



MSc in Pharmaceutical Sciences (Thesis Track)



Program Guide



Plan Number 1 \ 12 07 2005 T

I. GENERAL CONDITIONS:

1. This plan conforms to the regulations of the general frame of the programs of graduate studies.
2. Areas of specialty of admission in this program:
 - Holders of the Bachelor's degree in:
 - a. Pharmacy
 - b. Pharm.D.

II. SPECIAL CONDITIONS: None.

III. THE STUDY PLAN: Studying (33) Credit Hours as follows:

1- Obligatory courses: (15) Credit Hours:

Course No.	Course Title	Credit hrs.	Theory	Prac.	Pre-request
1201722	Pharmaceutical Organic Chemistry	3	3	-	-
1201728	Drug Analysis and Identification	3	2	3	-
1202721	Drug Formulation and Drug Delivery (1)	3	3	-	-
1202727	Physical Pharmacy	3	3	-	-
1203701	Biopharmaceutics and Pharmacokinetics	3	3	-	-

2- Elective Courses: Studying (9) Credit hours from the following:

Course No.	Course Title	Credit hrs.	Theory	Prac.	Pre-request
1201707	Natural Products Chemistry	3	2	3	-
1202704	Pharmaceutical Microbiology	3	3	-	-
1201705	Drug Design	3	3	-	-
1201710	Medicinal Chemistry	3	3	-	-
1201723	Phytotherapy	3	3	-	-
1202709	Pharmaceutical Biotechnology	3	3	-	-
1202724	Cosmeticolog	3	3	-	-
1202726	Drug Formulation and Drug Delivery (2)	3	3	-	-
1203707	Clinical Pharmacology and Therapeutics.	3	3	-	-
0301737	Biostatistics	3	3	-	-

3- Thesis: 9 Credit hours (1202799).



Course Description

1201722	Pharmaceutical Organic Chemistry:	(3cr.)
	This course includes the common organic reactions (classical and recent) including their generic names, mechanism, reagents, conditions, the required starting materials and their generated products. Advanced synthetic strategies and retro-synthetic analysis, synthesis of complex natural products with biologically interesting molecules such as antibiotics, anti - hypertensive agents, hormones anticoagulants and antiviral agents.	
1201728	Drug Analysis and Identification:	(3cr.)
	This course includes application of general principles of systematic methods for the identification of organic compounds and drugs (single material or mixture) whether they are solids or liquids; via detailed studies of physical properties; solubility classifications; characterization of functional groups, preparation of appropriate derivatives, and final confirmation by instrumental methods. This course includes a practical application in which student is asked to identify unknown single compound and mixtures by applying accredited systematic methods in the laboratory.	
1202721	Drug Formulation and Drug Delivery (1):	(3cr.)
	This course includes advances in microencapsulation, cyclodextrin complexes, coating, sustained parenterals, oral drug limitations and their solutions, transdermal and microemulsions.	
1202727	Physical Pharmacy:	(3cr.)
	This course includes the physicochemical properties for drugs as molecules and in their preparations, that affect the stability and the bioavailability of drugs, which determine the approach to be taken in the preformulation and further development stages. The course includes surface and interface properties like surface and interfacial tension, electrical properties. The course also includes, among other related topics, surfactant systems, colloidal dispersions and phase equilibria.	
1203701	Biopharmaceutics and Pharmacokinetics:	(3cr.)
	This course includes advanced topics in pharmacokinetics; introduction to mathematical techniques required for the treatment of complex pharmacokinetic modeling. It also include some advanced techniques which provide the basis for in-vitro/ in-vivo correlation of biopharmaceutical data. Additionally, application of pharmacokinetic principles to clinical practice and its relevance to the safe and effective management are included. This course also includes statistical design and analysis of bioavailability and bioequivalence studies.	
1201707	Natural products Chemistry:	(3cr.)
	This course include the principles of natural products chemistry and research methods and their application in pharmaceutical technology. However emphasis on the occurrence of various natural products with biological activity will be discussed:	



	in plants and other natural sources. General methods of isolation and purification by modern methods of chromatography, confirmatory tests and structure elucidation by the aid of instrumental analysis are covered. This course also includes a practical part in which the student will face all the practical aspects deal with the different methods of extraction, purification and structure elucidation of compounds in their pure forms.	
1202704	Pharmaceutical Microbiology:	(3cr.)
	The course includes studies on the microbiological quality assurance where the students will study how to handle pharmaceutical preparation samples and will be familiar with the conventional and rapid microbiological methods used for identification of bacteria and fungi. They will also study how to evaluate different sterilizing processes. During the course, students will be exposed to the effect of the material and design of the container and closures on the activity and stability of pharmaceutical preparation, with special emphasis on microbiological point of view. They will also be familiar with modern biotechnology in production of substances from microorganisms such as antibiotic and insulin. A section on the genetic and biochemical basics of resistance of microorganisms to biocides is included.	
1201705	Drug Design:	(3cr.)
	This course includes illustration of drug design concepts through the exposure into the procedures followed in drug design including search of leads and molecular manipulation. In addition to structure and action of drugs along with the quantitative structure activity relationships. Knowledge accumulation will be substantiated by common examples in drug design led to the discovery of new drugs.	
1201710	Medicinal Chemistry :	(3cr.)
	This course includes detailed studies of the chemistry, biochemistry, pharmacology and metabolism of clinically important natural and synthetic steroidal and non-steroidal hormones and autocooids with also function as peripheral neurohormones. Steroids, chemistry, biochemistry and pharmacology.	
1201723	Phytotherapy:	(3cr.)
	This course insight into dosage forms of application and effect of the most important herbal remedies and fields of applications. It also includes medicinal plants, phytopharmaceuticals and their effects on CNS, Cardiovascular system, Respiratory system, Digestive system and Urinary tract. Quality control of herbal medicines and poisonous plants are included.	
1202709	Pharmaceutical Biotechnology:	(3cr.)
	The course is includes general molecular biology and genetics: construction and application of expression vectors, genetic diversity and disease, oncogenes and cancer. It also enclosed medical dimensions of molecular biology such as vaccine and DNA fingerprint determination, in addition to gene therapy; retrovirus, IVF and cells fusion. This course also includes the use of genetic engineering in drug targeting and plants where genetic transformation and chimaeric gene vectors will be	



	discussed.	
1202724	Cosmeticology:	(3cr.)
	This course includes advanced cosmetic formulations for skin, hair, nail and dental products. New active materials and excipients, efficacy testing of cosmetics. It also includes legislation and safety regulations for cosmetics, stability testing and perfume manufacturing.	
1202726	Drug Formulation and Drug Delivery (2):	(3cr.)
	This course includes drug formation and targeting of active materials to the brain and colon. It also includes drug-polymer conjugates, liposomes, niosomes, polymer micelles and liquid crystals. The use of inhibitory agents to overcome the enzymatic barrier to orally administered therapeutic peptides and proteins are discussed.	
1203707	Clinical Pharmacology:	(3cr.)
	The course includes advanced pharmacology from pharmaceutical point of view with a special emphasis on the treatment of patients. The course also contains topics that discuss drugs which affect major organ systems, autonomic nervous system, the central nervous system and chemotherapy.	



STUDY PLAN					
FIRST YEAR					
FIRST SEMESTER			SECOND SEMESTER		
Course No.	Course Title	Credit hrs.	Course No.	Course Title	Credit hrs.
1201728	Drug Analysis and Identification	3	1201722	Pharmaceutical Organic Chemistry	3
1203701	Biopharmaceutics and Pharmacokinetics	3	-	Elective	3
-	Elective	3	-	Elective	3
TOTAL HOURS		9	TOTAL HOURS		9
SECOND YEAR					
FIRST SEMESTER			SECOND SEMESTER		
Course No.	Course Title	Credit hrs.	Course No.	Course Title	Credit hrs.
1202727	Physical Pharmacy	3	1202799	Thesis	6
1202721	Drug Formulation and Drug Delivery (1)	3			
1202799	Thesis	3			
TOTAL HOURS		9	TOTAL HOURS		6
ELECTIVE COURSES					
Course No.	Course Title	Credit hrs.	Theory	Prac.	Pre-requisite
1201707	Natural Products Chemistry	3	3	-	-
1202704	Pharmaceutical Microbiology	3	3	-	-
1201705	Drug Design	3	3	-	-
1201710	Medicinal Chemistry	3	3	-	-
1201723	Phytotherapy	3	3	-	-
1202709	Pharmaceutical Biotechnology	3	3	-	-
1202724	Cosmeticolog	3	3	-	-
1202726	Drug Formulation and Drug Delivery (2)	3	3		
1203707	Clinical Pharmacology and Therapeutics.	3	3		
0301737	Biostatistics	3	3		