



Department: Clinical Pharmacy and pharmacy practice  
Program: Doctor of Pharmacy

القسم: الصيدلة السريرية و الممارسة الصيدلانية  
البرنامج: دكتور صيدلة

**Islamic Culture (BUST 05)****4 Credit hours (4 Lecture)**

يعد مقرر الثقافة الإسلامية من أهم المقررات الدراسية وذلك للدور الذي يساهم فيه هذا المقرر في تكوين الشخصية المسلمة القادرة على قراءة ماضيها وفهم واقعها والإسهام الإيجابي في بناء المستقبل بناءً يوافق شرع الله ويلبي احتياجات العصر من غير إفراط ولا تفريط (بوسطية).  
ويتم أخذ هذا المقرر بطريقة الحوار والمناقشة، كما يكلف فيه الطلبة بالبحوث التي تخدم أهداف المقرر.  
ويتم تقييم الطلبة عن طريق المشاركة الصفية واللاصفية والأعمال التي يكلف بها الطلبة والاختبارات النصفية والنهائية.

**English Language I (BUST 02)****4 Credit hours (8 Practical)**

The current course provides students with the language basics of everyday English to help them communicate in different real life situations. The course focuses more on real life conversations and the basic grammars that will help each one in his/her major.

Moreover the course provides students with plenty of writing and speaking practices. The updates of the book allow students to be posted with the latest language uses and functions that are easy and useable in real life situations.

**Communications Skills (BUST 07)****1 Credit hour (1 Lecture)**

يهدف مهارات الاتصال الى المام الطالب بالنظريات والمفاهيم الاساسية في مجال الاتصال الانساني ، وتنمية المهارات الاساسية في مجال التواصل الجيد مع الذات ومع الاخرين، وتعزيز ممارستها في حياته اليومية والعملية باستخدام اساليب جديّة تعتمد على التدريب والتقييم المتنوع والفعال، بما يساهم في نجاح حياته الخاصة والعملية على حد سواء.

**Biology I (PHF 110)****3 Credit hours (2 Lecture+2 Practical)**

This course is important since it provides a brief differences between living and non-living organisms. The topics will cover the cell structure, cell function, cell division including enzymes and material transport .The teaching will include lectures, discussion and assignment. There will be no pre-requisite course needed.

**Mathematics (PHF 111)****3 Credit hours (2 Lecture+2 Tutorial)**

Course discusses the principles of linear equations and applications , linear inequalities , absolute value in equations and inequalities , quadratic equations and applications ,laws of power and logarithm, power and logarithm equations, functions ,type of functions , limited and continuity .

**General Chemistry I (PHS 112)****3 Credit hours (2 Lecture+2 Practical)**

This course provides a student with the basic principles and concepts of chemistry and prepare him/her for more advanced courses in chemistry and other related courses via topics within containing matter and energy, atomic theory, periodic table, solutions and chemical reactions.

It depends on theoretical lectures and practical experiments.

Pharmacy students should master the concepts of General Chemistry to excel in their careers.

**Skills of Holy Quran Recitation & Tajweed (BUST 01) 1 Credit hour (2 Practical)**

يعد هذا المقرر من المقررات المهمة؛ كونه متعلق بكلام الله تعالى ثم إنه من متطلبات الجامعة، وهو مقرر نظري وتطبيقي يقوم الطالب فيه بتلاوة وحفظ نصف جزء عم من سورة (الطارق- الناس )، ودراسة الآداب التي ينبغي أن يتحلى بها قارئ القرآن، وفهم وتطبيق هذه الأحكام عند قراءة القرآن الكريم، وتستخدم طريقتي الحوار والمناقشة في التدريس، ويتم تقييم الطالب من خلال تلاوته للقرآن أثناء اللقاءات التعليمية، والقيام بالتكليفات المصاحبة – الصفية واللا صفية – مع الامتحانين النصفين والنهائي.

**Arabic Language (BUST 03)****4Credit hours (2 Lecture+4 Practical)**

يهتم المقرر بتنمية المهارات اللغوية الأساسية للطالب كونه من متطلبات الجامعة، ويتناول جملة من النشاطات الاتصالية والدروس اللغوية والإملائية والتركيبية ويحتوي على معارف ونصوص وتدريبات لغوية، ويتألف من كتابين:  
الأول يركز على مهارتي الاستماع والتحدث، والثاني يركز على مهارتي القراءة و الكتابة، مع احتواء كل من الكتابين على أساسيات التركيب النحوي وبعض القواعد الإملائية، ويعتمد المقرر أسلوب التدريبات والتطبيقات العملية لكل طالب، بالإضافة إلى النصوص التطبيقية في CD المرفق بالكتاب مع الامتحان النصفين والنهائي.

**English Language II (BUST 06)****4 Credit hours (8 Practical)**

The current course provides students with the language basics of everyday English to help them communicate in different real life situations. The course focuses more on real life conversations and the basic grammars that will help each one in his major.

Moreover the course provides students with plenty of writing and speaking practices. The updates of the book allow students to be posted with the latest language uses and functions that are easy and useable in real life situations.

**Critical Thinking (BUST 08)****1 Credit hour (1 Lecture)**

التفكير الناقد مادة هدفها الأساسي بناء وتنمية مهارة الطلاب الذهنية في مجال التعامل مع الآراء والأفكار المقروءة أو المسموعة أو المرئية لإبداء الرأي المؤيد أو المعارض استناداً إلى المهارات الذهنية المنظمة ، والمهارات المعرفية والخبرات والتجارب. يتضمن العديد من الموضوعات الرئيسية كمفهوم التفكير الناقد وفائدته العملية والتعليمية و في الفصل الدراسي ، ومعايير ، ومعوقاته ومفوماته الأساسية والمساعدة ، وكيفية بناء حجج مقنعة بالاستناد إلى الاستدلال الناقد ، مع بيان صور المغالطات والخدع البلاغية ، ثم توجت المادة بخاتمة تضمنت تطبيق مهارات التفكير على بعض الظواهر والمجالات الحيوية في الحياة ، والطريقة المثلى لتدريسها تكاد تنحصر في الجانب النظري من خلال المحاضرات والمدخلات والمناقشات المستفيضة ، مع تعزيز ذلك بقدر كبير من الأساليب التدريسية ، كلعب بعض الأدوار، وعرض مقاطع فيديو بالصوت والصورة، وإجراء بعض المناظرات، خصص لتدريسها والتدريب على بعض مفاهيمها 14 ساعة في الفصل الدراسي الواحد ، وتدرس بنظام الساعة ( زمن المحاضرة ساعة واحدة).

**Computer Skills (BUST 09)****3 Credit hours (6 Practical)**

This course provides a student by basic skills for using computer at studying environment, library, and at home. It presents the knowledge of basic computer and information technology concepts. The course provides the knowledge needed to operate and utilize the operating system and office software package, and to use the computer for Internet access and electronic communication.

**General Chemistry II (PHS 120)****3 Credit hours (2 Lecture + 2 Practical)**

The main objective of this course is to prepare student for further studies as pharmacists. Pharmacy students should master the concepts of general chemistry 2 to excel in his/her future carrier, this will be through learning some topics in chemistry for example chemical bonding, lew's structure, properties of liquids, acid-base equilibrium and the most important concepts in nuclear chemistry

**Biology II (PHF 121)****3 Credit hours (2 Lecture+2 Practical)**

The importance of this course will provide a brief description of plants as living organism. The topics will cover the plant morphology, growth and anatomy of roots, stem and leaves. The course will also deal with the sexual and asexual reproduction of plants. The teaching will be based on lectures, discussion and assignment. No pre-requisites courses needed.



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**Second Year Courses**

مقررات السنة الثانية

**Organic chemistry I (PHS 210)****3 Credit hours (2 Lecture +2 Practical)**

The general aim of this course is to provide students with organic structures compounds, name culture, synthesis, reaction mechanism of compounds, containing various functional group, selected example of medicinal & pharmaceutical compounds. This course will offer basic information which help students to understand the drug design, synthesis, and mechanism. The courses require general chemistry, as a pre-request. The students will complete practical course to acquire practical skills.

**Physiology I (PHF 211)****2 Credit hours (2Lecture)**

This introductory physiology course introduces basics concepts in physiology of human body. The course familiarizes students with basic definitions and principles related to physiology. This course helps students to understand body fluid and cellular physiology including the functions of cell components. Study blood compositions, nerve fibers and the nerve impulses transporting mechanism as will as, study autonomic nervous system, introduction of muscular system and the digestive system.

**Biochemistry I (PHF 212)****3 Credit hours (2 Lecture + 2 Practical)**

This course provides students with basic knowledge about structure and properties of main biomolecules in human body, such as amino acids, proteins, carbohydrates, lipids, and nucleic acids. The course emphasizes the relationship between protein structure and its biological function. In addition, it discusses the role of phospholipids in determining the properties of biological membranes and their function. The course is based on lectures as well as seminars, group discussion and practical skills.

**Anatomy (PHF 213)****3 Credit hours (2 Lecture + 2 Practical)**

This course will prepare the student to utilize, retrieve, interpret and allocate information useful to their practice and in their clinical rotations. The students will be also familiarized with basic definitions and principles related to normal anatomy of different parts of human body with knowing the relationship between its constituent parts to each other. This course is taught through lectures, interactive class discussions, demonstration, and revised assignments.

**Pharmacognosy I (PHS 214)****3 Credit hours (2 Lecture +2 Practical)**

This course deals with the basic concepts of pharmacognosy. The purpose of this course is to provide an overview of the composition, beneficial properties, and potential side effects of the most commonly used herbal products. Topics include identification of some medicinal plants organs such as leaves, bark and subterranean organ. The course requires to study of botany as pre-request for pharmacognosy. Different methods of teaching/learning are used in this course including lectures and seminar.

**Professional skills I (PHS 215)****1 Credit hours (1 Lecture)**

This course is the study of medical terminology, the language of medicine, focusing on prefixes, suffixes, word roots and their combining forms. The students gain information regarding pharmaceutical and therapeutic terms and abbreviations, anatomy, disease, diagnostic procedures, pharmacology, and medical abbreviations. A basic understanding of the language used in medicine and nursing will enable the student to communicate more effectively and efficiently with other members of the health professions

**Leadership Skills Development (BUST 04)****1 Credit hours (1 Lecture)**

يهدف المقرر الى تنمية بعض المهارات القيادية والإدارية لدى الدارسين، وتنمية فرص التميز لديهم، من خلال تعريفهم بسمات الشخصية القيادية والإدارية، وأهم طرق واساليب التحول من التبعية الى القيادة، وتعريفهم بأهم استراتيجيات التميز والتفاعل القيادي، اضافة الى تنمية بعض مهارات وأخلاقيات القيادة والإدارة المتعلقة بالتخطيط وادارة الذات والآخرين، وطرق واساليب اتخاذ القرارات الفعالة، واساليب التحفيز، واساليب التحفيز، ومهارات قيادة التغيير، وأخلاقيات الإدارة والقيادة.

**Organic Chemistry II (PHS 220)****3 Credit hours (2 Lecture +2 Practical)**

This course prepares the students for the different types and preparation of organic compound name culture, synthesis, reaction mechanism of compounds, containing various functional group, selected example of medicinal & pharmaceutical compounds. This course will offer basic information which help students to understand the drug design, synthesis, and mechanism. The courses require general chemistry, as a pre-request. The students will complete practical course to acquire practical skills.

**Physiology II (PHF 221)****3 Credit hours (2 Lecture +2 Practical)**

Physiology II is a continuation of physiology I. This course examines the function relationships of the cardiovascular system, lymph and lymphatic's, introduction to respiratory system, functional anatomy of the kidneys, introduction to reproductive system, menstrual cycle, introduction to central nervous system and pain physiology.

**Biochemistry II (PHF 222)****3 Credit hours (2 Lecture +2 Practical)**

This course provides students with basic knowledge about metabolic pathways and their key steps. It also help student understand generation and storage of metabolic energy. This course also acquaints medical students with some basic biochemical lab techniques, help them to perform some independent lab work and learn to cooperate with their colleagues in a laboratory environment. In the laboratory sessions, students are expected to learn how to use the centrifuge and spectrophotometer. Protein concentration, glucose and cholesterol level in the plasma will be determined using spectrophotometer. The course is based on lectures as well as seminars group, discussion and practical skills.

**Analytical Chemistry (PHS 223)****3 Credit hours (2 Lecture +2 Practical)**

Analytical chemistry is more than a large dose of equilibrium or a collection of analytical methods. Thus, the purpose of this course is to provide pharmaceutical students with technical and intellectual skills and help him/her to be an independent thinker who can approach pharmaceutical problems from different directions. The course requires learning the concepts of General chemistry 1 & 2 as pre-requisite. Different methods of teaching/learning are used in this course including lectures, seminars and practical skills.

**Pharmacognosy II (PHS 224)****3 Credit hours (1 Lecture +2 Practical)**

This course is a continuation of pharmacognosy I. It is provide an overview of the composition, beneficial properties, and potential side effects of the most commonly used herbal products. Topics include identification of some medicinal plants organs such as flower, fruits, seeds, herbs and unorganized drugs. The course requires to study of basic concepts of pharmacognosy as pre-request for pharmacognosy II. Different methods of teaching/learning are used in this course including lectures and seminar.

**Physical Pharmacy (PHS 225)****3 Credit hours (2 Lecture +2 Practical)**

The course aims to give students a detailed background about application of physiochemical principles to pharmaceutical systems like - solubility and distribution phenomena, adsorption, rheology, interfacial phenomena, complexation, stability and reaction kinetics

A prior knowledge of the basics of mathematics as well as general chemistry is essential for this course. The lectures will be conducted informally with participation by the student's seminars.

**Professional Skills II (PHS 226)****1 Credit hours (1 Lecture)**

This course is designed to help the student comprehend the basic and professional calculations of pharmacy practice. During the semester, students will be exposed to several calculation problems. Although this is primarily a lecture-based course, interaction and participation by each student is highly encouraged. Graded assignments will further consolidate the acquired knowledge and skills.





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## Course syllabus

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## Third Year Courses

مقررات السنة الثالثة

## Pharmacology I (PHS 310)

2 Credit hours (2 Lecture)

This course is designed as a basic topic to help the student comprehend the information of general pharmacology, autonomic nervous system (ANS) and cardiovascular (CVS) drugs as well as different groups of autocoids. The course requires learning the concepts of physiology and anatomy as pre-request as well as pathology as co-request. Different methods of teaching/learning are used in this course including lectures, cooperative learning and problem-based learning.

## Pharmaceutical Technology I (PHS 311)

3 Credit hours (2 Lecture +2 Practical)

This course introduces the students to the different types and preparation of pharmaceutical dosage forms encountered in pharmaceutical industry. Liquid dosage forms, parenteral preparations, ophthalmic preparations, and aerosols will be covered. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control through classes and practical experiments. A prior knowledge of the basics of physical pharmacy is essential for this course.

## Pharmaceutical chemistry I (PHS 312)

2 Credit hours (2 Lecture)

This course includes basic and specific science in order to well understand of pharmaceutical chemistry. The importance of this course in the field of drug: synthesis, development, discovery, and uses. It includes Physicochemical properties and drug design, metabolic pathway, autonomic nervous system drugs, diuretics, local anaesthetics, in which study, chemical structure, classification, metabolism, method of preparations, and the structure activity relationship. The pre-requisite of this course is organic chemistry, analytical chemistry, the co-requisite course pharmacology1.

## Phytochemistry I (PHS 313)

2 Credit hours (2 Lecture)

This course provide an information about the chemistry of some natural products such as glycosides tannin and terpinoids and the suitable methods for characterization, biosynthesis, and isolation by different methods. In addition to study the medicinal plant that contain such groups, their physical and chemical properties, uses, side effect and abuse. The course requires to study of as pre-request for phytochemistryII. Different methods of teaching/learning are used in this course including lectures and seminar.



### Microbiology and Immunology (PHF 314)

3 Credit hours (2 Lecture + Practical)

This course is designed to help the student identified the name of microorganism and their relationship with human. During the semester, students will be took several organisms cause disease to human. Although this is primarily a lecture-based course, interaction and participation by each student is highly encouraged.

### Pathology (PHF 315)

2 Credit hours (2 Lecture)

The course allows students to learn basic concept of the various disease processes in the body. Cell injury and pathology of inflammation are also discussed. The course also emphasizes neoplasia including classification, epidemiology, and characteristics of benign and malignant tumors. A prior knowledge of the basics of histology and anatomy are essential for this course The lectures will be conducted informally with participation by the student's seminars.

### Instrumental Analysis (PHS 316)

3 Credit hours (2 Lecture +2 Practical)

The main purpose of this course is to give students a broad experience and survey the theories and applications of modern instrumentation techniques that deal with separation, identification and quantitation of pharmaceutical compounds. Students will be given the opportunity to gain some knowledge of basic principles behind each technique, how it works, what kind of information it provides, how to interpret the data and how to use them to solve pharmaceutical problems. This course contains essential and indispensable analytical tools for pharmacists to isolate and identify various functional groups. The course requires learning the concepts of analytical chemistry as pre-requisite. Different methods of teaching/learning are used in this course including lectures, seminars and practical skills.

### Professional Skills III (PHS 317)

1 Credit hours (1 Lecture)

This course will prepare the student to utilize, retrieve, interpret and allocate information useful to their practice and in their clinical rotations. The students will be also familiarized with the drug development process and medication errors and how to prevent them. This course is taught through lectures, interactive class discussions, demonstration, and revised assignments.#

### Pharmacology II (PHS 320)

3 Credit hours (3 Lecture)

This course is designed to provide students with the important guidelines in treatment of central nervous system, respiratory and gastrointestinal tract diseases to prepare them for the future pharmacy practice. The concepts of pharmacology should be studied prior this course. Different methods of teaching/learning are used in this course including lectures and problem-based learning.

### Pharmaceutical Technology II (PHS 321)

3 Credit hours (2 Lecture + 2 Practical)

This course builds on what has been taught in PHS 311 covering the different types and preparation of pharmaceutical dosage forms encountered in pharmaceutical industry. Solid and semi-solid dosage forms will be covered. This course relates the basic scientific background to pharmaceutical practice regarding the dosage forms preparation and quality control through classes and practical experiments. Completion of Pharmaceutical Technology I course PHS 311 is a pre-requisite for this course.





### Pharmaceutical chemistry II (PHS 322)

2 Credit hours (2 Lecture)

This course contains various topics in pharmaceutical chemistry and sought to acquire the students more pharmaceutical science. The importance of this course in the field of drug: chemistry, development, synthesis, uses and Mechanism of action.

It includes cardiovascular drug, Hypoglycemic agents,  $\beta$ -lactam antibiotics, tetracyclines, macrolides, sulfonamides, quinolones, antiprotozoal, antifungal, antiviral and anticancer, that embraces study of chemical structure, metabolism, method of synthesis, and the structure activity relationship. The pre-requisite of this course is pharmaceutical chemistry-1.

### Phytochemistry II (PHS 323)

3 Credit hours (2 Lecture + 2 Practical)

This course provide an information about the physical, chemical properties, uses, side effect and abuse of volatile oil and alkaloids and the suitable methods for characterization, biosynthesis, and isolation by different methods. In addition to study the principle of chromatography and different chromatographic methods like TLC, column, paper, gas chromatography and HPLC. The course requires to study of different official medicinal parts as pre-request for phytochemistry II. Different methods of teaching/learning are used in this course including lectures and seminar.

### Pharmaceutical Microbiology (PHF 324)

3 Credit hours (2 Lecture + 2 Practical)

This course is designed to help the student Understand the diseases caused by microbes and how to be the body defenses and treatment and to explain the different types of hypersensitivity.

Although this is primarily a lecture-based course, interaction and participation by each student is highly encouraged.

### Pathophysiology I (PHF 325)

2 Credit hours (2 Lecture)

This course serves to prepare students for consequent therapeutics courses through introducing the pharmacy students to mechanisms of diseases in several human body systems. It will help them to understand the underlying pathogenesis and how they can stop it through proper intervention.

### Nutrition (PHF 326)

2 Credit hours (2 Lecture)

This is a comprehensive course developed for health care professionals to enable them to understand the relationship between nutrition and human body. Understanding of human nutrition provides an integrated overview of the physiological requirements and functions of, proteins, carbohydrates, fats, and the major vitamins and minerals that are determinants of health and disease. The course also help the student to integrate both the clinical & basic scientific knowledge of pharmacy practice with nutrition issues that will be faced in the clinical setting, through providing information about the interaction of food nutrition and drugs. To study this course student should have the core courses or prerequisites courses such as Biochemistry, 1,11 & Human Physiology, 1,11. Methods used for teaching this course are lectures, group discussion and assignment.



**Professional Skills IV (PHS 327)**

**1 Credit hours (1 Lecture)**

This course present an overview of communication skills in pharmacy practice that will enhance the pharmacist's ability to develop professional relationships with their patients, co-workers and other healthcare providers to optimize health care. This course emphasizes specific tools and techniques for improving listening skills, delivering effective messages and bridging different communication styles. Through interactive lectures, tutorial and simulations students work in small or large groups to apply communication tools and strategies required in patient interview, assessment, education and counseling related to patient self-care.#



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## Fourth Year Courses

مقررات السنة الرابعة

## Pharmacology III (PHS 410)

3Credit hours (2 Lecture +2 Practical)

The aim of this course is to provide students with the important guidelines in treatment of blood and endocrine disorders to prepare them for the future pharmacy practice. The basic fundamentals of pharmacology should be studied prior this course. Different methods of teaching/learning are used in this course including lectures, problem-based learning and practical scission.

## Therapeutics -cardiovascular diseases (PHS 411)

2Credit hours (2 Lecture )

The course deals essentially with cardiovascular related disorders, particularly in the medication treatment approaches. The topics that will be covered through this course are cardiovascular related disorders. The concepts of normal & abnormal body functions as well as different drug groups should be studied before this course. This course is primarily taught through series of instructor-student interactive lectures and interactive class discussions.

## Pharmaceutical chemistry III (PHS 412)

3Credit hours (2 Lecture +2 Practical)

This course provides students advance pharmaceutical science. The importance of this course in the field of drug: chemistry, design, synthesis, uses, and SAR .

It includes CNS stimulant drugs, CNS depressant drugs, NSAID drugs, vitamins, Steroids, Opioid analgesics, drug design that involves study of chemical structure, metabolism, method of synthesis, uses, and the structure activity relationship. The pre-requisite of this course is pharmaceutical chemistry-I and II.

## Pathophysiology II (PHF 413)

2 Credit hours (2 Lecture)

This course serves to prepare students for consequent therapeutics courses through introducing the pharmacy students to mechanisms of diseases in several human body systems. It will help them to understand the underlying pathogenesis and how they can stop it through proper intervention.

## Integrated Case-Based Learning I (PHD 414)

1 Credit hours (2 Tutorial)

This course involves simulated case studies and other activities aimed at integrating scientific and clinical concepts from across all courses in a problem-based learning environment. This course will emphasize on the comprehensive delivery of pharmaceutical care to patient with cardiovascular related disorders. Studying therapeutic-cardiovascular disorder is Co-requisite. This course will be taught through PBL and group discussion; students are allowed to spend time for self-directed learning and brainstorming with teachers and classmates.



**Biopharmaceutics (PHS 415)**

**2 Credit hours (2 Lecture)**

The course objective is to cover principles and applications of biopharmaceutics including physico-chemical, physiological, formulation factors affecting drug bioavailability. This course is also planned to cover pathological conditions affecting absorption as well as bioavailability and bioequivalence of drugs. A prior knowledge of the basics of physical pharmacy, pharmaceutical technology, anatomy, physiology and pathology are essential for this course. The lectures will be conducted informally with participation by the student's seminars.

**Public Health (PHF 416)**

**1 Credit hours (1 Lecture)**

This course introduces students to the concepts and issues of public health pharmacy. This includes the opportunities for pharmacists in a broad range of public health activities encompassing vaccination programs, disease prevention, health promotion, chronic disease management, and compliance programs. It will also present an overview of the pharmaceutical country profile, pricing situation, patent, and generic issues and the important of national drug policy to improve the health of the population.

**Pharmacy Practice I (PHF 417)**

**1 Credit hours (1 Lecture)**

This course objective to enhance student knowledge of the many aspects of pharmacy practice. This course is also planned to cover the activities of the pharmacist in pharmaceutical care, processing prescription, monitoring and utilization, responding to symptoms of minor ailments (OTC drug), and the rational drug use. A prior completion of communication skills course should be studied before this course. The lectures will be conducted in formally with participation by the student's seminars.

**Pharmacology IV (PHS 420)**

**2 Credit hours (2 Lecture)**

The aim of this course is to provide students with the important guidelines in treatment of different infectious diseases to prepare them for the future pharmacy practice. The basic fundamentals of pharmacology should be studied prior this course. Different methods of teaching/learning are used in this course including lectures, problem-based learning and practical session.

**Therapeutics - Endocrine and Renal diseases (PHD 421)**

**2 Credit hours (2 Lecture)**

The course deals essentially with the chronic diseases related to endocrine and renal systems and their pharmacotherapeutic approaches and treatment algorithm. The diseases that will be covered are endocrine and renal related disorders. The concepts of normal & abnormal body functions as well as different drug groups are required before this course. This course is taught through series of instructor-student interactive lectures and interactive class discussions.



**Integrated Case- Based Learning II (PHD 422)**

**1 Credit hours (2 Lecture)**

This course involves simulated case studies and other activities aimed at integrating scientific and clinical concepts from across all courses in a problem-based learning environment. This course will emphasize on the comprehensive delivery of pharmaceutical care to patient with endocrine, renal disorders as well as woman's and man's health. Studying cardiovascular diseases is pre-requisite for this course. This course will be taught through PBL and group discussion.

**Pharmacokinetics (PHS 423)**

**2 Credit hours (2 Lecture)**

This course covers the study of the kinetics of drug absorption, distribution, metabolism and elimination of the drug in the body. It includes compartmental models, volume of distribution, mathematical review, and kinetics of pharmacological effect, multiple dosing, renal and hepatic excretions and dosage regimen adjustment.

**Toxicology (PHS 424)**

**2 Credit hours (2 Lecture)**

This course offered pharmacy students an applied toxicology course. During which common toxicological problems are presented to students to direct their knowledge towards the sources, mode of poisoning, clinical picture and treatment of poisoning.

**Clinical Nutrition (PHD 425)**

**2 Credit hours (2 Lecture)**

This course is designed to provide in-depth knowledge of nutrition and the role of the nutrient to promote human's health. This course will focus on the special needs of people throughout the life in health and disease state in addition to specific nutrition therapy in selected diseases. The concepts of nutrition should be studied before this course. This course is taught through series of instructor-student interactive lectures and interactive class discussions.

**Therapeutics- woman's and man's health (PHD 426)**

**2 Credit hours (2 Lecture)**

This course deals essentially with chronic diseases and their therapies, especially optimization of drug therapy. The topics that will be covered are woman's and man's health as well as bone and joint disorders. The concepts of normal and abnormal body functions as well as different drug groups and classifications are required before this course. This course is taught through series of instructor-student interactive lectures and interactive class discussions

**Pharmacy Practice II (PHD 427)**

**2 Credit hours (2 Lecture)**

This course introduces students to hospital pharmacy practice and the pharmacist role in providing pharmacy services. Topics include policies and procedures, drug distribution systems, antimicrobials and injections, ensuring medicine safety and quality and consultant pharmacists and clinical pharmacy. Pharmacy Practice I course should be studied before this course. The lectures will be conducted in formally with participation by the student's seminars.





**Research Methodology (BUST 10)**

**2 Credit hours (2 Lecture)**

هذا المقرر من أهم المقررات الدراسية كونه يمكن الطالب الجامعي من المهارات التي تساعده على انجاز بحث التخرج، وهو يعمل على إكسابه مجموعة من المعلومات والمعارف حول العلم والمعرفة، والبحث العلمي ومناهجه، وينمي الاتجاهات الإيجابية لدى المتعلم تجاه البحث العلمي، ويتحقق ذلك من خلال مجموعة من الأنشطة الفاعلة (طرائق وأساليب تدريس، ووسائل) كطريقة الحوار والمناقشة، والتعلم الذاتي، والبحث، والتطبيقات، مع استخدام الباوربوينت عند العرض، وتقييم الطالب من خلال المشاركة الصفية والتكليفات المصاحبة - الصفية واللاصفية - والاختبار النصفى والنهائى.



## Course syllabus

Department: Clinical Pharmacy and pharmacy practice

القسم: الصيدلة السريرية و الممارسة الصيدلانية

Program: Doctor of Pharmacy

البرنامج: دكتور صيدلة

## Fifth Year Courses

## مقررات السنة الخامسة

## Biostatistics (PHF 511)

2 Credit hour (2 Lecture)

The course focuses to prepare students with essential concepts and application in Biostatistics. Students will be discovered Descriptive Statistics including variable types, central and dispersion measurements and making graphs and tables. Also, he or she will be exposed to Inferential Statistics including normal distribution, selecting suitable statistical tests and interpreting the findings (p-value). S/he will be able to deal with Excel and SPSS to code variables, inter data and do the proper statistical tests and applications. Independent t-test, paired t-test, and Chi-square will give to students as common used parametric tests. Mann-Whitney, Wilcoxon Signed Rank and Fisher exact tests will be given as corresponding non-parametric tests. Students will be requested to install SPSS in their PCs and practical sessions will be run to explain them how to deal with such software.

## Pharmacy Management (PHS 512)

1 Credit hour (1 Lecture)

This course prepares a pharmacy students capable of anticipating and responding to administrative position within the health care system settings and pharmaceutical industries. This course relates the basic scientific management concepts and its functions. This includes the core functions of planning, organizing, staffing, directing, coordinating and controlling—a preliminary idea of concepts, processes and techniques. Along with this it aids the students to develop leadership qualities, communication and interpersonal skills, motivation, supervision, problem solving, decision making and various managerial functions and professional skills. It will also introduce the student to national drug policy and principles of drug management cycle such as principles of selection of drugs, procurement and distribution.

## Pharmacy Law and Ethics (PHS 513)

1 Credit hour (1 Lecture)

This course introduces pharmacy students to ethical concepts, giving them directed practice in applying ethical principles in pharmacy practice and research through provide students with tools and methods for ethical analysis and discussed such topics as conflicts of interest, pharmacist-patient relationship and ethical considerations in professional communications, informed consent and research ethics. Teaching will be conducted in the form of lectures and class discussions.

## Pharmaceutical Biotechnology (PHS 514)

2 Credit hour (2 Lecture)

The basic concepts behind biotechnology and the use in providing many therapeutic solutions for many diseases are discussed throughout the course. The principles and mechanisms involved in development of biotechnology - derived products will be emphasized. This will be achieved through interactive class discussions and open journal club discussions. A prior knowledge of the basics of microbiology and immunology is essential for this course.



### Integrated Case- Based Learning III (PHD 515)

1 Credit hour (2 Tutorial)

This course involves simulated case studies and other activities aimed at integrating scientific and clinical concepts from across all courses in a problem-based learning environment. This course will focus on neuro/psychiatric disorders as well as respiratory and GIT related diseases. Studying integrated case-based learning 2 is pre-requisite. This course will be taught through PBL and group discussion, students are allowed to have more time for self-directed learning and brainstorming with teachers and classmates.

### Pharmacy Practice Training (PHD 517)

2 Credit hour (4 Practical)

Pharmacy Practice Training is an experience and supervised training program for pharmacy students in their fifth year of the program. This credit hour of pharmacy practice course consists of 300 hours of pharmacy experience in a community/hospital pharmacy setting. This course will introduce the students to the fundamentals of pharmacy practice in the community/ hospital pharmacy environment. A prior completion of pharmacy practice I &II course is required to register the course. The students will develop professionalism, judgment, and skills needed to function in this setting. The students will observe and discuss the many roles of the pharmacist in the community/ hospital pharmacy.

### Therapeutics - Respiratory and GIT diseases (PHD 518)

2 Credit hour (2 Lecture)

This course is primarily design to help student to deal with chronic diseases and their therapeutic approaches and treatment algorithm specially, drug optimization. This course will cover respiratory and gastrointestinal related disorders. The concepts of normal & abnormal body functions as well as different drug groups should be studied before this course. This course is taught through series of instructor-student interactive lectures.

### Therapeutics - Neurological and psychiatric diseases (PHD 519)

2 Credit hour (2 Lecture)

This course will focus primarily on common mental and dementia related disorders and their pharmacotherapeutic approaches and treatment algorithm including non-pharmacologic therapies. This course will cover common psychiatric and neurologic disorders. The concepts of normal & abnormal body functions as well as different drug groups are required. This course is taught through series of instructor-student interactive lectures.

### Pharmaceutical Marketing (PHS 520)

2 Credit hour (2 Lecture)

This course provides a comprehensive description of theoretical principles of marketing and promotional with practical issues and challenges facing the pharmaceutical industry. It will bridge knowledge gaps, and help understand the dramatic changes in pharmaceutical marketing techniques ranging from the pharmaceutical representatives detailing to the increasing use of direct-to-customer advertising, the internet, and social media and the impact on prescribing. This course delivered by lectures and through which will be discussed such topics as ethical practice in pharmaceutical marketing and the impact of government regulations on these activities.



**Complementary and Alternative Medicine (PHS 521)**

**1 Credit hour (1 Lecture)**

This introduction to complementary and alternative medicine reviews the wide variety of Complementary and Alternative Medicine "CAM" therapies that are in use, including acupuncture, chiropractic, herbal medicine, homeopathic medicine, energy medicine, behavioral medicine and others. The course requires to study of pharmacognosy as pre-request. Different methods of teaching/learning are used in this course including lectures and seminar.

**Therapeutics- Infectious diseases (PHD 522)**

**2 Credit hour (2 Lecture)**

This course deals essentially with infectious diseases and their therapeutic approaches. This course will provide student with the systematic approach for the evaluation of each patient's clinical presentation and utilization of antibiotic and therapeutic plan. The concepts of normal & abnormal body functions as well as different drug groups should be studied before this course. This course is taught through series of instructor-student interactive lectures.

**Pharmacoepidemiology and Pharmacoeconomics (PHS 523)**

**1 Credit hour (1 Lecture)**

This course introduces students to the basic concepts of pharmacoeconomics and pharmacoepidemiology. It presents the importance of utilizing Pharmacoeconomic and Pharmacoepidemiology results when evaluating drug safety. The students will explore and assess vital topics and trends regarding spontaneous reporting systems, adverse drug reactions, and post marketing surveillance. A prior knowledge of the basics of professional skills 5 is essential for this course .

**Therapeutics - Hematology and oncology diseases (PHD527)**

**2 Credit hour (2 Lecture)**

This course is designed to provide PharmD students with overview of pharmacotherapy and treatment approaches for patient with acute and chronic disorders. The diseases that will be covered through this course are malignancies, hematology and dermatology related disorders. The concepts of normal & abnormal body functions as well as different drug groups are required before this course. This course is taught through series of instructor-student interactive lectures



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## Sixth Year Courses

## مقررات السنة السادسة

**Clinical training: cardiovascular diseases (PHD 611)****4 Credit hour (160 Practical)**

Cardiology rotation includes four weeks of supervised experiential training in the cardiology department at university of science and technology hospital. This rotation is including cardiovascular related disorders encountered in hospital setting. Attending morning round and discussing clinical cases based on daily follow-up, monitoring parameters in addition to pharmaceutical care plan evaluation. Completing obligatory and elective courses as well as practical courses as stated in the curriculum is prerequisite for Cardiology rotation..

**Clinical training: Oncology diseases (PHD 612)****4 Credit hour (160 Practical)**

Oncology rotation is deal with chemotherapy and supportive care drugs utilized for the care of cancer patients. During this rotation student will understand the therapeutic plan and procedure for patient with oncologic/hematologic disorders. This rotation will be taught through attending oncology rotation, discussing clinical cases based on daily follow-up, monitoring parameters in addition to pharmaceutical care plan evaluation. Completing PHD 527 is prerequisite for this rotation.

**Clinical training: Ambulatory care (PHD 613)****4 Credit hour (160 Practical)**

Ambulatory rotation is four experiential training weeks essentially deal with management of chronic diseases in the ambulatory care setting. In this course, student will expose to health-related disorders in cardiology, rheumatology, endocrinology and dermatology. This rotation will be taught through attending ambulatory clinics and discussing clinical cases based on daily follow-up, monitoring parameters and pharmaceutical care plan evaluation. Completing all therapeutics as well as integrated case-based learning courses is prerequisite for ambulatory rotation.

**Clinical training: Intensive care unit (PHD 614)****4 Credit hour (160 Practical)**

This rotation will provide the student the opportunity to develop skills for dealing with critically ill patients, under the supervision of team of multidisciplinary health care experts in an ICU environment. Main areas covered will be fluid electrolyte balance, cardiovascular hemodynamics, therapeutic drug monitoring for critically ill patients, glycemic control, prevention of stress ulcers, DVT, ventilator associated pneumonia, sepsis etc.





**Clinical training: Internal medicine I (PHD 621)**

**4 Credit hour (160 Practical)**

This rotation will integrate the knowledge of therapeutics, and pathophysiology and is designed to allow the student the opportunity to provide pharmaceutical care in the areas of adult internal medicine. This course will stress the application of therapeutics in patient care and will cover infectious diseases, cardiovascular diseases, gastroenterology diseases, and kidney diseases.

**Clinical training: Internal medicine II (PHD 622)**

**4 Credit hour (160 Practical)**

This rotation will integrate the knowledge of therapeutics, and pathophysiology and is designed to allow the student the opportunity to provide pharmaceutical care in the areas of adult internal medicine. This course will stress the application of therapeutics in patient care and will cover rheumatology disorders, endocrinology disorders, neurology diseases, and pulmonary diseases.

**Clinical training: Pediatrics (PHD 623)**

**4 Credit hour (160 Practical)**

Pediatric course gives student opportunity to provide patient –centered care in an ambulatory care setting. During this course student will understand the therapeutic plan for pediatric patient, emphasis will be on common pediatric disease states, weight-based dosing, therapeutic drug monitoring. This rotation will be taught through attending pediatric rotation, discussing clinical cases based on daily follow-up, monitoring parameters in addition to pharmaceutical care plan evaluation. Completing obligatory and elective courses is prerequisite for this rotation.

**Clinical training: Hospital Pharmacy (PHD 624)**

**4 Credit hour (160 Practical)**

This rotation will be an orientation to hospital pharmacy, inpatient and outpatient pharmacies, which will include how a pharmacy interfaces with the total hospital operation, pharmacist roles and models of practice, the standards of practice, technology used in pharmacy, and the distributive functions of the pharmacy. This course will cover inpatient and outpatient pharmacies, inventory, purchase and storage.

**Clinical training :Infectious diseases (PHD 625)**

**4 Credit hour (160 Practical)**

This rotation will expand the knowledge and skills about clinical microbiology, the utilization of antibiotics, pharmacokinetic and adverse effects of antibiotics. The student will learn a systematic approach on the evaluation of each patient so that they will have an understanding of pathophysiology, clinical presentation, diagnosis and treatment of infectious diseases that are covered. Studying therapeutic courses is prerequisite for this rotation. This course is taught through supervised clinical training.

**Pharmaceutical Research Rotation (PHD 626)**

**4 Credit hour (160 Practical)**

This course is a broad coverage of research design, data collection, and data analysis. The course focuses on the spectrum of clinical research and research process by reviewing the literature and highlighting epidemiologic methods, study design, proposal and protocol preparation, principles involved in the ethical, legal, and regulatory issues in clinical human subjects research, including the overview of basic biostatistical and epidemiologic methods involved in conducting clinical research. ##