FACULTY OF PHARMACY

Faculty Administration

Dean	Prof. Abdalla El-Lakany
Assistant Dean	Dr. Lama Soubra
Executive Administrator	Pharmacist Hanadi Jazi

Academic Staff

Professors	Dr. Abdalla El Lakany, Dr. Maha Aboul Ela, Dr. Azza Ghazi, Dr. Hania Nakkash.
Associate Professors	Dr. Khaled Abdel Galil, Dr. Doaa Issa, Dr. Karim Raafat, Dr. Mohamad Amin, Dr. Lama Soubra
Assistant Professors	Dr. Mohammad Mehanna, Dr. Suzanne Nasser, Dr. May Saab, Dr. Mohammad Ali Hijazi, Dr. Marwa Al Jamal, Dr. Safaa Hammoud, Dr. Suraya Domiati
Clinical Lecturers	Dr. Rania Itani, Dr. Samar Karout,Dr. Dima Rahme
Part-time Lecturers	Dr. Olfat Osta, Dr. Katia Iskandar, Dr. Soha Sinno, Dr. Maysaloun Kanso, Dr. Ahmad El-Yazbi, Dr. Mais Abdel Haq, Dr. Rabih Hassouneh

History

Faculty of Pharmacy at Beirut Arab University was established in 1986 in Beirut, the capital of Lebanon. The undergraduate program at the Faculty started with six academic departments and progressed to include four academic departments, as follows:

- Pharmaceutical Sciences
- Pharmacology and Therapeutics
- Pharmacy Practice
- Pharmaceutical Technology

Faculty of Pharmacy has observed considerable growth in the number of its students that increased from 115 in 1991 to 480 in the academic year 2017-2018. The main objective of the Faculty is to prepare competent pharmacists for career opportunities in different Pharmacy domains and to promote their role as healthcare providers, in framework of code of ethics. In 2002, the Faculty updated the academic programs and adopted the rules and regulations of the “Credit Hour System”. It also expanded its curriculum to incorporate graduate programs including: Master and PhD Degrees, in addition to Two-year duration Pharm.D. Program. In 2009-2010, the “Experiential Training” Program, for Pharmacy students, became an integral part of the curriculum aiming to allow students acquire the required skills and competencies, under effective supervision from Faculty.

In the same academic year 2009-2010 and in response to a societal need, a one-year duration Pharm.D. program was established. Accordingly and at the same time, pharmacotherapeutics I-VI were added, gradually, to enable Faculty graduates to enroll in the Pharm. D. program without conditions.

In the year 2011-2012, pharmacotherapeutics I-VI became core courses, and two Faculty elective courses, “Pharmaceutical Marketing and Management” and ”Communication Skills For Health Professionals”, were added to the curriculum. Moreover, the Faculty established a "Pharmaceutical Continuing Education Program" which includes short courses, seminars and presentations in the various Pharmaceutical fields that offer graduates and the community a venue for maintaining up-to-date knowledge.

In May 2012, the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) conducted a pre-accreditation site visit to the Faculty of Pharmacy for evaluation of the undergraduate educational Program at BAU. In the same year and based on the CCAPP final report, the Faculty of pharmacy

started to design a new curriculum to adjust the pharmaceutical sciences and introduce more clinical courses.

The Faculty also established a pharmacy practice department PPD to offer courses specifically designed to achieve the Canadian professional competencies for pharmacists at entry-to-practice. The courses offered at early levels like Professional Communication Skills, Pharmacy Practice Management, Pharmacy Practice I and Pharmaceutical calculations serve as a solid foundation for the subsequent courses offered at higher levels.

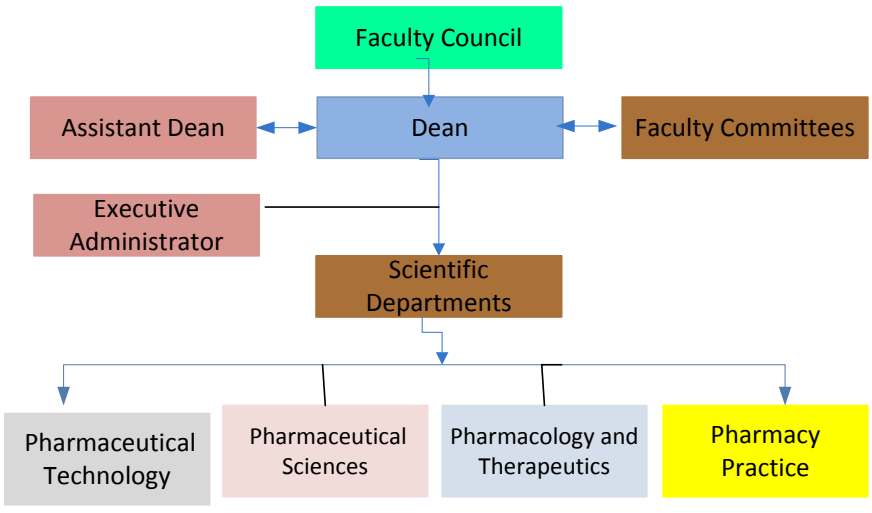
The Pharmacy practice courses are interspersed in the Faculty curriculum in concordance with other relevant courses including Biochemistry, Pharmacology, Therapeutics and Pharmaceutics, to achieve optimal learning outcomes. Moreover, a series of Integrated Case-Based Learning ICBL courses in addition to an Inter-Professional Education IPE course were included to promote pharmaceutical care practice as well as inter-professional collaborative patient-centered practice.

In October 2014, CCAPP has conducted its second site visit to the Faculty of Pharmacy for the accreditation of the Pharmacy Program. In the same academic year and based on the site-visit report, the Faculty of Pharmacy started to improve the curricular contents and design and further increase the percentage of clinical part of the curriculum. A great effort was made to vertically and horizontally integrate the courses to facilitate the curricular delivery. Moreover, OSCE was applied for the first time for the Fifth level students as a tool to measure the expected acquired competencies.

In late October 2017, the Faculty of Pharmacy had a successful accreditation visit of CCAPP that concluded several years of hard work by granting the Faculty a five-year unconditional international accreditation status.

Organizational Structure

The Faculty of Pharmacy constitutes the following Departments: Pharmaceutical Technology, Pharmaceutical Sciences, Pharmacology and Therapeutics, and Pharmacy Practice.
The organizational chart of the Faculty is as follows:



Vision

The Faculty of Pharmacy, at BAU, envisions itself as a premier academic institution in pharmacy education, research and community involvement.

Mission

Faculty of Pharmacy, at BAU, is an academic institution founded in 1986 to provide high quality pharmacy education and scientific research. The faculty educational program was designed and

developed to prepare competent pharmacists able to effectively participate in the advancement of pharmacy profession, nationally and internationally. The Faculty supports the role of its graduates as health care providers in the frame of professional ethics. The faculty seeks to establish a well-built relation with peer institutions and the surrounding society. To accomplish its mission, the faculty relies on qualified staff members, laboratory facilities and educational tools.

Objectives

- Preparing pharmacists who are able to apply their unique knowledge and skills during their professional practice, and are committed to the code of ethics, and dedicated to life-long learning.
- Continuous development of the curriculum to keep up with the global changes and to cope with the growing professional and community needs.
- Enhancing the intended outcomes and competencies necessary to attain the international standards of the pharmacy profession.
- Advancement of professional training programs for pharmacy students and graduates to maintain high quality pharmaceutical care.
- Enhancement of the scientific research at the Faculty and supporting the collaboration with local and international peer institutions.
- Providing the community with research experts capable of effective participation in the advancement and preservation of the environment.
- Supporting the collaboration with regulatory authorities, pharmaceutical and health care settings, and other community sectors.

Academic Program

The Faculty offers a Bachelor Degree in Pharmacy, where the standard duration of study is ten semesters.

Admission Requirements

To be accepted for an undergraduate degree, applicants must:

- Hold the official Lebanese Secondary School Certificate in a branch relevant to the chosen undergraduate field of specialization, or an official equivalent;
- Successfully pass an Entrance Exam to measure the level of Proficiency in ***English Language, an aptitude test (thinking skills, scientific knowledge: Biology, Physics and Chemistry), as well as attend a Personal Interview.***

Learning Outcomes

The pharmacy program provides opportunities for students to develop and demonstrate fundamental knowledge and understanding skills, supported by other professional and practical skills appropriate for attaining a Bachelor Degree in Pharmacy.

After completing the academic program all graduates will be able to:

- Practice Pharmaceutical Care
- Assume ethical, legal, and professional responsibilities
- Access, retrieve, evaluate and disseminate relevant information
- Communicate and educate effectively
- Manage drug distribution
- Apply practice management knowledge and skills
- Demonstrate the ability to work in a pharmaceutical plant
- Practice rational distribution and manufacturing of drugs from natural sources

Career Opportunities

The diversity of pharmacy domains is one of its chief strengths, and in diversity lies the opportunity. In Lebanon, the vast majority of pharmacists practice in the community, pharmaceutical industries or hospital pharmacies. The remainder follow one or another of the special fields. The opportunity for success in any of these fields is wide open for men and women with ability, education and imagination.

Career opportunities for pharmacy graduates are:

Community pharmacists, Hospital pharmacists, Health care centers, Pharmaceutical industry, Pharmaceutical promotion, Academia, Regulatory affairs, Clinical Pharmacy settings, Pharmaceutical public sector, International organizations, Military/governmental hospitals.

Graduation Requirements

To receive a Bachelor Degree in the Pharmacy program, a student must satisfactorily complete 180 credit hours with an overall minimum grade point average (GPA) of 2.0 + ICDL (International Computer Driving License). The **Student's Study Plan** is given to every Pharmacy student upon his/her enrollment. The following table summarizes the number of credits required for each bachelor-granting program at the Faculty:

Program	**University Requirements (12 Credits)**		**Faculty Requirements (168 Credits)**		**Total Credit Hours**
	Mandatory Courses	**Elective Courses**	**Faculty Mandatory Courses (162Crs.)**	**Faculty Elective Courses**	
PHAR	5	7	- *Biomedical Sciences Courses:* ***24Crs***. - *Pharmaceutical Sciences Courses:* ***69Crs.*** - *Pharmacy Practice Courses:* ***41Crs.*** - *Pharmacy Practice Experience:* ***28Crs.***	6	180
PHAR: Pharmacy					

* A total of 12 credits is required as General University Requirements; 5 credits are selected from the University Mandatory courses list including: ARAB 001 (2Cr.), ENGL 001 (2Cr.), BLAW 001 (1Cr.) and another 7 credits are selected from the University Elective courses list + ICDL.

Faculty Mandatory Courses

Course		Title	Crs.	Pre-/Co-requisites
PHAR	250	Pharmaceutical Physical Chemistry	2	
PHAR	251	Natural Medicine and Nutritional Supplements	3	
PHAR	252	Pharmaceutical Organic Chemistry I	3	
PHAR	253	Human Biology	2	
PHAR	254	Anatomy and Histology	3	
PHAR	255	Communication Skills in Pharmacy Practice	2	
PHAR	260	Pharmaceutical Analytical Chemistry I	3	Pre: PHAR 250
PHAR	261	Natural Therapies I	3	Pre: PHAR 251
PHAR	262	Pharmaceutical Organic Chemistry II	3	Pre: PHAR 252
PHAR	263	Physiology I	2	
PHAR	264	Orientation to Pharmacy Practice	2	
PHAR	265	Pharmacy Practice Management	1	
PHAR	266	Pharmacy Practice Experience I	4	Pre: PHAR 265
PHAR	270	Pharmaceutical Analytical Chemistry II	3	Pre: PHAR 260
PHAR	271	Pharmaceutical Dosage Forms I	2	Pre: PHAR 264
PHAR	272	Natural Therapies II	3	Pre: PHAR 261
PHAR	273	Pharmaceutical Organic Chemistry III	3	Pre: PHAR 262
PHAR	274	Physiology II	2	Pre: PHAR 263
PHAR	275	Pharmacy Practice I	2	Pre: PHAR 255
PHAR	280	Pharmaceutical Analytical chemistry III	2	Pre: PHAR 270
PHAR	281	Physical Pharmacy and Product Stability	3	Pre: PHAR 271
PHAR	282	Modern Separation and Isolation Techniques	2	Pre: PHAR 272
PHAR	283	Pharmaceutical Microbiology I	3	
PHAR	284	Biochemistry	3	Pre: PHAR 273
PHAR	285	Pharmacy Practice II	2	
PHAR	286	Pharmacy Practice Experience II	4	Pre: PHAR 272, PHAR 285
PHAR	360	Pharmaceutical Analysis	2	Pre: PHAR 280
PHAR	361	Pharmaceutical Dosage Forms Ii	3	Pre: PHAR 281
PHAR	362	Pharmaceutical Microbiology II	3	Pre: PHAR 283
PHAR	363	Medicinal Chemistry I	3	Pre: PHAR 273
PHAR	364	Laboratory Data	2	Pre: PHAR 284
PHAR	365	Fundamentals of Pharmacology	3	Pre: PHAR 274
PHAR	366	Pharmacy Practice III	2	Co-req: PHAR 365
PHAR	370	Drug Delivery Systems	3	Pre: PHAR 361
PHAR	371	Medicinal Microbiology	2	Pre: PHAR 362
PHAR	372	Medicinal Chemistry II	3	Pre: PHAR 363

PHAR	373	Pharmacology I	1	Pre: PHAR 365
PHAR	374	Pharmacotherapeutics I	2	Co-req: PHAR 373
PHAR	375	Pharmacy Practice IV	2	Pre: PHAR 366 Co-req: PHAR 374
PHAR	376	Integrated Case-Based Learning I (ICBL I)	2	Pre: PHAR 275 Co-req: PHAR 374
PHAR	380	Pharmacy Practice Experience III	4	Pre: PHAR 375, PHAR 376
PHAR	460	Biopharmaceutics and Pharmacokinetics	3	Pre: PHAR 281
PHAR	461	Recent Approaches in Phytotherapy	2	Pre: PHAR 272
PHAR	462	Medicinal Chemistry III	3	Pre: PHAR 363
PHAR	463	Pharmacology II	1	Pre: PHAR 365
PHAR	464	Pharmacotherapeutics II	2	Co-req: PHAR 463
PHAR	465	Pharmacy Practice V	2	Pre: PHAR 285
PHAR	466	Integrated Case-Based Learning II (ICBL II)	2	Pre: PHAR 376 Co-req: PHAR 464
PHAR	470	Pharmaceutical Manufacturing	3	Pre: PHAR 361
PHAR	471	Phytochemistry	3	Pre: PHAR 273, PHAR 360
PHAR	472	Pharmacology III	1	Pre: PHAR 365
PHAR	473	Pharmacotherapeutics III	2	Pre: PHAR 371 Co-req: PHAR 472
PHAR	474	Pharmacotherapeutics IV	2	Co-req: PHAR 472
PHAR	475	Pharmacy Practice VI	2	Pre: PHAR 376
PHAR	476	Integrated Case-Based Learning III (ICBL III)	2	Pre: PHAR 375, PHAR 376 Co-req: PHAR 473, PHAR 474
PHAR	480	Pharmacy Practice Experience IV	4	Pre: PHAR 475
PHAR	547	Pharmacology IV	1	Pre: PHAR 365
PHAR	548	Pharmacotherapeutics V	2	Co-req: PHAR 547
PHAR	549	Public Health	1	Pre: PHAR 371
PHAR	577	Pharmacy Practice Experience V	6	Pre: PHAR 466, PHAR 476, PHAR 480 Co-req: PHAR 549, PHAR 579
PHAR	578	Pharmacy Practice Experience VI	6	Pre: PHAR 466, PHAR 476, PHAR 480 Co-req: PHAR 549, PHAR 579
PHAR	579	Pharmaceutical Legislations	2	
PHAR	583	Toxicology	2	Pre: PHAR 463
PHAR	584	Pharmacology V	1	Pre: PHAR 365
PHAR	585	Pharmacotherapeutics VI	2	Co-req: PHAR 584
PHAR	586	Inter-Professional Education	2	Pre: PHAR 476

Description of Faculty Mandatory Courses

PHAR 250–PHARMACEUTICAL PHYSICAL CHEMISTRY (2Cr.: 2Lec):
The aim of the course is to provide students with a systematic understanding of the principles of pharmaceutical physical chemistry, through discussing different states of matter, various types of pharmaceutical solutions of non-electrolytes, strong electrolytes and their colligative properties. The course also studies thermodynamics, dynamic equilibria and catalysis, topics that provide students with basic knowledge necessary for chemistry, pharmacokinetics and pharmaceutics study.

PHAR 251–NATURAL MEDICINE AND NUTRITIONAL SUPPLEMENTS (3Cr.: 2Lec, 2Lab):
The course introduces students to the history of natural medicine, importance of medicinal plants in the body's health care system, characteristics and detection of primary and bioactive metabolites and medicinal values of some common medicinal plants. An emphasis on nutritional supplements and public concern is also considered.

PHAR 252–PHARMACEUTICAL ORGANIC CHEMISTRY I (3Cr.: 2Lec, 2Lab):
The course is designed to include introductory concepts followed by studying fundamentals of stereochemistry and related effects on drug receptor interactions. Physical and chemical characters of alkanes, unsaturated compounds, alkyl halides, alcohols, ethers and their applications in pharmaceutical industry are discussed. Basic knowledge about the phenomena of aromaticity is argued.

PHAR 253–HUMAN BIOLOGY (2Cr.: 2Lec):
The course considers definitions in science, scientific methods, the characteristics of life, metabolism and energy, macromolecules, prokaryotic and eukaryotic cells, cell membrane and organelles, cell division, unity and diversity of living forms, genetic basis of inheritance, Mendelian genetics, exceptions and deviations, as well as male and female reproductive systems.

PHAR 254–ANATOMY AND HISTOLOGY (3Cr.: 2Lec, 2Lab):
The aim of the course is to deliver anatomical and histological backgrounds covering the skeleton and joints, cardiovascular, respiratory, digestive, urogenital, CNS and endocrine systems. The course provides details about living cell, epithelium, connective tissue, blood, cartilage, muscular tissue, nervous tissue, lymphatic system and the digestive tract.

PHAR 255–COMMUNICATION SKILLS IN PHARMACY PRACTICE (2Cr.:1Lec, 2 Practice):
The course is designed to develop and enhance students' communication skills (listening, questioning and presentation) that are essential for the implementation of pharmaceutical care. The course aims at providing students with tools and techniques for effective interpersonal communication. It also aims at introducing students to basic components of communication (verbal, nonverbal and paraverbal). Through interactive case studies and exercises, students will have the opportunity to learn about various communication styles and communication barriers.

PHAR 260–PHARMACEUTICAL ANALYTICAL CHEMISTRY I (3Cr.: 2Lec, 2Lab):
The course describes nature of material, atomic structure, bonding, chemical equilibria, stoichiometry, and the relationships between the structure of molecules, their chemical properties and behaviour. Interferences of heavy metals impurities in the active pharmaceutical ingredients and how to detect such metal impurities according to compendial methods are also explored.
Pre-requisite: PHAR 250

PHAR 261–NATURAL THERAPIES I (3Cr.: 2Lec, 2Lab):
The course elaborates bioactivity of some official medicinal plants belonging to different medicinal organs, diagnostic characters for full identification, detection of adulteration, ensuring patient safety and quality of the product. Special focus is particularized on patient counseling in single herbal

medications, besides possible interactions between nutritional supplements and herbal products highlighting the role of pharmacist in this concern.
Pre-requisite: PHAR 251

PHAR 262–PHARMACEUTICAL ORGANIC CHEMISTRY II (3Cr: 2Lec, 2Lab):
The course discusses basic knowledge of different organic functional groups including aldehydes, ketones, carboxylic acids and their derivatives. An attention is given to nitrogenous compounds, phenols, alicyclic compounds and their applications in basic synthetic methods used in pharmaceutical industry.
Pre-requisite: PHAR 252

PHAR 263–PHYSIOLOGY I (2Cr.: 2Lec):
The course discusses the physiology of blood, autonomic nervous system, excitable system, and endocrine system.

PHAR 264–ORIENTATION TO PHARMACY PRACTICE (2Cr.: 2Lec):
The course introduces students to various dimensions of pharmacy profession. Emphasis is placed on drug discovery and development process, history of pharmacy profession and the evolution of pharmaceutical care philosophy. Students will also be exposed to common medical and pharmaceutical terminology, routes of drug administration and drug dosage forms.

PHAR 265–PHARMACY PRACTICE MANAGEMENT (1Cr.: 1Lec):
The aim of the course is to provide students with an understanding of the fundamentals of managing businesses and value-added services that meet patient needs in an era where pharmacy practice has evolved from a product to a patient-centered care. The modules contain theories with integration of practical examples, and include varieties of managerial, transformational, behavioral and personal development techniques and practices embedded throughout the course.

PHAR 266–PHARMACY PRACTICE EXPERIENCE I (4Cr.: 180 Contact Hours):
This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge and skills previously introduced in courses relevant to the experience.
Pre-requisites: PHAR 265

PHAR 270–PHARMACEUTICAL ANALYTICAL CHEMISTRY II: (3Cr.: 2Lec, 2Lab):
The course includes principles of basic and pharmaceutical analytical chemistry such as fundamentals of acid-base, complexation, precipitimetric titrations, gravimetric analysis, as well as, application of these principles in the pharmaceutical analysis and quality control of drug substances using compendial methods**.**
Pre-requisite: PHAR 260

PHAR 271–PHARMACEUTICAL DOSAGE FORMS I (2Cr: 1Lec, 2Lab):
The course provides students with necessary tools to carry out pharmaceutical calculations in a wide range of settings. It allows students to gain competence in supporting pharmaceutical services in community, hospital pharmacy and industry. The course also aims at offering students the basic skills for formulating and compounding liquid dosage forms and related guidelines for patient counseling. Moreover, the course enables students to manipulate different factors affecting polyphasic pharmaceutical systems and methods of their stabilization.
Pre-requisite: PHAR 264

PHAR 272–NATURAL THERAPIES II (3Cr: 2Lec, 2Lab):
The course deliberates sedatives, anti-inflammatory, antioxidants and other drugs derived from different medicinal plants organs. Diagnostic macro- and microscopic characteristics, active constituents, medicinal uses, qualitative chemical tests, detection of adulteration and patient safety are well detailed. The course discusses the medicinal uses of unorganized drugs, herbal remedies, surgical dressings and sutures, thus enabling students to perform proper patient counseling. It depicts the misuse of herbs, interactions, contraindications and role of pharmacist in pharmaceutical care.
Pre-requisite: PHAR 261

PHAR 273–PHARMACEUTICAL ORGANIC CHEMISTRY III (3Cr: 2Lec, 2Lab):
The course delivers knowledge of natural molecules such as carbohydrates, amino acids, peptides and proteins. Specialized evidences concerning polynuclear hydrocarbons, heterocyclic chemistry and their applicability in the field of medicinal drugs synthesis are deeply argued, in addition to adequate familiarity to different spectroscopic techniques.
Pre-requisite: PHAR 262

PHAR 274–PHYSIOLOGY II (2Cr.: 2Lec):
The course aims at familiarizing students with the physiology of important body systems such as cardiovascular, gastrointestinal, respiratory, renal and central nervous systems.
Pre-requisite: PHAR 263

PHAR 275-PHARMACY PRACTICE I (2Cr: 1Lec, 2 Practice):
The course introduces students to various professional and ethical standards of pharmacy practice. The course is highlighting the structure, processes and financing of the healthcare system. Students will gain insight on the pharmacist's role within the healthcare framework. Through interactive sessions and case scenarios, students will be able to develop their critical thinking and decision-making skills.
Pre-requisite: PHAR 255

PHAR 280–PHARMACEUTICAL ANALYTICAL CHEMISTRY III (2Cr.: 1Lec, 2Lab):
The course establishes fundamentals of oxidation-reduction reactions and electrochemical techniques appropriate for the modern chemical analysis laboratory; explaining the application of these principles in the pharmaceutical analysis of drug substances in pharmacopeia.
Pre-requisite: PHAR 270

PHAR 281–PHYSICAL PHARMACY AND PRODUCT STABILITY (3Cr.: 2Lec, 2Lab):
The course aims at providing students with a strong background and applications of physicochemical characteristics of drugs in relation to formulation and biological performance. The course discusses the significance of utilization of surfactants, co-solvents, complexation, suspending and emulsifying agents for proper design and formulation of drug delivery systems. The course introduces students to the concepts of product stability and stability testing of pharmaceutical products, besides the basic principles of chemical kinetics and regulation of product stability.
Pre-requisite: PHAR 271

PHAR 282–MODERN SEPARATION AND ISOLATION TECHNIQUES (2Cr.: 1Lec, 2Lab):
The course addresses full insights of the main chromatographic types and the latest techniques of separation of chemical constituents from their natural sources. The course enables students to practice quality control of herbs. It provides sufficient knowledge about herbal preparations and phytopharmaceuticals, explains the production of active constituents from medicinal plants, and details spectroscopic identification of some classes of bioactive natural products.
Pre-requisite: PHAR 272

PHAR 283–PHARMACEUTICAL MICROBIOLOGY I (3Cr.: 2Lec, 2Lab):
The course focusses on explaining the structure of different microorganisms in relation to their environmental and nutritional requirements. The course aims at rendering the students familiar with different laboratory techniques for isolation and identification of pathogens. Emphasis will be placed on learning how to master various sterilization techniques and solving the problems encountered with contamination of pharmaceutical products.

PHAR 284–BIOCHEMISTRY (3Cr.: 2Lec, 2Lab):
The course introduces the aspects of mammalian biochemistry and metabolism. It enables students to understand the pathophysiologic basis of several diseases and the mode of action of many drugs. It also provides the scientific basis of biochemical processes at the molecular level and orient them towards the application of knowledge acquired in solving clinical problems. The course will discuss the biochemical processes pertinent to carbohydrates, lipids, proteins and nucleotides, as well as any related abnormalities. The laboratory part enables students to understand fundamental laboratory data and apply their knowledge in daily practice. Case studies are also included to prepare students to understand the role of these data in defining therapeutic goals and outcomes.
Pre-requisites: PHAR 273

PHAR 285–PHARMACY PRACTICE II (2Cr.: 2Lec):
The course focusses on processes, operations and regulatory aspects dealing with drug distribution. The goal of this course is to provide insight into how pharmacists can ensure safe, legal and accurate handling of drugs. Students are expected to use critical thinking skills to recognize and resolve potential and actual problems within the drug distribution system.

PHAR 286–PHARMACY PRACTICE EXPERIENCE II (4Cr.: 180 Contact Hours):
This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge and skills previously introduced in courses relevant to the experience.
Pre-requisites: PHAR 272, PHAR 285

PHAR 360–PHARMACEUTICAL ANALYSIS (2Cr.: 1Lec, 2Lab):
The course handles the theoretical aspects of ultraviolet-visible spectrophotometry, molecular fluorescence, atomic spectrometry, chromatography (high-performance liquid chromatography "HPLC", and gas chromatography "GC") and application in pharmaceutical analysis of drug substances, which helps in ensuring the quality, safety and integrity of pharmaceutical products.
Pre-requisite: PHAR 280

PHAR 361–PHARMACEUTICAL DOSAGE FORMS II (3Cr.: 2Lec, 2Lab):
The course is tailored to deliver principles of formulation and aspects of quality control of tablets, capsules, suppositories, sterile and semisolid preparations. The course is integrated with skills utilized in pharmaceutical laboratories, relevant to drug compounding, labeling and patients counseling for the appropriate use and storage of the compounded prescription.
Pre-requisite: PHAR 281

PHAR 362–PHARMACEUTICAL MICROBIOLOGY II (3Cr.: 2Lec, 2Lab):
The course addresses the complex nature and functioning of human immune system, immunization programs in addition to different types of hypersensitivity reactions. It also explores the mechanism of action and spectrum of activity for different antimicrobial drugs and the mechanisms by which bacteria develop antimicrobial resistance. The course emphasises on the use of biotechnology in obtaining different pharmaceuticals of medical importance.
Pre-requisite: PHAR 283

PHAR 363-MEDICINAL CHEMISTRY I (3Cr.: 2Lec, 2Lab):
The course intends to elaborate fundamentals of medicinal chemistry; it starts with an introduction to physiochemical properties of drugs relative to their biological effects. The course is developed to highlight the concept of drug discovery and development throughout studying chemical and biochemical aspects of certain drug categories including those affecting neurotransmission, local anesthetics, respiratory and gastrointestinal drugs. Satisfactory awareness of the chemistry of antibiotics, antibacterial sulfonamides, quinolones, and antimycobacterial agents is also undertaken. The course helps students to acquire adequate comprehension of potential drug instabilities, interactions and side effects, supporting them meeting patient's needs. The practical part of the course develops students' ethical and professional responsibilities and raises their decision-making skills.
Pre-requisites: PHAR 273

PHAR 364–LABORATORY DATA (2Cr.: 2Lec):
The course introduces students to the fundamentals of interpreting laboratory test results, and the essential information used to screen for or diagnose diseases and monitor the effectiveness and safety of therapy. Topics include reference ranges and critical values. Tests for kidney, liver and heart function, lipid disorders, infectious diseases, cancers and tumor markers, tests for pharmacogenomics, rheumatic diseases and others.
Pre-requisite: PHAR 284

PHAR 365– FUNDAMENTALS OF PHARMACOLOGY (3Cr.: 2Lec, 3Lab):
The course aims to provide students with the knowledge of the basic principles of pharmacology, pharmacodynamics (general and molecular aspects) and pharmacokinetics. It also covers the effects of autonomic drugs on cholinergic and noradrenergic neurotransmission, their clinical uses, side effects and drug interactions. Accordingly, the course is considered as pre-requisite to the subsequent five Pharmacology courses (Pharmacology I-V) dealing with drugs affecting different body systems/organs. The practical part of the course aims to help students apply this acquired knowledge using selected *in-vitro* animal models as well as simulation techniques.
Pre-requisite: PHAR 274

PHAR 366–PHARMACY PRACTICE III (2Cr.: 2Lec):
The course is designed to guide student searching for drug information in textbooks and compendial recourses widely used in pharmacy practice. In addition, students will be trained to recognize credible and reliable knowledge resources particularly internet-based information. Emphasis will be put on the different ways of communicating drug-related information to different audiences such as patients and healthcare professionals.
Co-requisite: PHAR 365

PHAR 370–DRUG DELIVERY SYSTEMS (3Cr.: 2Lec, 2Lab):
The course is built to include adequate study of pre-formulation, *in vitro* drug interaction ensuring safety and accuracy of products and different release mechanisms to monitor drug release patterns. The course aims at rendering students familiar with principles underlying preparation and administration of modified drug delivery systems, transdermal patches and their use in patient care. The course also emphasizes on the role of pharmacist in counseling patients to identify proper way of using compounded products.
Pre-requisite: PHAR 361

PHAR 371–MEDICAL MICROBIOLOGY (2Cr.: 2Lec, 1Lab):
The course explores the etiology, pathogenesis, relevant clinical manifestations, diagnostic procedures and treatment guidelines for different infections (bacterial, viral, fungal and parasitic ones). Students will be expected to use their knowledge to contribute to the development of therapeutic strategies against devastating human diseases.**Pre-requisite: PHAR 362**

PHAR 372-MEDICINAL CHEMISTRY II (3Cr.: 2Lec, 2Lab):
The course is designed to deliver students sufficient understanding of physicochemical, pharmacokinetic and pharmacodynamic properties related to drug structure, aiming at improving future collaboration abilities with other health care providers. The course illustrates the impact of chemical structure on biological aspects, of certain drug classes including those used to treat pain, inflammation and arthritis, opioid analgesics and antagonists, drugs affecting immune system (antihistamines and H2-receptor antagonists), calcium homeostasis, steroids and related drugs, in addition to drugs used to treat neuromuscular disorders. Anti-parasites, antifungal and anti-infective agents are likewise included. The practical part of the course promotes students professionalism through taking responsibility for their proper decisions.
Pre-requisite: PHAR 363

PHAR 373–PHARMACOLOGY I (1Cr.: 1Lec):
The course aims to provide students with the knowledge and understanding of the mode of action, pharmacokinetics, adverse effects, drug interactions and clinical uses of drugs used in the therapy of: glaucoma, allergic rhinitis, inflammation (including NSAIDs, antirheumatoid drugs and drugs used in gout), respiratory disorders, and drugs affecting gastrointestinal function. Being co-requisite to Pharmacotherapeutics I, **PHAR 374**, the course contents are horizontally integrated and chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes.
Pre-requisite: PHAR 365

PHAR 374–PHARMACOTHERAPEUTICS I (2Cr.: 2Lec):
The course is designed to introduce students to the essential therapeutic knowledge, principles and concepts needed for providing pharmaceutical care to patients with the following disorders: glaucoma, allergic rhinitis, bone and joint disorders (including rheumatoid arthritis, osteoarthritis and gout), respiratory disorders (including COPD and asthma), and gastrointestinal disorders (including gastro-esophageal reflux disease, peptic ulcer disease, inflammatory bowel disease, irritable bowel syndrome, and liver cirrhosis). Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options and guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge and skills, the course is co-requisite to Integrated Case-Based Learning I, **PHAR 376**, which enables the provision of patient-centered care.
Co-requisite: PHAR 373

PHAR 375–PHARMACY PRACTICE IV (2Cr.: 1Lec, 2 Practice):
The course provides students with knowledge and skills required to understand, criticize and integrate the results of pharmaceutical and biomedical literature into practice, in order to ensure safe and effective pharmaceutical care and to promote health. Special emphases will be put on principles and methods of biostatistics.
Pre-requisite: PHAR 366
Co-requisite: PHAR 374

PHAR 376–INTEGRATED CASE-BASED LEARNING I (ICBL I) (2Cr.: 2 Practice):
The course aims at introducing students to the basic knowledge of pharmaceutical care principles and practice. It also aims to introduce students to the application of therapeutics in order to enable the provision of patient-centered care.
Pre-requisite: PHAR 275
Co-requisites: PHAR 374

PHAR 380–PHARMACY PRACTICE EXPERIENCE III (4Cr.: 180 Contact Hours):
This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge and skills previously introduced in courses relevant to the experience.
Pre-requisites: PHAR 375, PHAR 376

PHAR 460–BIOPHARMACEUTICS AND PHARMACOKINETICS (3Cr.: 2Lec, 2Lab):
The course aims at providing students with necessary information related to different factors affecting the performance of various drug dosage forms *in vitro* and *in vivo*. The course also delivers specialized knowledge that is essential to understand the concept of bioavailability and bioequivalence. The course allows student to explore the kinetics of the drug in human body, moreover, enables the student to explain the complex issues associated with the processes of drug absorption and disposition in relation to the *in vivo* performance and determination of drug dose and regimen for therapy individualization.
Pre-requisite: PHAR 281

PHAR 461–RECENT APPROACHES IN PHYTOTHERAPY (2Cr.: 1Lec, 2Lab):
The course reflects the application of concepts and recent trends of pharmaceutical care regarding phytotherapy. Furthermore, it reveals implementation of tools for increased health, well-being and clinical significance of new discovered drugs of natural origin. In addition, the course directs students to formulate appropriate care plans that solve and/or prevent drug-herb interactions in the provided cases scenarios.
Pre-requisites: PHAR 272

PHAR 462-MEDICINAL CHEMISTRY III (3Cr.: 2Lec, 2Lab):
The course illuminates the governance of chemical structure on biological attributes of some drug categories including: drugs acting on CNS (depressants and stimulants), insulin, oral hypoglycemic agents, thyroid drugs, diuretics, cardiovascular, and diagnostic agents. The chemotherapeutic characteristics of antineoplastic and antiviral agents, are reasonably discussed in relevance to drug development. Students are expected to postulate molecular modifications of lead drugs enhancing their bioavailability and biological activities, while appreciating the importance of chemistry towards improving patients safety and quality of life. The practical part of the course refines students ethical and professional competences.
Pre-requisite: PHAR 363

PHAR 463–PHARMACOLOGY II (1Cr.: 1Lec):
The course aims to provide students with the basic knowledge and understanding of the mode of action, pharmacokinetics, side effects, drug interactions and uses of drugs acting on the cardiovascular and renal systems, including blood drugs. Being co-requisite to Pharmacotherapeutics II course, the course contents are horizontally integrated and chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes.
Pre-requisite: PHAR 365

PHAR 464–PHARMACOTHERAPEUTICS II (2Cr.: 2Lec):
The course is designed to introduce students to the essential therapeutic knowledge, principles and concepts needed for providing pharmaceutical care to patients with the following disorders: cardiovascular: hypertension, dyslipidemia, ischemic heart disease, heart failure, arrhythmias, thromboembolism, and stroke; hematologic: anemias, hematopoiesis, and coagulation disorders; renal: acute renal failure, chronic kidney disease, electrolyte and acid-base disorders; urologic: erectile dysfunction, management of benign prostatic hyperplasia, and urinary incontinence. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options and guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge and

skills, the course is co-requisite to Integrated Case-Based Learning II course, which enables the provision of patient-centered care.
Co-requisite: PHAR 463

PHAR 465–PHARMACY PRACTICE V (2 Cr.: 1Lec, 2 Practice):
The course focusses on procedures and processes of pharmacy practice in specialized and institutional settings. It highlights potential causes of errors and lapses in patient care during regular operations and care transitions. Students will be expected to use their critical thinking skills to identify probable causes of errors, and design procedures to improve medication use safety.
Pre-requisite: PHAR 285

PHAR 466–INTEGRATED CASE-BASED LEARNING II (ICBL II) (2 Cr.: 2 Practice):
ICBL II is an interactive course that uses case scenarios set in realistic contexts as the starting place to integrate knowledge from several previous courses with newly acquired therapeutic knowledge. The course aims to develop and refine the students' ability to identify, solve and prevent drug therapy problems while providing pharmaceutical care. The course also develops various students' clinical skills such as communication, patient assessment, and problem solving.
Pre-requisites: PHAR 376
Co-requisite: PHAR 464

PHAR 470–PHARMACEUTICAL MANUFACTURING (3Cr.: 2Lec, 2Lab):
The course begins with an introduction to basic principles that are involved in the manufacturing of different pharmaceutical dosage forms. It also focusses on the design and operation of equipment used for each unit operation in the industrial pharmacy as mixing, drying, size reduction, emulsification and centrifugation; and how such principles are utilized to design and specify equipment used in manufacturing solid, semisolid, sterile preparations and aerosols. Moreover, selection of proper packaging materials to ensure the stability of the manufacturing products will be considered.
Pre-requisite: PHAR 361

PHAR 471–PHYTOCHEMISTRY (3Cr.: 2Lec, 2Lab):
The course is designed to discuss classes of bioactive constituents from natural sources (glycosides, essential oils, alkaloids, and miscellaneous natural products). The course explains extraction, preparation, molecular structure, stability in extracts and interactions with other ingredients in pharmaceutical preparations, physical and chemical characteristics, pharmacological effects, SAR, and methods of quantification. The course depicts ensuring quality and safety of the products in extracts and in different dosage forms. The course specially emphasizes on the role of pharmacist in counseling OTC and prescribed drugs of natural origin belonging to the studied bioactive classes.
Pre-requisite: PHAR 273, PHAR 360

PHAR 472–PHARMACOLOGY III (1Cr.: 1Lec):
The course aims to provide students with the basic knowledge and understanding of the mode of action, pharmacokinetics, side effects, drug interactions and uses of antimicrobial drugs, in addition to drugs affecting the endocrine system. Being co-requisite to Pharmacotherapeutics III course and Pharmacotherapeutics IV course, the course contents are horizontally integrated and chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes.
Pre-requisite: PHAR 365

PHAR 473–PHARMACOTHERAPEUTICS III (2Cr.: 2Lec):
The course is designed to introduce students to the essential therapeutic knowledge, principles and concepts needed for providing pharmaceutical care to patients with the following infectious diseases: central nervous system infections, upper respiratory tract infections, lower respiratory tract infections,

skin and soft-tissue infections, tuberculosis, endocarditis, intra-abdominal infections, urinary tract infections, prostatitis, sexually transmitted diseases, sepsis and septic shock, surgical prophylaxis, superficial fungal infections, invasive fungal infections, viral infections, HIV infection, and parasitic diseases. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options and guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge and skills, the course is co-requisite to Integrated Case-Based Learning III, **PHAR 476**, which enables the provision of patient-centered care.

Pre-requisite: PHAR 371

Co-requisite: PHAR 472

PHAR 474–PHARMACOTHERAPEUTICS IV (2Cr.: 2Lec):

The course is designed to introduce students to the essential therapeutic knowledge, principles and concepts needed for providing pharmaceutical care to patients with the following disorders: endocrinologic: Diabetes Mellitus, thyroid disorders, and adrenal gland disorders; gynecologic and obstetric: pregnancy and lactation, contraception, and menstruation-related disorders. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options and guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge and skills, the course is co-requisite to Integrated Case-Based Learning III, **PHAR 476**, which enables the provision of patient-centered care.

Co-requisite: PHAR 472

PHAR 475–PHARMACY PRACTICE VI (2 Cr.: 1Lec, 2 Practice):

The course further explores various aspects and dimensions of professional practice. The course covers drug distribution processes, patient self-care therapeutics (OTC) and patient counseling. Through a combination of lectures, laboratory simulations, patient case scenarios and individual work, students will be able to develop their knowledge, skills and attitudes required to practice in different settings.

Pre-requisites: PHAR 376

PHAR 476–INTEGRATED CASE-BASED LEARNING III (ICBL III) (2Cr.: 2 Practice):

ICBL III is an interactive course that uses case scenarios set in realistic contexts as the starting place to integrate knowledge from several previous courses with newly acquired therapeutic knowledge. The course aims to develop and refine the students' ability to identify, solve and prevent drug therapy problems while providing pharmaceutical care. The course also develops various students' clinical skills such as communication, patient assessment, and problem solving**.**

Pre-requisites: PHAR 375, PHAR 376

Co-requisites: PHAR 473, PHAR 474

PHAR 480–PHARMACY PRACTICE EXPERIENCE IV (4Cr.: 180 Contact Hours):

This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge and skills previously introduced in courses relevant to the experience.

Pre-requisites: PHAR 475

PHAR 547-PHARMACOLOGY IV (1Cr.: 1Lec):

The course aims to provide students with the basic knowledge and understanding of the mode of action, pharmacokinetics, side effects, drug interactions and uses of drugs acting on the CNS, including antidepressants, antipsychotics, anticonvulsant drugs, anxiolytics and hypnotics, antiepileptics, drugs for Parkinsonism, CNS stimulants, general and local anesthetics. Being co-requisite to Pharmacotherapeutics V course, the course contents are horizontally integrated and chronologically

delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes.
Pre-requisite: PHAR 365

PHAR 548–PHARMACOTHERAPEUTICS V (2Cr.: 2Lec):
The course is designed to introduce students to the essential therapeutic knowledge, principles and concepts needed for providing pharmaceutical care to patients with the following disorders: neurologic: epilepsy and status epilepticus, Parkinson's disease, pain management and headache; psychiatric: childhood disorders, eating disorders, Alzheimer's, schizophrenia, depressive disorders, anxiety, sleep disorders, and substance-related disorders. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options and guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders.
Co-requisite: PHAR 547

PHAR 549–PUBLIC HEALTH (1Cr: 1Lec):
This course is offered to provide students with comprehensive information and principles related to public health particularly as it relates to pharmacy practice, in the context of the Lebanese health care system. Fundamentals of public health, concepts, tools of health policy and models of pharmacist-run public health programs are all presented in this course.
Pre-requisite: PHAR 371

PHAR 577– PHARMACY PRACTICE EXPERIENCE V (6Cr.: 270 Contact Hours):
This course is conducted in an in-patient care settings and other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge and skills previously introduced in courses relevant to the experience.
Pre-requisites: PHAR 466, 476, 480
Co-requisites: PHAR 579, PHAR 549

PHAR 578–PHARMACY PRACTICE EXPERIENCE VI (6Cr.: 270 Contact Hours):
This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge and skills previously introduced in courses relevant to the experience.
Pre-requisites: PHAR 466, 476, 480
Co-requisites: PHAR 579, PHAR 549

PHAR 579–PHARMACEUTICAL LEGISLATIONS (1Cr.: 1Lec.):
The course aims at acquainting students with Lebanese laws and legislations that control the pharmacy profession in the framework of good pharmacy practice.

PHAR 583–TOXICOLOGY (2Cr.: 2Lec):
The course aims to provide students with the basic knowledge and understanding of the principles of general toxicology, clinical toxicology, toxicity of common drugs, household products, substances of abuse, common environmental and food toxicants. In addition, the course discusses the mechanisms of action of antidotes with examples of available ones and their clinical uses. The course promotes problem-solving skills of students.
Pre-requisites: PHAR 463

PHAR 584–PHARMACOLOGY V (1Cr.: 1Lec):
The course aims to provide students with the basic knowledge and understanding of the mode of action, pharmacokinetics, side effects, drug interactions and uses of anticancer drugs and immunosuppressants. Being co-requisite to Pharmacotherapeutics VI course, the course contents are horizontally integrated

and chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes.
Pre-requisite: PHAR 365

PHAR 585–PHARMACOTHERAPEUTICS VI (2Cr.: 2Lec):
The course is designed to introduce students to the essential therapeutic knowledge, principles and concepts needed for providing pharmaceutical care to patients with the following disorders: Oncologic: cancer treatment and chemotherapy, breast cancer, lung cancer, colorectal cancer, prostate cancer, ovarian cancer, lymphomas, leukemia, and myeloma; immunologic: Systemic Lupus Erythematosus, allergic drug reactions, organ transplantation; dermatologic: psoriasis, drug-induced skin reactions, and dermatitis. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options and guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above-mentioned disorders.
Co-requisite: PHAR 584

PHAR 586–INTER-PROFESSIONAL EDUCATION (2Cr.):
The course aims to foster the skills, knowledge, attitudes and behaviors that facilitate effective inter-professional (IP) collaborative practice among health care providers. Through interactive learning, students will explore ways in which their professions can work together in order to optimize patient's care while respecting each other's roles and responsibilities.
Pre-requisite: PHAR 476

Faculty Elective Courses

1. CATEGORY A

Students have to choose FOUR from the following courses:

Courses		Title	Crs.	Pre/co -requisites
PHAR	564	Supportive Care For Patients With Chronic Kidney Disease	1	Pre: PHAR 435
PHAR	565	Pharmacovigilance	1	
PHAR	567	Medication Use in Geriatric Patients	1	
PHAR	568	Medication Use in Pediatric	1	
PHAR	569	Medication Use in Pregnancy	1	
PHAR	570	Substance Related Disorders	1	
PHAR	571	Childhood Disorders	1	
PHAR	587	Anticoagulation Therapy Management	1	Pre: PHAR 464
PHAR	588	Pain Management	1	Pre: PHAR 548
PHAR	589	Oncology Supportive Care	1	Pre: PHAR 462
PHAR	590	Clinical Nutrition	1	Pre: PHAR 461
PHAR	591	Selected Autoimmune Disorders	1	Pre: PHAR 362, PHAR 584 Co-req: PHAR 584
PHAR	592	Clinical Pharmacokinetics	1	Pre: PHAR 460

2. CATEGORY B

Students have to choose TWO from the following courses:

Courses		Title	Crs.	Pre/co -requisites
PHAR	566	Pharmaceutical Regulatory Affairs	1	
PHAR	593	Hospital Pharmacy	1	Pre: PHAR 465
PHAR	594	Principles of Pharmacoeconomics	1	Pre: PHAR 275, PHAR 465
PHAR	595	Pharmaceutical Layout	1	Pre: PHAR 470
PHAR	596	Cosme-Pharmaceuticals	1	Pre: PHAR 361
PHAR	597	Natural Dietary Supplements and Health Products	1	Pre: PHAR 272
PHAR	598	Pharmaceutical Marketing	1	Pre: PHAR 265
PHAR	599	Advanced Communication Skills and Care for Special Population	1	Pre: PHAR 464 or PHAR 474

Description of Faculty Elective Courses

1. CATEGORY A

Students have to choose FOUR from the following courses:

PHAR 564-SUPPORTIVE CARE FOR PATIENTS WITH CHRONIC KIDNEY DISEASE (1Cr.:1Lec.): This course highlights the role of the pharmacist as a member of the circle of care of patients with CKD. It will provide the necessary knowledge and skills to handle hemodialysis complications such as nausea and vomiting, anemias and others.
Pre-requisite: PHAR 435

PHAR 565 PHARMACOVIGILANCE (1Cr.:1Lec.):
This course aims to provide an opportunity for the students to learn about basic terminologies used in pharmacovigilance and various methods that can be used to generate safety data. In addition, it develops the skills of classifying drugs, diseases and adverse drug reactions.

PHAR 567–Medication Use in Geriatric Patients (1Cr.:1Lec.):
The course aims to provide students with the essential knowledge and skills required for optimizing drug therapy in elderly to ensure better outcomes. A special focus is put on selecting medication therapy, determining a dose and schedule appropriate for the patient's physiologic status, monitoring for effectiveness and toxicity, educating the patient about expected side effects and indications for seeking consultation. Beers criteria are also discussed.

PHAR 568–Medication Use in Pediatric (1Cr.:1Lec.):
The course aims to provide students with the essential knowledge and skills required for optimizing drug therapy in infants and children to ensure better outcomes. A special focus is put on selecting medication therapy, determining a dose and schedule appropriate for the patient's physiologic status and monitoring parameters for effectiveness and toxicity. Pharmacokinetic differences in childhood that influence drug therapy and problems inherent to pediatric drug monitoring are also discussed.

PHAR 569–Medication Use in Pregnancy (1Cr.:1Lec.):
The course aims to provide students with the essential knowledge and skills required for optimizing drug therapy in pregnant women to ensure better outcomes. A special focus is put on selecting medication therapy, determining a dose and schedule appropriate for the patient's physiologic status, monitoring for effectiveness and toxicity, educating the patient about expected side effects, and indications for seeking consultation. New FDA Pregnancy categories of drugs are also discussed.

PHAR 570 –Substance Related Disorders (1Cr.:1Lec.):
This course provides an overview of the fundamental concepts in substance abuse. The contents of this course will introduce students to terminologies used in substance abuse as well as their definitions. A comprehensive overview of etiology, assessment, and treatment of the drugs of abuse that are most commonly used (alcohol, caffeine, tobacco, sedatives and stimulants) is also covered.

PHAR 571 Childhood Disorders (1 Cr.:1Lecture)
This course aims to give students an overview of some prevalent developmental disorders including autism, ADHD and nocturnal enuresis. The course covers issues related to diagnosis and assessment and treatment of these disorders, as well as theories related to causes of these disorders and strategies for coping with these disorders.

PHAR 587–Anticoagulation Therapy Management (1Cr.):
The course aims at providing students with necessary knowledge and skills to offer care and management of patients with conditions requiring the use of anticoagulant and antiplatelet therapy to ensure better outcomes.
Pre-requisite: PHAR 464

PHAR 588–Pain Management (1Cr.):
In this course, emphasis will be put on various approaches for controlling pain in patients with acute and chronic conditions such as postoperative pain, neuropathies and cancer.
Pre-requisite: PHAR 548

PHAR 589–Oncology Supportive Care (1Cr.):
This course highlights the role of the pharmacist as a member of the circle of care of cancer patients. It will provide the necessary knowledge and skills to handle chemotherapy complications such as nausea and vomiting, febrile neutropenia, anemias and toxicities specific to particular chemotherapeutic agents.
Pre-requisite: PHAR 462

PHAR 590–Clinical Nutrition (1Cr.):
This course describes the nutritional requirements for therapeutic support of special patient populations. Concepts of enteral and parenteral nutrition will be discussed in the context of critically ill patients' care.
Pre-requisite: PHAR 461

PHAR 591–Selected Autoimmune Disorders (1Cr.):
This course provides the students with in depth knowledge and skills required to provide patient care to patients with selected autoimmune disorders such as: systemic lupus erythematosus, multiple sclerosis, and psoriasis. In addition, the role of pharmacist within the circle of care of post-transplant patients will be covered.
Pre-requisite: PHAR 472, PHAR 362
Co-requisite: PHAR 584

PHAR 592–Clinical Pharmacokinetics (1Cr.):
The course is designed in order to enable the student to develop and integrate the knowledge and skills required to apply pharmacokinetic-pharmacodynamic principles for the individualization of drug dosing regimens. The student recognizes and manages clinically significant actual and potential pharmacokinetic interactions and perform therapeutic drug management in patients receiving medications for which concentrations can be measured in practice (e.g. chemotherapeutic agents, anticonvulsants, cardiac medications, psychiatric medications, immuno-suppressants) or predicted from population-pharmacokinetic data.
Pre-requisite: PHAR 460

CATEGORY B

Students have to choose TWO from the following courses:

PHAR 566–Pharmaceutical Regulatory Affairs (1Cr.:1Lec.):
This course aims to provide students with an opportunity to understand aspects related to pharmaceutical regulatory affairs including national and international drug laws, guidelines and regulations. Moreover, this course develops skills required for drug registration nationally and internationally.

PHAR 593–Hospital Pharmacy (1Cr.):
Principles of different Pharmaceutical technical services implemented in hospitals including, preparation of IV admixtures and TPN, handling of cytotoxic and radioactive products. Identification and correction of irrational prescription and causes of medication errors. The administrative role of pharmacists in hospital (knowledge related to hospital pharmacist activities).
Pre-requisite: PHAR 465

PHAR 594–Principles of Pharmacoeconomics (1Cr.):
In this course the students will explore the application of the ECHO in deriving useful conclusions regarding drug selection for particular patient situations in addition to drug formulary development. In addition, the course will highlight the basic concepts of health policy management.
Pre-requisites: PHAR 275, PHAR 465

PHAR 595–Pharmaceutical Layout (1Cr.):
The course aims at providing the students with the main ideas about the essential concepts and aspects related to quality control and quality assurance of pharmaceuticals. The course allows students to recognize GMP regulations for different dosage forms as well as various methods of pharmaceutical process validation and sources of quality variations. The course allows students to gain the basic knowledge of pharmaceutical layout through training in different pharmaceutical plants. It enables the students to identify variables controlling packaging materials selection and stability of the finished products. The course is also focusing on the basic knowledge of drug approval and registration in Lebanon.
Pre-requisite: PHAR 470

PHAR 596–Cosme-Pharmaceuticals (1Cr.):
The course aims at providing the students with strong background of the function and behavior of skin, hair and nails with special emphasis on their response to environmental, physiological and aging factors. Dermatological reactions of skin, hair and nails to cosmetic raw materials and formulations are also addressed. Functions, properties, stability, and possible side effects of active and inactive cosmetic ingredients and formulations, in addition to cosmetic regulations, product safety and manufacturing are illustrated. The manufacture of cosmetic products, with therapeutic focus, as well as their quality control prospective are clarified.
Pre-requisite: PHAR 361

PHAR 597–Natural Dietary Supplements and Health Products (1Cr.):
Chemistry, classification, distribution, pharmaceutical and clinical use of natural dietary supplements and Health Products, possible interactions with other drugs, self-medication, restrictions before use, national and international regulations, public awareness and role of pharmacists.
Pre-requisite: **PHAR 272**

PHAR 598–Pharmaceutical Marketing (1 Cr.)
Marketing management, analysis of marketing opportunities, developing market strategies, shaping the market offering, managing and delivering marketing programs, Lebanese pharmaceutical market.
Pre-requisite: **PHAR 265**

PHAR 599–Adv. Com.Skills&Care for Sp. Pop. (1Cr.: 1Lec):
The overall focus of this course is on the theory and practice of communication in the pharmacy setting. With patient empowerment being the ultimate goal, instruction will be directed toward improving communication skills in professional relationships with patients. The course uses different techniques including role playing exercises to improve the student's ability to conduct patient centered consultations. The course also prepares students to collaborate in developing effective interpersonal communication skills with pharmacist colleagues and other health practitioners.
Pre-requisite: PHAR 464 or PHAR 474

Study Plan
Bachelor Degree "B.Sc. in Pharmacy (180 Credits)

First Semester (17 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 250	Pharmaceutical Physical Chemistry	2	
PHAR 251	Natural Medicine and Nutritional Supplements	3	
PHAR 252	Pharmaceutical Organic Chemistry I	3	
PHAR 253	Human Biology	2	
PHAR 254	Anatomy and Histology	3	
PHAR 255	Communication Skills in Pharmacy Practice	2	
ENGL 001	English Language (University Mandatory[1])	2	

Second Semester (18 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 260	Pharmaceutical Analytical Chemistry I	3	Pre: PHAR 250
PHAR 261	Natural Therapies I	3	Pre: PHAR 251
PHAR 262	Pharmaceutical Organic Chemistry II	3	Pre: PHAR 252
PHAR 263	Physiology I	2	
PHAR 264	Orientation to Pharmacy Practice	2	
PHAR 265	Pharmacy Practice Management	1	
ARAB 001	Arabic Language (University Mandatory[1])	2	
BLAW 001	Human Rights (University Mandatory[1])	1	
	University electives[1]	1	

PHAR 266	Pharmacy Practice Experience I	4	Pre: PHAR 265

Third Semester (18 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 270	Pharmaceutical Analytical Chemistry II	3	Pre: PHAR 260
PHAR 271	Pharmaceutical Dosage Forms I	2	Pre: PHAR 264
PHAR 272	Natural Therapies II	3	Pre: PHAR 261
PHAR 273	Pharmaceutical Organic Chemistry III	3	Pre: PHAR 262
PHAR 274	Physiology II	2	Pre: PHAR 263
PHAR 275	Pharmacy Practice I	2	Pre: PHAR 255
	University Electives[1]	3	

Fourth Semester (18 Credits)			
Course	**Title**	**Crs.**	**Pre/Co-Requisite**
PHAR 280	Pharmaceutical Analytical Chemistry III	2	Pre: PHAR 270
PHAR 281	Physical Pharmacy and Product Stability	3	Pre: PHAR 271
PHAR 282	Modern Separation and Isolation Techniques	2	Pre: PHAR 272
PHAR 283	Pharmaceutical Microbiology I	3	
PHAR 284	Biochemistry	3	Pre: PHAR 273
PHAR 285	Pharmacy Practice II	2	
	University Electives[1]	3	

PHAR 286	Pharmacy Practice Experience II	4	Pre: PHAR 272, PHAR 285

Fifth Semester (18 Credits)

Course	**Title**	**Crs.**	**Pre/Co-Requisite**
PHAR 360	Pharmaceutical Analysis	2	Pre: PHAR 280
PHAR 361	Pharmaceutical Dosage Forms II	3	Pre: PHAR 281
PHAR 362	Pharmaceutical Microbiology II	3	Pre: PHAR 283
PHAR 363	Medicinal Chemistry I	3	Pre: PHAR 273
PHAR 364	Laboratory Data	2	Pre: PHAR 284
PHAR 365	Fundamentals of Pharmacology	3	Pre: PHAR 274
PHAR 366	Pharmacy Practice III	2	Co-req: PHAR 365

Sixth Semester (15 Credits)

Course	**Title**	**Crs.**	**Pre/Co-Requisite**
PHAR 370	Drug Delivery Systems	3	Pre: PHAR 361
PHAR 371	Medical Microbiology	2	Pre: PHAR 362
PHAR 372	Medicinal Chemistry II	3	Pre: PHAR 363
PHAR 373	Pharmacology I	1	Pre: PHAR 365
PHAR 374	Pharmacotherapeutics I	2	Co-req: PHAR 373
PHAR 375	Pharmacy Practice IV	2	Pre: PHAR 366 Co-req: PHAR 374
PHAR 376	Integrated Case-Based Learning I (ICBLI)	2	Pre: PHAR 275 Co-req: PHAR 374

PHAR 380	Pharmacy Practice Experience III	4	Pre: PHAR 375, PHAR 376

Seventh Semester (15 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 460	Biopharmaceutics and Pharmacokinetics	3	Pre: PHAR 281
PHAR 461	Recent Approaches In Phytotherapy	2	Pre: PHAR 272
PHAR 462	Medicinal Chemistry III	3	Pre: PHAR 363
PHAR 463	Pharmacology II	1	Pre: PHAR 365
PHAR 464	Pharmacotherapeutics II	2	Co-req: PHAR 463
PHAR 465	Pharmacy Practice V	2	Pre: PHAR 285
PHAR 466	Integrated Case-Based Learning (ICBL) II	2	Pre: PHAR 376 Co-req: PHAR 464

Eighth Semester (15 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 470	Pharmaceutical Manufacturing	3	Pre: PHAR 361
PHAR 471	Phytochemistry	3	Pre: PHAR 273, PHAR 360
PHAR 472	Pharmacology III	1	Pre: PHAR 365
PHAR 473	Pharmacotherapeutics III	2	Pre: PHAR 371 Co-req: PHAR 472
PHAR 474	Pharmacotherapeutics IV	2	Co-req: PHAR 472
PHAR 475	Pharmacy Practice VI	2	Pre: PHAR 376
PHAR 476	Integrated Case-Based Learning (ICBL) III	2	Pre: PHAR 375, PHAR 376 Co-req: PHAR 473, PHAR 474

PHAR 480	Pharmacy Practice Experience IV	4	Pre: PHAR 475

Ninth Semester (14 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 547	Pharmacology IV	1	Pre: PHAR 365
PHAR 548	Pharmacotherapeutics V	2	Co-req: PHAR 547
PHAR 549	Public Health	1	Pre: PHAR 371
PHAR 577 PHAR 578	Pharmacy Practice Experience V Pharmacy Practice Experience VI	6	Pre: PHAR 466, PHAR 476, PHAR 480 Co-req: PHAR 549, PHAR 579
PHAR 579	Pharmaceutical Legislations	1	
	Faculty Electives[2]	3	

Tenth Semester (17 Credits)

Course	Title	Crs.	Pre/Co-Requisite
PHAR 583	Toxicology	2	Pre: PHAR 463
PHAR 584	Pharmacology V	1	Pre: PHAR 365
PHAR 585	Pharmacotherapeutics VI	2	Co-req: PHAR 584
PHAR 577 PHAR 578	Pharmacy Practice Experience V Pharmacy Practice Experience VI	6	Pre: PHAR 466, PHAR 476, PHAR 480 Co-req: PHAR 549, PHAR 579
PHAR 586	Inter-Professional Education (IPE)	2	Pre: PHAR 476
	Faculty Electives[2]	3	

[1] A total of 12 credits is required as general University requirements; 5 credits are University mandatory courses which are: Arabic language [ARAB 001 (2Cr.)], General English [ENGL 001 (2Cr.)] and Human Rights [BLAW 001 (1Cr.)] and another 7 credits which are to be selected from the University Elective course list.

[2] To be selected from the Faculty elective courses list offered by the Faculty, which is subject to change according to the number of students enrolled in the elective course.

- International Computer Driving License (ICDL) certificate is a requirement for graduation

- The list of University Requirement courses and their descriptions are presented in the introductory pages of this catalog.