

**Study Plan**  
**Master in Pharmacology**  
**Starting 2009/2010**  
**(Non Thesis Track)**

**A. General Rules and conditions:**

1. This plan conforms to the regulations of the general frame of the programs of graduate studies.
2. Holders of the Bachelor's degree in the following areas could be accepted, according to the following priorities:
  - 1- Medicine and Surgery (Doctor of Medicine)
  - 2- Dentistry (Doctor of Dentistry)
  - 3- Pharmacy
  - 4- Doctor of Pharmacy
  - 5- Bachelor of Veterinary Medicine

**B. Special conditions:**

1. Students with pharmacy and doctor of pharmacy degrees are accepted only if they were not denied admission to the Faculty of Pharmacy Master Programs.
2. Students of veterinary medicine should register for Pharmacology for dental students if the total number of credits they studied during the bachelor degree is less than five credits.

**C: The Study Plan:**

Studying (33) credit Hours are follows:

**1. Obligatory courses: (21) credit hours:**

Course Number	Course title	Credit hours	Theory	Practical
0503701	Pharmacokinetics	3	3	--
0503712	Cardiovascular System Pharmacology	3	3	--
0503713	Methods of Pharmacology Research	3	1	2
0503705	Clinical Pharmacology-1	3	3	--
0503714	Neuropharmacology	3	3	--
0503709	Pharmacogenomics	3	3	--
0301737	Biostatistics	3	3	--

**2. Elective courses: Studying (12) credit hours from the following:**

Course Number	Course Title	Credit hours	Theory	Practical laboratory
0503715	Clinical Pharmacology-2	3	3	--
0503707	Pharmacoepidemiology	3	3	--
0503716	Ethnopharmacology and Drug Discovery	3	2	1
0503710	Antibiotics and Cancer chemotherapy	3	3	--
1203715	Clinical Pharmacokinetics	3	2	1
0503711	Endocrine Pharmacology	3	3	--
0501701	Toxicology	3	3	--
0504718	Pathology	3	2	1

**3. A comprehensive exam (0503798)**

## Study Plan Master in Pharmacology (Thesis Track)

### A. General Rules and Conditions:

1. This plan conforms to the regulations of the general frame of the programs of graduate studies.
2. Holders of the Bachelor's degree in the following areas could be accepted, according to the following priorities:
  - 1- Medicine and Surgery (Doctor of Medicine)
  - 2- Dentistry (Doctor of Dentistry)
  - 3- Pharmacy
  - 4- Doctor of Pharmacy
  - 5- Bachelor of Veterinary Medicine

### B. Special conditions:

1. Students with pharmacy and doctor of pharmacy degrees are accepted only if they were not denied admission to the Faculty of Pharmacy Master Programs.
2. Students accepted must work full time on their project and not be committed to work outside the university.
3. Students of veterinary medicine should register for Pharmacology for dental students if the total number of credits they studied during the bachelor degree is less than five credits.

### C. The study plan:

Studying (33) credit hours as follows:

#### 1. Obligatory courses (18) Credit Hours:

Course Number	Course title	Credit hours	Theory	Practical
0503701	Pharmacokinetics	3	3	-
0503713	Methods of Pharmacology Research	3	1	2
0503705	Clinical Pharmacology-1	3	3	--
0503714	Neuropharmacology	3	3	--
0503709	Pharmacogenomics	3	3	--
0301737	Biostatistics	3	3	--

**2. Elective courses: Studying (6) credit hours from the following:-**

Course Number	Course Title	Credit hours	Theory	Practical laboratory
0503712	Cardiovascular System Pharmacology	3	3	--
0503715	Clinical Pharmacology-2	3	3	--
0503707	Pharmacoepidemiology	3	3	--
0503716	Ethnopharmacology and Drug Discovery	3	2	1
0503710	Antibiotics and Cancer chemotherapy	3	3	--
1203715	Clinical Pharmacokinetics	3	2	1
0503711	Endocrine Pharmacology	3	3	--
0501701	Toxicology	3	3	--
0504718	Pathology	3	2	1

**3. Thesis : 9 credit hours (0503799)**

## **Course Description**

### **0503701 Pharmacokinetics**

The course deals with the action of human body on drugs, with respect to absorption, distribution, metabolism and excretion. Mathematical description of these processes will be offered. The pharmacokinetic parameters like half-life, elimination rate constants, volume of distribution and clearance will be predicted using pK models. Their determination is a pre-request for rational dosing regimens.

### **0503712 Cardiovascular System Pharmacology**

This course deals with drugs used in the treatment of cardiovascular disease, concerning their mode of action, pharmacological actions, pharmacokinetics and adverse effects. Drugs include those used for hypertension, ischemic heart disease, heart failure and cardiac arrhythmias. Diuretics, anticoagulants, thrombolytics and antiplatelet drugs will be included.

### **0503713 Methods in Pharmacology Research**

The course deals with the some research methods used in pharmacology research, some instruments used, biological samples, drug analysis. Development of some animal models of disease. Use of animals such as mice, rats and rabbits in research and how to administer drugs to these animals and recording of research results.

### **0503705 Clinical Pharmacology-1**

The course deals with the use of drugs in humans. It includes a brief description of the pathophysiological processes, diagnosis and treatment of common medical problems. The mechanism of action, pharmacological effects, clinical uses, adverse effects and drug interactions will be discussed. In addition, the course will briefly discuss preclinical and clinical trials and the ethics of conducting such studies.

### **0503715 Clinical Pharmacology-2**

This course deals with the effects of drugs on people. The pathophysiology and treatment of selected common medical problems or illnesses will be discussed in details with great emphasis on major classes of drugs that are effective in the management of such diseases and discussing the pharmacological characteristics and therapeutic uses of such drugs, in an attempt to enhance the safety of prescription by increasing drug efficacy and minimizing drug side effects. Also use of drugs in special populations such as pregnancy, lactation, neonates and geriatric patients will be included.

### **0503714 Neuropharmacology**

This course deals with drugs affecting the peripheral, autonomic and central nervous system and used in the treatment of its diseases. These drugs include sedatives-hypnotics, alcohols, anti-epileptics, anesthetics, skeletal muscle relaxants, drugs for parkinsonism and movement disorders, antipsychotics, antidepressants and opioid analgesics and antagonists and drugs of abuse and treatment. Also the autonomic drugs such as cholinergic agonists and antagonists, sympathomimetics and adrenergic antagonists.

### **0503707 Pharmacoepidemiology**

The course deals with the study of drug effects at the population levels. It is concerned with the variability of drug effects between individuals in a population, and between populations. The purpose of pharmacoepidemiology is supporting rational and cost effective use of drugs in the population to improve health outcomes.

### **0503716 Ethnopharmacology and Drug Discovery**

The course deals with the use of phytomedicine mainly herbal medicine in folk medicine. Several herbal preparations will be discussed regarding their botanical content in the treatment of diseases. Scientific evidence will be criticized. Specific herbs will be described for efficacy, toxicity and use. Also, international and local regulations of their use will be discussed.

**0503709 Pharmacogenomics**

The course deals with intraindividual differences in drug response due to genetic influences. A portion of the course will deal with general description of genes, then the effect of mutations on drug absorption, distribution and metabolism and on receptors will be discussed.

**0503710 Antibiotics and Cancer chemotherapy**

This course deals with antibiotics and drugs used in treatment of cancer with respect to mechanisms of action, uses and adverse effects.

**1203715 Clinical Pharmacokinetics**

This course will deal with utilization of drug pharmacokinetic parameters in human for the design of individual's dose regimen. Drugs with low therapeutic index, such as antiepileptics, certain antibiotics, theophylline, digoxin and antiarrhythmic drugs and immunosuppressants,... The practical part will be problem solving rather than laboratory.

**0503711 Endocrine Pharmacology**

This course of endocrine pharmacology will deal with the pharmacological properties of different hormones that act as drugs, hormonal-like drugs and drugs that affect the endocrine system or hormonal release. Sources, mechanism of action, pharmacological actions, clinical uses and adverse drug reactions to such drugs will be discussed in details. Emphasis will also be placed on the development of hormonal therapy in treating certain major endocrine disorders.

**0301737 Biostatistics**

The course deals with organization and summarization of data, statistical distribution (Binomial Poisson, Normal, Chi Square, T.F), sampling methods and sampling distributions, statistical inference (Estimation and hypothesis testing) about one and two population, analysis of variance, chi square test (homogeneity, independence, goodness of fit), non-parametric tests, simple and multiple linear regression, correlation coefficient, application on biomedical and environmental data.

**0501701 Toxicology**

The course covers the principles of toxicology, such as definitions, area, & scope of toxicology, toxicokinetics, toxicant interaction. mechanisms of toxicity, factors affecting toxicity, organ toxins and principles of management of acute poisoning. Also it covers introduction to types of toxicity response and applications of different braches of toxicology such as clinical, forensic, environmental, descriptive and regulatory toxicology.

**0504718 Pathology**

The course deals with abnormal changes that affect body cells, tissues, organs and the general effect of such changes on the body. It also covers means of diagnosing, obtaining, processing and staining of samples.