricultural Mechanics*. 0.6; 2 cr. Fabrication methods applicable to agricultural equipment and structures.

221 *Applied Entomology*. 2.3; 3 cr. Insect morphology, anatomy and biology in relation to pest control.

222 *Principles of Agronomy*. 3.3; 4 cr. Production of major field crops, botany, physiology, seeds, cultural practices and principles of weed control.

223 *Principles of Plant Pathology*. 2.3; 3 cr. Occurrence, nature and life-cycles of plant pathogens and diseases. Prerequisite: Biol. 274, or consent of instructor.

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

226 *Agricultural Machinery*. 1.6; 3 cr. Principles of operation and care of farm field machinery and power units.

- 240** *Taxonomy of Economic Plants.* 1.6; 3 cr. Identification and classification of economic plants according to their natural relationships.
- 241** *Small Power Units.* 2.5; 3 cr. Selection, operation and care of electric motors, pumps and small internal combustion engines for agricultural applications.
- 248** *Ornamental Horticulture.* 2.3; 3 cr. Principles of production of flowers and shrubs of commercial importance in the Middle East. Prerequisite: consent of instructor.
- 255** *Plant Breeding.* 2.0; 2 cr. Application of genetic principles and allied subjects to crop improvement. Prerequisite: Biol. 243.
- 261** *Seed Technology.* 1.3; 2 cr. Seed development, identification, sampling,, physical purity, germination, tests of quality.
- 263** *Shop Management.* 1.3; 2 cr; alternate years. Planning physical and managerial requirements for establishing and operating agricultural mechanical service centers.
- 270** *Agricultural Structures.* 2.3; 3 cr. Economic, structural, environmental and functional aspects of agricultural buildings.
- 271** *Advanced Mechanics.* 1.3; 2 cr; alternate years. Shop construction techniques including welding, drawing, sheet metal and farm carpentry.
- 272** *Agricultural Machinery Management.* 2.3; 3 cr; alternate years. Selection, adaptation and economics of agricultural machinery. Prerequisite: 226, or consent of instructor.
- 275** *Subtropical Fruit Production.* 3.0; 3 cr.
- 276** *Plant Propagation.* 2.3; 3 cr. Methods and principles of seedage and asexual propagation of horticultural crops.
- 277** *Vegetable Production.* 3.4; 3 cr. Classification, identification and cultural practices of important vegetables of the area. Prerequisite: 224, or consent of instructor.
- 281** *Deciduous Fruit Production.* 3.0; 3 cr. Principles and practices underlying propagation, cultivation, pruning, fertilizing and handling of deciduous fruit orchards.
- 284** *Weed Science.* 2.0; 2 cr. Weeds and their control; emphasis on recommendations of herbicides and their fate in plants and soils.
- 286** *Forage Crops.* 2.0; 2 cr. Establishment and management of grass and legume crops for hay, silage and pasture.
- 287** *Crop Production.* 3.0; 3 cr. Adaptation, distribution, production and improvement of small grain and other field crops.
- 290** *Seed Production.* 2.0; 2 cr. Principles and factors involved in the production, harvesting, processing and certification of seed for sowing.
- 291** *Crop Anatomy.* 2.3; 3 cr. Structure and functions of plant tissues, their origin and differentiation. Organization and differentiation of plant organs with emphasis on crop plant.
- 293** *Plant Diseases of Economic Importance.* 3.0; 3 cr. Biology, etiology and control of plant pathogens. Prerequisite: as for 223.
- 294** *Plant Protection.* 2.5; 3 cr. Observation and study of plant diseases and insect

pests in the field with emphasis on recognition, evaluation and control. Prerequisites: 221 and 223.

295 *Pesticides*. 3.0; 3 cr. Survey of the commonly used insecticides, fungicides, herbicides, rodenticides, and related materials as to their chemistry, mode of action, relation of structure to activity, toxicity and metabolism.

299 *Undergraduate Tutorial*. 1-3 cr. Directed study. Prerequisite: third year standing.

300 *Graduate Tutorial*. 1-3 cr. Research or advanced discussion of special problems.

301 *Research Methods in Plant Sciences*. 0.6; 2 cr. Basic laboratory procedures used in plant sciences.

307 *Advanced Crop Production*. 3.0; 3 cr. Prerequisite: 287.

308 *Advanced Economic Entomology*. 3.0; 3 cr. Principles underlying chemical and biological control of insects, stressing the upsetting of biological equilibria through improper use of insecticides.

309 *Advanced Vegetable Production*. 3.0; 3 cr. Recent advances in vegetable production. Prerequisite: 247, or consent of instructor.

311 *Insect Transmission of Plant Diseases*. 3.0; 3 cr. Insects and mites as transmitters of infectious and non-infectious plant diseases; morpho-biological adaptations favoring transmission. Prerequisite: consent of instructor.

312 *Advanced Principles and Methods in Plant Pathology*. 2.3; 3 cr. Principles of plant infection; physiology of host-parasite relationships; modern methods of research.

316 *Seed Physiology*. 2.3; 3 cr. Physiology of flowering, seed development, germination, dormancy and senescence. Prerequisite: 261.

317 *Plant Parasitic Fungi and Bacteria*. 2.3; 3 cr. Morphology, taxonomy, ecology and identification.

318 *Plant Parasitic Viruses and Nematodes*. 3.0; 3 cr. Fundamental and practical aspects of plant virology and nematology.

319 *Advanced Plant Genetics*. 2.3; 3 cr. Theories and principles of plant inheritance.

320 *Insect Toxicology*. 3.0; 3 cr. General principles of toxicology; modes of action of substances toxic to insects. Prerequisite: 295.

324 *Cytogenetics of Field Crops*. 2.3; 3 cr. Cytological and genetic effects of variations in chromosome structure and number.

325 *Advanced Fruit Handling*. 3.0; 3 cr. Fruit quality in relation to methods of production, physiology, handling and storage.

326 *Advanced Fruit Production*. 3.0; 3 cr. Applied studies; history, principles and practices of fruit production.

328 *Crop Ecology*. 3.0; 3 cr. The environment and the plant. Plant communities, their nature as indicators of habitat-types. Geneecology of crops; competition and adaptation.

331 *Advanced Plant Breeding*. 3.0; 3 cr. Principles, technique and problems in crop improvement. Prerequisite: 255.

332 *Field Plot Technique*. 2.3; 3 cr. Application of statistical design and analysis to agricultural experiments.

335 *Mode of Action of Herbicides*. 3.0; 3 cr. Absorption, translocation, selectivity and mechanisms of toxic action of herbicides and their fate in plants and soils.

336 *Advanced Crop Physiology*. 3.0; 3 cr. Principles, concepts and advanced theories of plant functions, including hormones, photosynthesis, reproductive physiology, environmental stresses and pollution effects.

342 *Production of Special Horticultural Crops*. 3.0; 3 cr. Principles and practices involved in the production of specialized crops, such as grapes and mangos, which have worldwide importance.

370 *Materials Handling*. 2.0; 2 cr. Principles and practices in the transporting, conveying, grading and processing of agricultural materials and products.

371 *Agricultural Machinery Design*. 3.0; 3 cr; alternate years.

372 *Machinery Construction*. 1.6; 3 cr; alternate years. Techniques of construction, repair and testing of agricultural machines.

373 *Farm Power Design*. 3.0; 3 cr; alternate years. Elements of design in heat engines and electricity including development, transmission and use of power for farming.

395, 396, 397 and **398** *Seminar in Current Topics in Plant Science*. 1.0; 1 cr each. Reviews of recent literature relating to selected topics.

399 *M.S. or Ph.D. Thesis*.

DEPARTMENT OF FOOD TECHNOLOGY AND NUTRITION

Chairman: Cowan, J.

Professors: Akrabawi, S.; Hallab, A.; Tannous, R.

Senior Lecturer: Mameesh, M.

The Department of Food Technology and Nutrition (FTN) offers an *undergraduate* major in *Food Technology and Nutrition* based on a broad background of basic courses in the biological and agricultural sciences. Course offerings in the Department stress the interrelationship of the disciplines of food technology and nutrition as well as problems of the area related to nutritional deficiencies, food quality and food processing.

The Department also offers a *graduate* program leading to the M.S. degree with majors in: (a) *Food Technology*, with options in food chemistry and toxicology, food processing and food microbiology; and (b) *Nutrition*, under the Interfaculty Nutrition program described on page 252 of this catalogue.

210 *Brief Survey of Foods and Nutrition*. 2.0; 2 cr. For non-Agriculture students only.

219 *Introduction to Agricultural Biochemistry*. 5.0; 3 cr. Prerequisite: Chem. 208. Credit is not given for both 219 and 261.

221 *Basic Principles of Nutrition*. 3.0; 3 cr. Prerequisite: 219 or 261.

261 *Introductory Biochemistry*. 3.0; 3 cr. Prerequisite: Chem. 208. Credit is not given for both 261 and 219.

263 *Biochemistry Laboratory*. 0.6; 2 cr. Prerequisite: 219 or 261, or concurrent registration in either course.

265 *Food Chemistry*. 3.3; 4 cr. Chemical, physical and sensory properties of foods. Prerequisite: Chem. 208.

274 *Human Nutrition*. 3.0; 3 cr. Nutritional requirements; growth, malnutritional interrelationships. Prerequisite: 221.

287 *Principles and Methods of Food Processing*. 2.3; 3 cr.

288 *Technology of Foods and Food Products*. 3.3; 4 cr. Technical aspects of food processing, stressing unit operations. Prerequisite: 287.

290 *Traditional Methods of Food Processing*. 2.3; 3 cr. Scientific basis of common traditional processing and preservation methods used in developing countries. Prerequisite: 287.

298 *Senior Project in Nutrition and Food Science*. 1.6; 3 cr. Directed laboratory or field project. Prerequisite: Third year standing.

299 *Undergraduate Tutorial*. 1-3 cr. Directed study. Prerequisites: third year standing and consent of instructor.

300 *Graduate Tutorial*. 1-3 cr. Directed Study. Prerequisite: consent of instructor.

370 *Advanced Food Technology*. 3.0; 3 cr. Prerequisite: 287.

377 *Applied Nutrition*. 3.0; 3 cr. Nutrition, food and agriculture; public health and medical aspects of nutrition; applied nutrition programs. Prerequisite: 221, or consent of instructor.

379 *Advanced Experimental Nutrition*. 3.0; 3 cr. Physiological and biochemical aspects underlying nutritional requirements and disorders. Nutrient interactions in foods. Prerequisites: 221 and 261, or consent of instructor.

395, 396, 397 and **398** *Seminar in Food Technology and Nutrition*. 1.0; 1 cr each. Reports and discussions. Prerequisite: graduate standing.

391 *Laboratory Methods*. 0.9; 3 cr. Assay techniques and instrumentation.

399 *M.S. Thesis*.

DEPARTMENT OF SOILS AND IRRIGATION

Acting Chairman: Atallah, N.

Professors: Macksoud, S.; Paeth, R.; Sayegh, A.

The Department of Soils and Irrigation (SI) offers an integrated *undergraduate* major for the training of students in the various aspects of soils and irrigation. Introductory courses in these subjects are offered to all Agriculture students within the framework of the Core curriculum. Specialized and advanced courses are offered to students wishing to major in *Soils and Irrigation* at the undergraduate level.

The Department also offers a *graduate* program leading to a M.S. degree with a major in either *Soils* or *Irrigation*. The program emphasizes the importance of subject matter related to the major with the intention of training students in the broader aspects of irrigated agriculture and soil management.

215 *The Nature and Properties of Soils*. 3.3; 4 cr. The origin and classification of soils; their chemical, physical and biological properties in relation to plant growth.

228 *Irrigation Principles and Practices*. 3.4; 3 cr. The fundamentals of irrigation; land preparation; water measurement, conveyance and control; farm irrigation methods.

261 *Hydraulics*. 3.0; 3 cr. Principles of hydraulics and their application in the design of irrigation systems.

262 *Soil Fertility*. 2.3; 3 cr. Use of fertilizers and soil amendments in soil fertility management programs.

263 *Irrigation Water Requirements*. 3.0; 3 cr. Water use by crops; methods utilized for determining irrigation requirements at farm and project levels.

267 *Soil Conservation*. 3.0; 3 cr. Evaluation and control of wind and water erosion on cultivated, range and forested land.

275 *Chemistry of the Soil System*. 2.3; 3 cr. Soil chemistry with emphasis on the diagnosis, reclamation and management of salt affected soils.

280 *Soil Survey and Morphology*. 2.3; 3 cr. Soil profile morphology, geographical distribution of soils, soil mapping, and interpretation of soil survey information.

299 *Undergraduate Tutorial*. 1-3 cr. Directed study. Prerequisites: Third year standing and consent of instructor.

300 *Graduate Tutorial*. 1-3 cr. Special problem.

303 *Soil Genesis and Classification*. 3.0; 3 cr. Weathering, processes of soil formation, interpretation of laboratory data, formation and classification of soils.

305 *Clay Mineralogy*. 2.3; 3 cr. Structure and identification of clay minerals in relation to the chemistry, physics, fertility and genesis of soils.

309 *Drainage*. 3.0; 3 cr. Theory and practice of drainage of agricultural lands.

312 *Advanced Soil Fertility*. 3.0; 3 cr. Current developments, theories and research; nutrient availability and absorption; crops responses and fertilizer requirements.

316 *Ground Water Hydrology*. 4.0; 4 cr. Occurrence, distribution and movement of ground water; well hydraulics and design; ground water basin management.

320 *Irrigation Project Planning*. 3.3; 4 cr. Policies for planning and development of irrigation projects; study and analysis of various irrigation systems and structures.

326 *Irrigation System Design*. 4.0; 4 cr. Hydraulic design of conveyance, control and protective structures of irrigation systems. Prerequisite: 261.

330 *Irrigation Project Management*. 4.0; 4 cr. Theory and application of management policies and practices, including operation and maintenance of irrigation systems.

395, 396, 397 and **398** *Seminar in Soils and Irrigation*. 1.0; 1 cr each.

399 *M.S. Thesis*.

PROGRAM IN GENERAL AGRICULTURE

Chairman: Cowan, J.

Professors: Barnard, E.; Kawar, N.; Swenson, S.

The *undergraduate* program leading to a major in *General Agriculture (Agr.)* is offered to the student whose interest is in a broad education in the agricultural sciences rather than in a special area. The undergraduate courses offered under the program are required for all undergraduate students in the Faculty of Agricultural Sciences. There is no graduate degree offered in *General Agriculture*.

201 *Agricultural Orientation*. 2.0; 2 cr. Introduction to agriculture in the Middle East and to agricultural activities at the University.

222 and **223** *Farm Practices*. 0.10; 2 cr each. Practical experience in operational activities and management decisions essential in modern farming.

295 and **296** *Current Topics in Agricultural Sciences*. 1.0; 1 cr. Each student is required to give at least one presentation on a chosen subject. Prerequisite: third year standing.

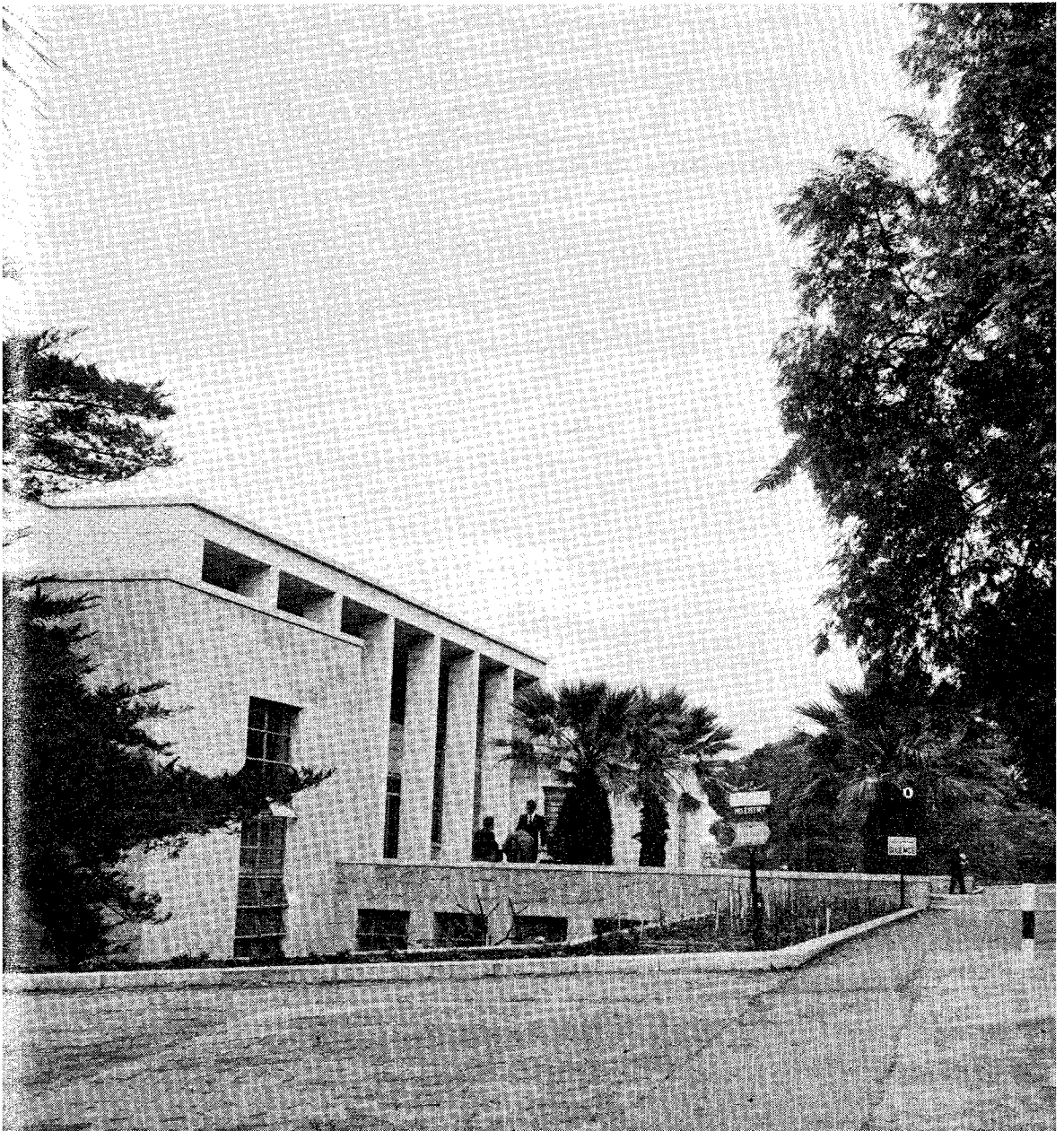
301 *Statistical Methods in Agriculture*. 4.6; 3 cr. Prerequisite: consent of instructor.



Student Cafeteria.

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GRADUATE STUDY



GRADUATE STUDY

General Statement

Graduate study is closely linked with research. Graduate students are introduced to areas and problems of current research, and are expected to approach them in a critical and independent manner. Candidates for the degree of Doctor of Philosophy are expected to make an original contribution to knowledge in their fields.

Study leading to the Master's degree was begun at the American University of Beirut in 1904, and the first Master's degree was awarded in 1905. Study leading to the degree of Doctor of Philosophy was initiated in 1961, and the first Ph.D. degree was granted in 1966. The Ph.D. degree is recognized by the Lebanese Government as equivalent to the French degree of Doctorat d'État.

Graduate study is under the direction of the Board of Graduate Studies, with the assistance of the Graduate Committees of the various Faculties. The Board of Graduate Studies is responsible to the University Senate.

The members of the Board of Graduate Studies are: D.W. Bray, J. Cowan (chairman), F. Haddad, W. Hijab, C. Inglessis, R. Khuri, D. Makinson, Y. Sayegh and S. Thabet (Provost).

AREAS IN WHICH GRADUATE STUDY IS OFFERED

The University offers both the Master's degree and the degree of Doctor of Philosophy. The Master's degrees offered are Master of Arts (M.A.), Master of Business Administration (M.B.A.), Master of Engineering (M.E.), Master of Public Health (M.P.H.), Master of Science (M.S.) and Master of Science in Pharmacy (M.S. in Pharmacy).

I. Master's degrees are offered in the following areas of specialization:

Interfaculty Program

Nutrition (M.S.)

Faculty of Arts and Sciences

Anthropology (M.A.)

Arabic Language and Literature (M.A.)

Archaeology (M.A.)

Biology (M.S.)

Business Administration (M.B.A.)

Chemistry (M.S.)

Comparative Literature (M.A.)

Economics (M.A.)

Education (M.A.)

English Language (M.A.)

English Literature (M.A.)

Geology (M.S.)

History (M.A.)

Marine Sciences (M.S.)

Mathematics (M.A. and M.S.)

Middle Eastern Studies (M.A.)

Philosophy (M.A.)

Physics (M.S.)

Political Studies (M.A.)

Psychology (M.A.)

Public Administration (M.A.)

Religious Studies (M.A.)

Sociology (M.A.)

Statistics (M.A. and M.S.)

Faculties of Medical Sciences

Bacteriology and Virology (M.S.)
 Biochemistry (M.S.)
 Epidemiology (M.S.)
 Human Morphology (M.S.)
 Parasitology (M.S.)
 Pharmaceutical Chemistry (M.S. in Pharmacy)
 Pharmacodynamics and Toxicology (M.S. in Pharmacy)
 Pharmacognosy (M.S. in Pharmacy)
 Pharmacology and Therapeutics (M.S.)
 Pharmacy (M.S. in Pharmacy)
 Physiology (M.S.)
 Public Health (M.P.H.)

Faculty of Engineering and Architecture

Architecture (M.E.)	Mechanical Engineering (M.E.)
Civil Engineering (M.E.)	Sanitary Engineering (M.E.)
Electrical Engineering (M.E.)	

Faculty of Agricultural Sciences

Agricultural Economics (M.S.)	Food Technology (M.S.)
Agricultural Mechanization (M.S.)	Horticulture M.S.)
Agronomy (M.S.)	Irrigation (M.S.)
Animal Pathology (M.S.)	Plant Pathology (M.S.)
Animal Production (M.S.)	Poultry Production (M.S.)
Entomology (M.S.)	Rural Sociology (M.S.)
Extension Education (M.S.)	Soils (M.S.)

II. Ph.D. degrees are offered in the following areas of specialization:

Faculty of Arts and Sciences

Arab History	Chemistry
Arabic Literature	Physics

Faculties of Medical Sciences

Medical Sciences

Faculty of Agricultural Sciences

Agronomy

PROCEDURE FOR APPLYING FOR ADMISSION TO GRADUATE STUDY

Application forms for admission to graduate study can be obtained from the Office of the Registrar, American University of Beirut, Beirut, Lebanon. All applications for admission should be made on these forms, and returned to the Office of the Registrar. Any subsequent correspondence should also be addressed to the Office of the Registrar.

Completed application forms should reach the Office of the Registrar by May 1 for students who wish to begin graduate study in the summer session or in the first

semester of the academic year. Students who wish to begin graduate study in the second semester should ensure that completed application forms reach the Office of the Registrar by January 1.

REQUIREMENTS FOR ADMISSION TO GRADUATE STUDY

Graduate study is offered only on a selective basis for students who have shown distinct academic ability.

To be admitted to graduate study, an applicant must hold a Bachelor's degree from the American University of Beirut (or an equivalent degree from another recognized institution). An average of at least 80 in the major field of study (or a performance at an equivalent standard if the degree was obtained elsewhere) is required for admission to the Master's program. However, in exceptional cases, graduates of the American University of Beirut with an average between 75 and 80 in their major field of study (or with an equivalent performance at another institution) may be admitted to the Master's program *on probation*. The conditions for subsequent removal of probation are described in the section on Probation and Dismissal below.

For admission directly to Ph.D. study upon completion of the Bachelor's degree at this University, an applicant must have an average substantially above 80 in his major field of study (or a performance at an equivalent standard if the degree was obtained elsewhere). Applicants for Ph.D. study who hold the Master's degree must have demonstrated at the Master's level both outstanding academic ability and the potential to conduct scholarly research.

Before admission to graduate study, all students must pass the English entrance examination. This examination is administered by the University, and the passing score is 575 (600 for students entering the program for Teaching English as a Foreign Language: TEFL). Applicants who score between 500 and 574 in the English entrance examination (between 550 and 599 for students entering the TEFL program) may be admitted to graduate study, on condition that they take and pass a special non-credit course in English Communication Skills for Graduate Students (English 202) during the first semester of graduate study.

Exemption from the English entrance examination is given to applicants who hold a degree from the American University of Beirut, or who have completed at least two years of full-time study in residence in a recognized institution in Australia, Canada, The Irish Republic, New Zealand, the United Kingdom or the United States.

For further information on the requirements for English, see page 20 of this catalogue.

SUPERVISION

During his first semester of graduate study, each student will be assigned to an advisor or advisors by the Department or Program in which he is enrolled. The advisor will guide the student in the initial phase, in planning his studies and selecting his courses. At a later date the student will be assigned to a Thesis Advisor. The Thesis advisor will normally be the Chairman of the Examining Committee.

COURSES AND GRADES

Courses taken as part of a student's graduate study program are of three categories:

(1) *Graduate level courses.* These are normally numbered 300 and above, except in the Faculty of Engineering and Architecture which has its own numbering system for graduate courses.

(2) *Undergraduate courses taken for graduate credit.* These must be of at least junior level and, if appropriate, a limited number of such courses can be considered for graduate credit.

(3) *Prerequisite courses.* These do not carry graduate credit but are taken to make up deficiencies in the student's background.

The minimum passing grade for a course taken for graduate credit (categories 1 and 2 above) is 70. Students in graduate study are required to maintain a cumulative average of at least 80 in *all* courses taken for graduate credit. The minimum passing grade for a prerequisite course is 60; however, a Department or Program may set a higher minimum passing grade for such courses taken by its students. Grades for prerequisite courses will be reported as either *Pass* (P) or *Fail* (F).

A student who is absent without excuse from more than one-third of the number of sessions in any one course, or who fails to sit for scheduled examinations or to submit scheduled written or oral work, will be given a grade of 40 for the course.

PROBATION AND DISMISSAL

A student may be placed on academic probation if:

- (1) He is admitted to graduate study *on probation*;
- (2) He fails in any course taken for graduate credit;
- (3) He does not maintain the cumulative averages mentioned in the section above on Courses and Grades;
- (4) The Department or Program in which he is enrolled recommends probation, even though his cumulative average may be adequate.

The probation of a student may be removed if both of the following conditions are satisfied:

- (1) At the end of any semester he passes in all courses and obtains the cumulative averages mentioned in the section above on Courses and Grades;
- (2) The Department or Program in which he is working is satisfied with the quality of the student's work.

A student may be discontinued from graduate study if:

- (1) He fails to remove a probation within a period of two semesters in which he is taking courses for credit;
- (2) In the view of the Department or Program in which he is enrolled, his work is inadequate, irrespective of grades obtained;
- (3) He fails either the General Examination or the Final Oral Examination twice.

EXAMINING COMMITTEE

At some time after a student has been admitted to graduate study, but before he takes his General Examination, the Faculty Graduate Committee, upon recommendation of the Department or Program in which the student is enrolled, will appoint an Examining Committee of at least three members. Whenever possible, external examiners will be included in the Committee. The Examining Committee should approve the student's thesis topic and review from time to time the progress of his

research. Also, the Examining Committee shall read and evaluate the student's thesis and conduct the final oral examination.

GENERAL EXAMINATION

At some time after a student has completed most of the course requirements for his degree, he must pass a General Examination. The timing of the General Examination will be set by the Department or Program concerned. The purpose of this examination is to ascertain the student's knowledge of his field and related areas, his acquaintance with methods and techniques of research, and his ability to organize and present material. The examination is not restricted to the content of courses.

If a student does not pass the General Examination, he may take it a second time after a period of at least three months. However, if he does not pass at the second attempt, he will be discontinued from graduate study.

DEPOSIT OF THE THESIS IN THE LIBRARY

When a student passes the Final Oral Examination, he is required to deposit two copies of his thesis, complete with abstract and with the signatures of the members of the Examining Committee, at the Central Jafet Memorial Library. One of these two copies should be the original. A receipt for these copies must be received by the Office of the Registrar from the Library before the student can receive his degree. The Library will bind, catalogue and shelve the two copies of the thesis.

Specific Requirements for the Master's Degree

As well as satisfying the general requirements set out in the preceding sections for all students in graduate study, students working towards a Master's degree must fulfill the requirements described below.

It should also be noted that individual Departments and Programs may impose further requirements. Information on these can be found in the sections of the catalogue dealing with the Departments and Programs concerned.

Course Requirements

A student working for the Master's degree must complete at least 21 course credits exclusive of prerequisite courses taken to make up deficiencies. Not all of the credits need be in courses offered by the Department or Program in which he is enrolled, but all of them must be in courses which, in the judgment of the Department or Program, are relevant to the field in which the student is specializing.

All of the required course credits must be in courses of at least the junior level or equivalent, and at least 15 of the credits must be in *graduate level* courses. Students with deficiencies in their undergraduate preparation may be required to take additional course credits, as set by the Department or Program concerned.

Students who have been admitted to an institution of higher education in Lebanon without a certificate recognized for admission to the American University of Beirut, but who have obtained a Sophomore Diploma recognized by the Lebanese Government as equivalent to the Lebanese Baccalaureate Part II, plus a Bachelor's Degree, and who have entered graduate study on this basis, will be required to complete at least 33 course credits for the Master's degree.

Not more than 6 credits towards the Master's degree may be transferred from *gradual level* courses taken at another institution or from excess credits in *graduate level* courses earned at this University above the requirements for the Bachelor's degree. Such transfers must be approved by the Department or Program and by the Faculty Graduate Committee.

Language Requirements

There are no University language requirements for the Master's degree. However, individual Departments and Programs may set their own language requirements, either as a general rule or in specific cases.

Language examinations will be arranged by the Department of European Languages and Literature, or by other bodies approved by the Faculty Graduate Committee.

Residence Requirements

To meet the minimum residence requirements for the Master's degree, a student must register for at least two semesters or one semester and two summers. The minimum residence requirements in the Department of Education can be fulfilled by registering for at least four summers.

All requirements for the Master's degree must be completed within a period of four years after admission to graduate study. Students attending summer sessions only must complete all requirements within a period of six summers after admission to graduate study.

Thesis

To obtain a Master's degree, a student is required to submit a thesis involving critical and independent research on a subject of current interest. Exceptions are made in the following cases:

- (1) A student in the Department of Education may submit a project and complete 9 credits of *graduate level* courses in lieu of the thesis;
- (2) A student who has been admitted to candidacy for the Ph.D. degree may, in some Departments, and with the approval of the Board of Graduate Studies, be awarded the Master's degree upon completing 30 credits of the course requirements for the Ph.D., without submitting a Master's thesis. Of the 30 credits, at least 24 must be of *graduate level*;
- (3) In special cases, a Department or Program may request that 9 credits of *graduate level* course work be substituted for the thesis. Such a request must be approved by the Faculty Graduate Committee and the Board of Graduate Studies.

Except in Departments or Programs in which the medium of instruction is not English, the thesis must be in English.

The thesis must be accompanied by an abstract of from 200 to 600 words. If the thesis is in a language other than English, the abstract must be written both in that language and in English. Exceptions require the approval of the Graduate Committee of the Faculty concerned.

Theses should follow the form and style described in K.L. Turabian, *Manual for Writers of Term Papers, Theses, and Dissertations* (University of Chicago Press) or any other form specified by the Department or Program.

Three typewritten copies, unbound but ready for binding, should be submitted by the student to his Thesis Advisor. Of these, one should be the original, and the other two should be copies obtained by any legible and durable form of mechanical reproduction. Additional copies may be required as specified by the Department or Program concerned. The thesis must be submitted to the Thesis Advisor before the Final Oral Examination and not later than October 5, February 5, or May 15, for students who wish to graduate in October, February, or June respectively.

Final Oral Examination

The Final Oral Examination is on the thesis and its field. It must be taken not later than October 20, February 20 or May 30, for students who wish to graduate in October, February, or June respectively.

A single result, *Pass* or *Fail*, is reported for the thesis and the Final Oral Examination. If a student fails, he may resubmit his thesis and sit again for his Oral Examination after a period of at least three months. However, if he does not pass at the second attempt, he will be discontinued from graduate study.

The Final Oral Examination may be held outside Beirut, if approved by both the Department or Program and the Faculty Graduate Committee. In such a case the Chairman of the Examining Committee should be from the Department or Program in which the student is enrolled. In such a case too, the Comptroller's Office of the University must receive a fee of \$ 50 from the student for each examiner before the examination takes place.

Interfaculty Graduate Nutrition Program (GNP)

The Interfaculty Graduate Nutrition Program leading to the M.S. degree draws on the resources of various Departments of the Faculties of Agricultural Sciences, Arts and Sciences, and Medical Sciences in providing opportunities for study and research in the general field of Nutrition. The Program is administered by the Graduate Committees of the three Faculties concerned in collaboration with an interfaculty Coordinating Committee.

The Program is designed around a core of three courses in nutritional biochemistry, animal physiology and applied nutrition which provide a foundation for the many scientific aspects of nutrition. At the same time, there is ample scope for the student to specialize in one area of nutrition (e.g., clinical nutrition, food science) by selecting appropriate additional courses and conducting his thesis research in one of the various Departments involved in specialized research. All other requirements are as defined in the Graduate Program of the Faculty concerned.

To be accepted into the program the student must:

- (1) Meet the general University requirements for admission to graduate study;
- (2) Be recommended by the Coordinating Committee and the Department concerned and accepted by the appropriate Faculty Graduate Committee.

Second Master's Degree

It is possible for a student to obtain a second Master's degree, provided that he completes all the requirements of the second degree and provided that he spends a minimum of one additional academic year of registered study or its equivalent at the University.

Permission to study towards a second Master's degree must be obtained from the Board of Graduate Studies.

Specific Requirements for the Degree of Doctor of Philosophy

As well as satisfying the general requirements for all students in the graduate program, students working for the degree of Doctor of Philosophy must fulfill the requirements described below.

It should also be noted that individual Departments and Programs may impose further requirements. Information on these can be found in the sections of the catalogue dealing with the Departments and Program concerned.

Admission to Candidacy

After a student has completed the requirements listed below, he may be admitted to candidacy for the degree of Doctor of Philosophy. Admission to candidacy signifies that the student is ready to devote his major energies to the subject of his thesis. The requirements for a student to be admitted to candidacy are:

- (1) He must have completed at least two semesters of graduate study;
- (2) He must have a cumulative average of at least 80 in all courses taken for graduate credit;
- (3) He must have passed the General Examination. Details of this examination are given above, page 250 ;
- (4) He must have passed all language requirements. Details of language requirements are given below, page 254 ;
- (5) He must have submitted a general plan and provisional title for his intended thesis. The plan and title must be approved by the Department or Program in which the student is enrolled and by the Board of Graduate Studies. Any subsequent change in plan or title also requires approval.

No student is admitted to candidacy if he is on probation.

Course Requirements

The Advisor of each student should submit a tentative program of study to the Board of Graduate Studies before the completion of nine credits of course work toward the Ph.D. degree. Such a program should conform to the following requirements:

- (1) A student who holds a Master's degree from this University must complete at least 15 credits of *graduate level* courses beyond those that were required for the Master's degree;
- (2) A student who holds a Bachelor's degree from this University, and who has been accepted to study for the Ph.D. without having obtained a Master's degree, must complete at least 45 course credits of which at least 39 must be in *graduate level* courses;
- (3) A student who holds a degree from another institution will have his degree evaluated by the Department or Program in which he is enrolled and by the Board of Graduate Studies:
 - (i) If his degree is recognized by this University as being at least equivalent to its Master's degree, then he must complete at least 24 course credits at this

University of which at least 15 must be in *graduate level* courses. In special cases and with the approval of the Department or Program concerned and the Board of Graduate Studies, fewer than 24 credits may be required;

(ii) If his degree is not recognized by this University as being equivalent to its Master's degree, but is recognized as being at least equivalent to its Bachelor's degree, then if he is accepted to study for the Ph.D. at this University he must complete at least 45 credits of which 39 must be in *graduate level* courses. However, in some cases of this kind it may be possible to transfer up to 12 credits of *graduate level* courses taken at another institution. Such a transfer requires the approval of the Department or Program in which the student is enrolled and of the Board of Graduate Studies.

If more than six years have elapsed since the completion of any course, that course will be scrutinized with particular care before credit can be given for it toward the Ph.D. degree.

Language Requirements

The University language requirements for the degree of Doctor of Philosophy consist of proficiency in one European language, other than English, that is considered by the Department or Program in which a student is enrolled to be relevant to his field of specialization.

Individual Departments and Programs may specify whether they require written proficiency, oral proficiency, or both. They may also require, either as a general rule or in special cases, additional languages.

Language examinations will be arranged by the Department of European Languages and Literature, or by other bodies approved by the Board of Graduate Studies. All language requirements must be satisfied before a student is admitted to candidacy for the degree of Doctor of Philosophy.

Residence Requirements

Completion of a Ph.D. degree will normally involve four years of full-time study or equivalent beyond the Bachelor's degree. To fulfill the minimum residence requirement for the Ph.D., the student must register for at least six semesters beyond the completion of the Bachelor's degree. A non-AUB graduate who is admitted to Ph.D. study on the basis of a Master's degree recognized as being equivalent to that of this University must register for at least four semesters.

The special demands of a doctoral program require that a student devote a sufficient amount of time continuously to concentrated study and research, with a minimum of outside distraction. Thus, the Ph.D. student should plan to spend at least one academic year in continuous full-time residence on the AUB campus. The timing of this period of full-time work will be specified by the Department or Program concerned.

All requirements for the degree of Doctor of Philosophy must normally be completed within a period of seven years after admission to graduate study, or five years after completion of the Master's degree.

Thesis

To obtain the degree of Doctor of Philosophy, a student is required to submit a

thesis. The thesis should contain the results of independent research, and is expected to make an original contribution to knowledge in its field. The Board of Graduate Studies will normally appoint from outside the University a Thesis Consultant, who will read the thesis and give his evaluation of it.

Regulations concerning language, form, style and presentation, the abstract which must accompany the thesis, and dates of submission are the same as for the Master's thesis, see above, p. 251 .

Final Oral Examination

The Final Oral Examination is on the thesis and its field, and is public. It must be taken not later than October 20, February 20, or May 30 for students who wish to graduate in October, February, or June respectively.

A single result, *Pass* or *Fail*, is reported for both the thesis and the Final Oral Examination. If a student fails, he may resubmit his thesis and sit again for his Oral Examination after a period of at least three months. However, if he does not pass at the second attempt, he will be discontinued from study towards the degree of Doctor of Philosophy.

DIVISION OF EXTENSION AND SPECIAL PROGRAMS

Director: Cajoleas, L., Associate Professor of Education.

The Division of Extension and Special Programs is the administrative and coordinating center for the extension services of the University. Such services make available the educational competencies of AUB to the countries of the region in the development of human resources.

These services include on-campus programs as well as those in the field. The on-campus programs may be special full-time short courses, institutes, part-time evening courses, seminars, special summer courses, or individualized on-the-job observation-study-training for specialized personnel. Field services include short refresher courses, consultantships, lectures, research advising, surveys, and long range advisory assistance. These educational activities are designed to provide opportunities which extend the services of the University beyond the usual regular academic programs and beyond the perimeters of the campus.

Extension services and special programs may be made available by the University upon request to the extent that personnel and facilities are available. Special fees are established for each activity.

SPECIAL SUMMER COURSES

Special programs of study (non-degree) are offered as in-service, refresher, or advanced education in areas of interest to the region. The programs differ each summer. During summer 1972 the following programs were offered:

1. Librarians Institute on College and University Library Management and Administration — 4 weeks
2. Secondary Teachers Institute: Teaching Environmental Sciences — 6 weeks
3. Secondary Teachers Institute: Teaching of Modern Mathematics — 6 weeks
4. Secondary School Administrators Workshop — 6 weeks
5. Colloquium on University Education for Administrators — 2 weeks
6. Management Development Program — 2 weeks
7. Teaching of English for Kuwaiti Teachers — 7 weeks
8. Special Program in Agriculture for Libyans — 6 weeks.

Similar and other programs will be offered in summer 1973.

TRAINEES

Sponsored individuals or small groups may be accepted for limited and specified periods of specialized and supervised training. Such trainees are not candidates for a university degree or a certificate, although some may be university graduates. Trainees are sent by a sponsorship agency to develop their competencies, knowledge and skills in a particular field. Training periods may be of varying lengths of time depending upon the objectives of the program. Recent trainees sponsored by a government ministry, international organization, business firm, or foundation have come to AUB for further study and training in such fields as:

Radiology
Premature Infant Care
Blood Bank Services
Nutrition Laboratory
Hospital Administration
Agriculture: Plant Science

Agriculture: Farm Management
Supervision of Science Teaching
Production of Teaching Materials in
Science and Mathematics
Intensive English Language Study
Supply and Procurement Management

SPECIAL EVENING COURSES

These are offered each semester and are designed to meet the needs of adults in the immediate community for further education. These evening courses provide (a) professional training, such as business management or teaching mathematics, (b) personal growth, such as English language, colloquial Arabic, psychology, etc., and (c) cultural development in such areas as music, art, dance, international relations. *Similar and other courses and programs are being planned.*

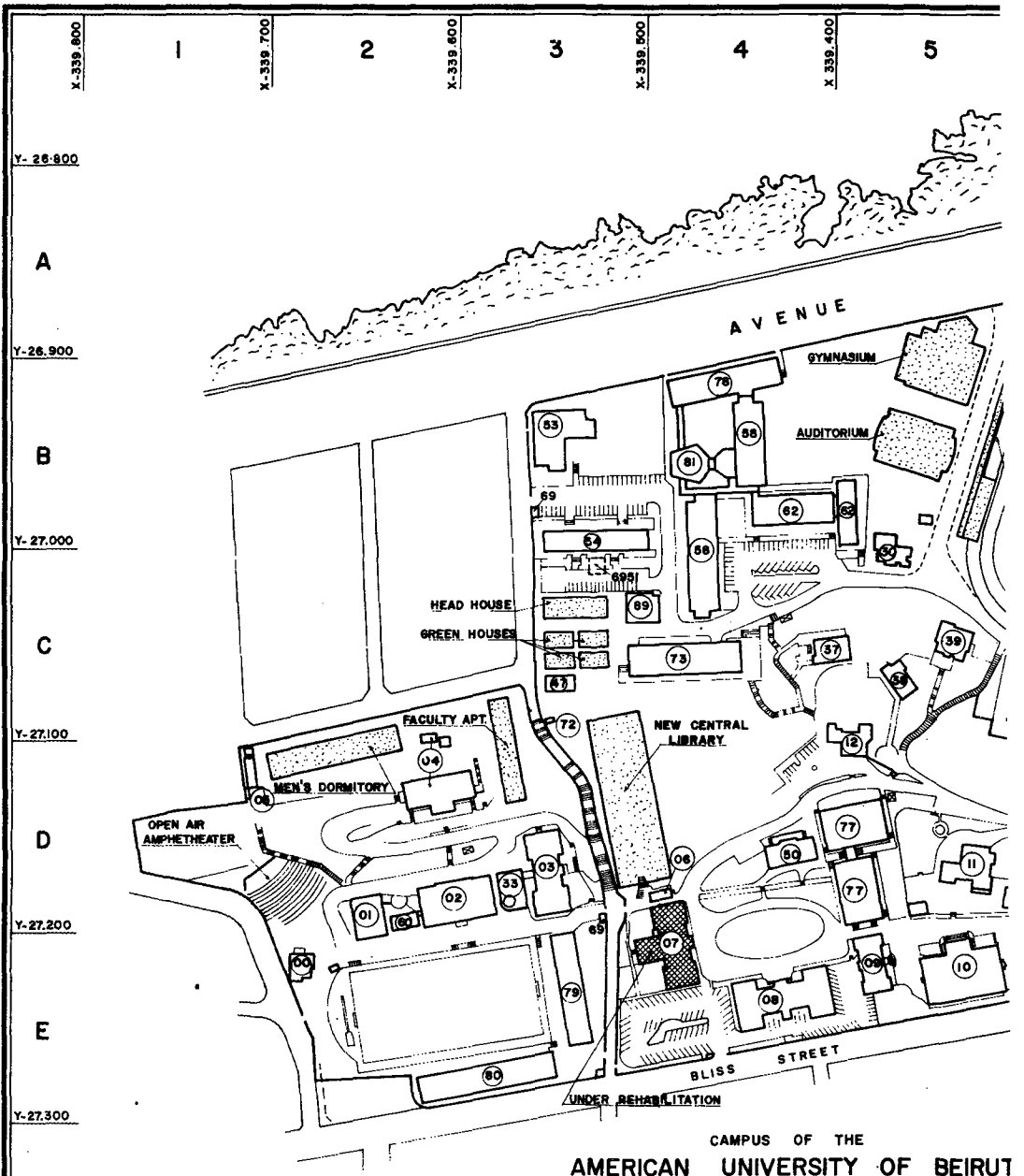
SPECIAL CERTIFICATE PROGRAMS

Essentials of Business Certificate is an evening program of two courses each semester for four semesters and leading to a certificate. The program consists of the following courses: Accounting, Marketing, Finance, Quantitative Methods for Decision Making, Human Resources, Business Conditions—a total of eight courses over two years.

Hospital Administration Certificate is a special program designed for candidates interested in a “middle management” career in hospital administration. The period of study normally is for 11 months. Selection of an area in management services has to be made prior to entry into the program.

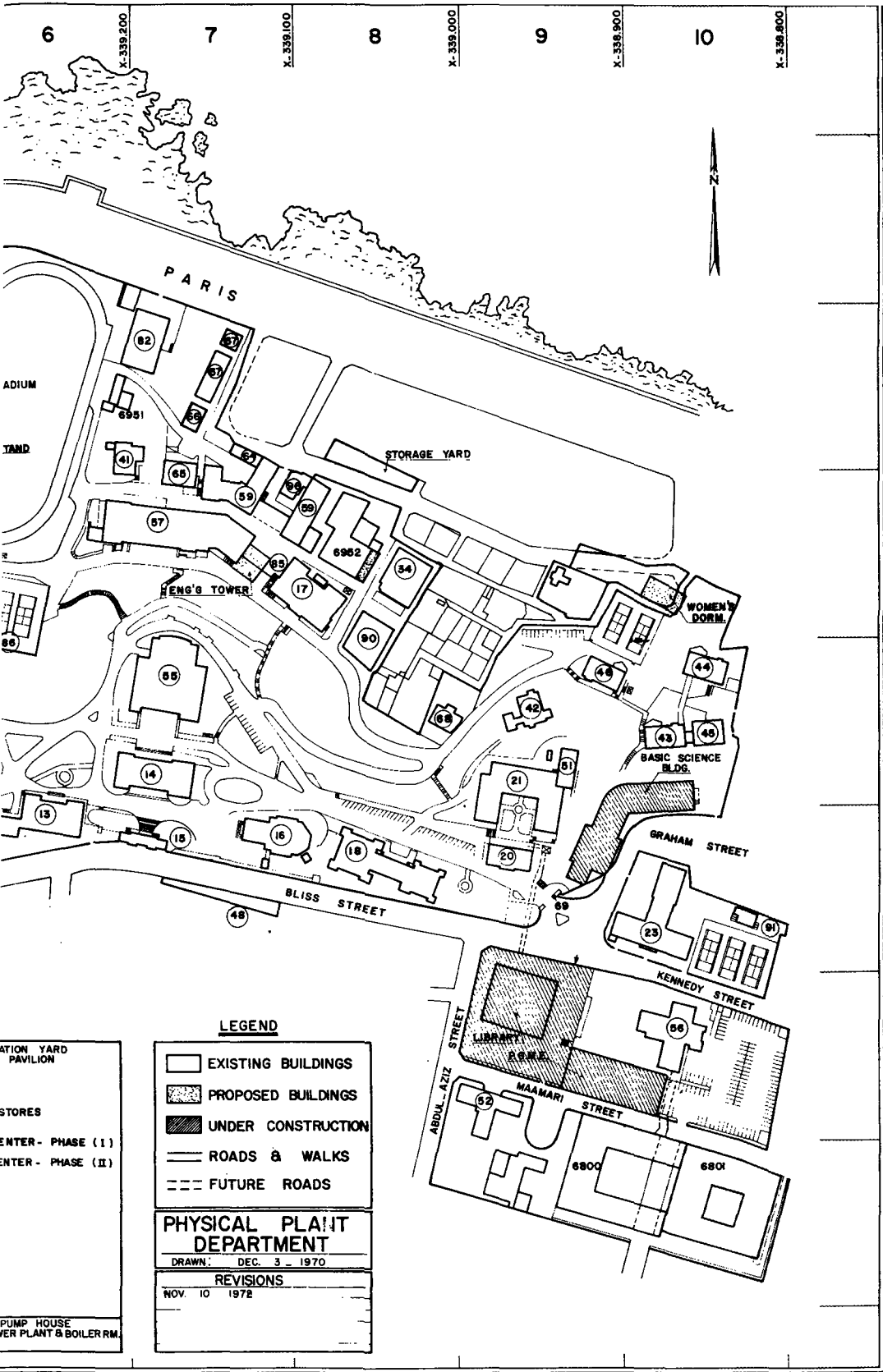
Several other certificate programs are being planned.

Separate brochures and further information are obtainable from the Director, Division of Extension and Special Programs.



CAMPUS OF THE
AMERICAN UNIVERSITY OF BEIRUT

F Y-27.400	67 00 MARTIN HOUSE - RESIDENCE	30 RESIDENCE	60 I.C. CLASSROOM BLDG.	90 B & G
	01 THOMSON HALL	31 RESIDENCE	61 PHYSICS BLDG. (EMILE BUSTAN HALL)	91 ALUMNI
	02 ROCKEFELLER HALL	32 RESIDENCE	62 PHYSICS BLDG. (EMILE BUSTAN HALL)	92
	03 SAGE HALL	33 PATIO I. C.	63 DYNAMOMETER ROOM	93
	04 ELEMENTARY SCHOOL & ANNEX	34 NEW LAUNDRY	64 SHEET METAL SHOP	94
	05 ATHLETIC I. C.	35 RESIDENCE	65 ELECTRICAL MACHINES LABORATORY	95
	06 PATCH HALL	36 RESIDENCE	66 MOTOR POOL	96 ENGINEER
	07 BLISS HALL	37 RESIDENCE	67 HYDRAULICS & SANITARY LABS.	
	08 FISK HALL	38 RESIDENCE	68 WARE HOUSE No 4	6800 MEDI
	09 JESSUP HALL	39 RESIDENCE	69 GATES & PUBLIC TOILETS	6801 MEDI
	10 WEST HALL	40 RESIDENCE	70	
	11 MARQUAND HOUSE, RESIDENCE	41 RESIDENCE	71	
	12 OBSERVATORY	42 RESIDENCE	72 INCINERATOR	
	13 DODGE HALL	43 WOMEN'S RES. MUREX	73 NEW CHEMISTRY	
14 COLLEGE HALL	44 WOMEN'S RES. JEWETT	74		
15 MAIN GATE	45 WOMEN'S RES. MARY DODGE	75		
16 ASSEMBLY HALL (CHAPEL)	46 WOMEN'S RES. LAURA BUSTANI	76		
17 OLD CHEMISTRY BUILDING	47	77 NICELY HALL, HUMANITIES BLDGS.		
18 POST HALL (MUSEUM)	48 ANNEX BLDG. (WORKERS DORM.)	78 BIOLOGY BLDG.		
19	49	79 PENROSE HALL, MEN'S DORM. No 1		
20 PUBLIC HEALTH (S.S. BUILDING)	50 INFIRMARY	80 SOPHOMORE DORM. " No 2		
21 VAN DYCK HALL	51 ANIMAL HOUSE	81 SCIENCE LECTURE HALL "		
22	52 FACULTY APARTMENT No 1	82 ENGINEERING ALUMNI HALL		
23	53 FACULTY APARTMENT No 2	83		
24	54 FACULTY APARTMENT No 3	84 ENGINEERING WELDING SHOP		
25	55 JAFET LIBRARY	85 ENGINEERING WATER TANK & PARKING		
26	56 HOSPITAL NEW WING	86 WATER RESERVOIR & TENNIS COURTS		
27	57 BECHTEL ENGINEERING BLDG.	87	6991 UTILIT	
28	58 AGRICULTURE BLDG.	88	6952 UTILIT	
29	59 ENGINEERING SHOPS	89 FOOD PROCESSING PILOT PLANT		
G Y-27.500				



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X-338,800



PARIS

ADIUM

TAND

STORAGE YARD

ENG'S TOWER

WOMEN'S DORM

BASIC SCIENCE BLDG.

GRAHAM STREET

BLISS STREET

KENNEDY STREET

LIBRARY

MAAMARI STREET

LEGEND

- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- UNDER CONSTRUCTION
- ROADS & WALKS
- FUTURE ROADS

PHYSICAL PLANT DEPARTMENT

DRAWN: DEC. 3 - 1970

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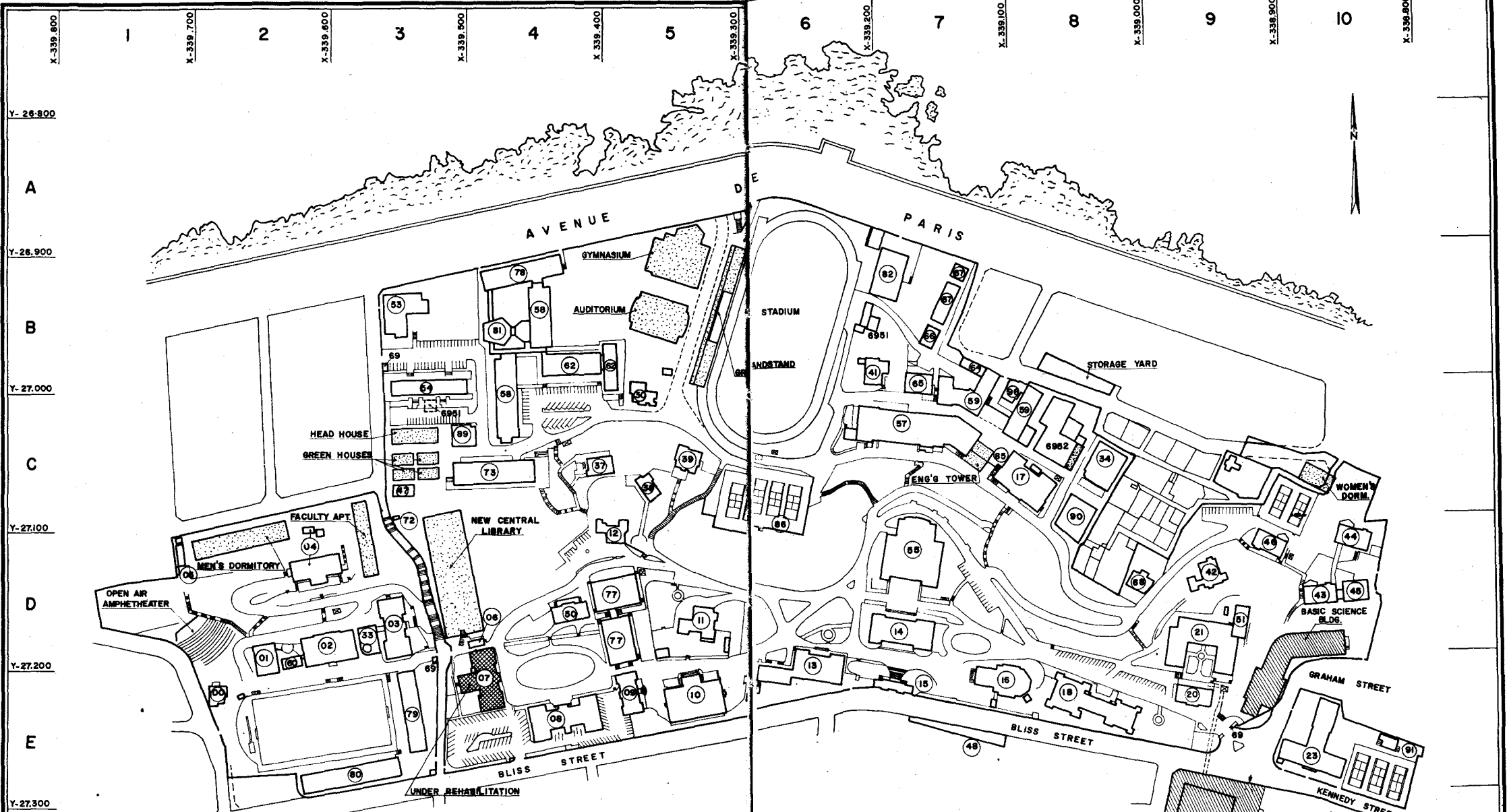
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AMERICAN UNIVERSITY OF BEIRUT

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10 WEST HALL	40	70	
11 MARQUAND HOUSE, RESIDENCE	41 RESIDENCE	71	
12 OBSERVATORY	42 RESIDENCE	72 INCINERATOR	
13 DODGE HALL	43 WOMEN'S RES. MUREX	73 NEW CHEMISTRY	
14 COLLEGE HALL	44 WOMEN'S RES. JEWETT	74	
15 MAIN GATE	45 WOMEN'S RES. MARY DODGE	75	
16 ASSEMBLY HALL (CHAPEL)	46 WOMEN'S RES. LAURA BUSTANI	76	
17 OLD CHEMISTRY BUILDING	47	77 NICELY HALL, HUMANITIES BLDGS.	
18 POST HALL (MUSEUM)	48 ANNEX BLDG. (WORKERS DORM.)	78 BIOLOGY BLDG.	
19	49	79 PENROSE HALL, MEN'S DORM. No 1	
20 PUBLIC HEALTH (S.S. BUILDING)	50 INFIRMARY	80 SOPHOMORE DORM. HALL " No 2	
21 VAN DYCK HALL	51 ANIMAL HOUSE	81 SCIENCE LECTURE HALL	
22	52 FACULTY APARTMENT No 1	82 ENGINEERING ALUMNI HALL	
23 O. P. D.	53 FACULTY APARTMENT No 2	83	
24	54 FACULTY APARTMENT No 3	84 ENGINEERING WELDING SHOP	
25	55 JAFET LIBRARY	85 ENGINEERING WATER TANK & PARKING	
26	56 HOSPITAL NEW WING	86 WATER RESERVOIR & TENNIS COURTS	
27	57 BECHTEL ENGINEERING BLDG.	87	
28	58 AGRICULTURE BLDG.	88	
29	59 ENGINEERING SHOPS	89 FOOD PROCESSING PILOT PLANT	

STORATION YARD
NIS PAVILION

STORES

CENTER - PHASE (I)

CENTER - PHASE (II)

PUMP HOUSE
POWER PLANT & BOILER RM.

LEGEND

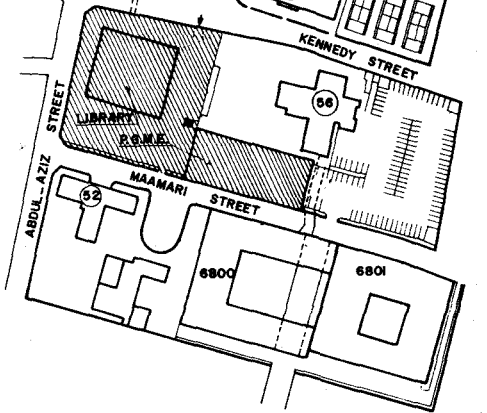
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- UNDER CONSTRUCTION
- ROADS & WALKS
- FUTURE ROADS

PHYSICAL PLANT DEPARTMENT

DRAWN: DEC. 3 - 1970

REVISIONS

NOV. 10 - 1972



STUDENTS BY FACULTY AND SCHOOL, 1972-1973

	Summer Session 1972	First Semester 1972-73
FACULTY OF ARTS AND SCIENCES		
Graduate	178	556
Senior		488
Junior		613
Sophomore	888	679
Freshman		194
Special		96
Total	<u>1,066</u>	<u>2,626</u>
SCHOOL OF MEDICINE		
Graduate	24	27
Fifth Year	40	38
Fourth Year	50	50
Third Year	—	42
Second Year	—	54
First Year	—	60
Special	18	18
Total	<u>132</u>	<u>289</u>
SCHOOL OF PHARMACY		
Graduate	4	5
Fourth Year	—	24
Third Year	23	29
Second Year	32	31
Second Year	32	31
First Year	29	35
Special	—	—
Total	<u>88</u>	<u>124</u>
SCHOOL OF NURSING		
Administrative & Teaching	8	6
Degree IV	—	14
Degree III	15	10
Degree II	14	32
Degree I	3	5
Diploma III	1	37
Diploma II	37	41
Diploma I	45	32
Special	—	3
Total	<u>123</u>	<u>180</u>

	Summer Session 1972	First Semester 1972-73
SCHOOL OF PUBLIC HEALTH		
Graduate	2	32
Third Year	3	3
Second Year	4	6
First Year	3	13
Diploma Program	2	2
Certificate Program	<u>33</u>	<u>34</u>
Total	47	90

**FACULTY OF ENGINEERING
AND ARCHITECTURE**

Graduate	24	76
Term XIII	—	7
Term XII	7	—
Term X	—	129
Term IX	126	—
Term VII	—	103
Term VI	107	—
Term IV	—	138
Term III	124	—
Term I	—	173
Special	<u>11</u>	<u>9</u>
Total	399	635

**FACULTY OF
AGRICULTURAL SCIENCES**

Graduate	103	157
Third Year	12	30
Second Year	31	25
First Year	38	85
Special	<u>6</u>	<u>17</u>
Total	190	314

Total Regular Programs	<u>2,045</u>	<u>4,258</u>
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SPECIAL PROGRAMS

Orientation Program	46	105
X-Ray Program	<u>19</u>	<u>23</u>
	65	128

DIVISION OF EXTENSION AND SPECIAL PROGRAMS

	Summer Session 1972	First Semester 1972-73
Special Summer Courses		
Secondary Teachers Institutes	42	—
Secondary School Administrators Workshop	30	—
Management Development Program	25	—
Librarians Institute on Periodicals Materials and Services	15	—
Colloquium on University Education for Administrators	18	—
	130	—
Grand Total	2,240	4,386
Special Evening Programs		
Trainees	—	199
(Registered at Division of Extension and Special Programs — not included in above totals)	151	25

STUDENTS BY NATIONALITY, 1972-1973

REGULAR PROGRAMS

	Summer Session 1972	First Semester 1972-73		Summer Session 1972	First Semester 1972-73
Afghanistan	44	66	Finland	2	3
Albania	—	1	France	4	8
Algeria	—	3	Germany	4	9
Argentina	3	3	Ghana	1	6
Australia	4	11	Greece	7	20
Bahrain	43	67	Holland	1	3
Belgium	—	1	India	4	9
Bolivia	—	1	Iran	32	68
Brazil	1	6	Iraq	26	56
British Guiana	1	6	Ireland	1	1
Bulgaria	—	1	Italy	2	3
Canada	1	2	Jamaica	1	2
Chad	—	1	Jordan	225	440
Chile	—	1	Kenya	—	1
Colombia	2	1	Korea	—	1
Costa Rica	1	1	Kuwait	32	56
Cyprus	29	69	Lebanon	1,084	2,289
Denmark	—	3	Libya	5	7
Dubai	3	6	Maldives	1	4
Egypt	14	36	Mexico	2	8
Ethiopia	11	17	Morocco	10	15

	Summer Session 1972	First Semester 1972-73		Summer Session 1972	First Semester 1972-73
Mozambique	—	1	Sweden	—	1
Nepal	3	7	Syria	124	259
Oman	3	10	Tanzania	1	1
Pakistan	63	105	Thailand	—	1
Palestine	86	145	Tunisia	1	2
Philippines	1	2	Turkey	22	38
Qatar	1	3	Uganda	—	1
Saudi Arabia	29	58	Undetermined	3	5
Senegal	—	1	United Kingdom	24	48
Sharja	—	1	U.S.A.	43	205
Sierra Leone	2	2	Venezuela	4	4
Somalia	2	—	Yemen (A.R.)	12	14
South Africa	1	1	Yemen (P.D.R.)	1	9
Sudan	17	19	Yugoslavia	1	1
				<u>2,045</u>	<u>4,258</u>

SPECIAL PROGRAMS

Abu Dhabi	—	3
Afghanistan	18	2
Bahrain	18	18
Cyprus	21	—
Denmark	1	—
Dubai	1	2
Iran	7	4
Italy	1	1
Japan	1	—
Jordan	26	20
Kuwait	5	3
Lebanon	32	44
Libya	1	—
Maldives	—	1
Pakistan	27	—
Palestine	5	5
Panama	—	1
Saudi Arabia	25	2
Syria	1	5
Turkey	4	2
U.S.A.	1	1
Yemen (A.R.)	—	14
Total	<u>195</u>	<u>128</u>
Grand Total	<u><u>2,240</u></u>	<u><u>4,386</u></u>

