



# Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104111</b>
<b>Course Title</b>	<b>Organic Chemistry</b>
<b>Credit Hours</b>	<b>(3)</b>
<b>Theoretical Hours</b>	<b>(2)</b>
<b>Practical Hours</b>	<b>(3)</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



### Brief Course Description:

- ❖ This course aimed to understand the most important functional group in organic compounds, their nomenclature, chemical reactions involved, identification, and the differences between their properties and how they react with each other, practice part aimed to know some techniques in organic chemistry like ( separation , purification, organic synthesis and chromatography )

### Course Objectives:

Upon the completion of the course, the student will be able to:

1. distinguish carbon compounds from elemental compounds
2. classify organic compounds according to the functional groups
3. distinguish saturated organic compounds from unsaturated compounds
4. familiar with the methods of preparations of some important organic compounds and also their chemical reactions
5. familiar with different methods for identifications of organic compounds
6. Familiar of the industrial importance of some organic compounds.
7. Student must be able to separate , purify, and synthesis organic compound.



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## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	<b>Aliphatic Hydrocarbons</b>	<ul style="list-style-type: none"> <li>▪ Introduction of organic chemistry, particularity of carbon atom and its position in the periodic table, classification of organic compound.</li> <li>▪ Saturated Hydrocarbons, IUPAC Nomenclature of Alkanes, Origin, Physical properties, Alkyl groups, Halogenation, combustion reaction, Cyclic Alkanes</li> <li>▪ Unsaturated hydrocarbons, Double and triple bonds, Alkenes, Alkynes, Nomenclature, Sources, Addition reactions (H<sub>2</sub>O, H<sub>2</sub>, X<sub>2</sub>, HX) (markovinkov's rule), chemical test for saturation, Summary on petrol.</li> </ul>	
2.	<b>Aromatic Hydrocarbons</b>	<ul style="list-style-type: none"> <li>▪ Benzene structure, Aromatic properties, Nomenclature of Benzene derivatives, Reactions of Benzene (Electrophilic aromatic substitution). Activating and deactivating groups, directing groups.</li> <li>▪</li> </ul>	
3.	<b>Alkyl &amp; Aryl Halides</b>	<ul style="list-style-type: none"> <li>▪ Nomenclature, physical properties, chemical reactions: substitution reactions with (aqueous KOH, NH<sub>3</sub>, AgNO<sub>3</sub>, NaCN), elimination (Zitzeff rule) wartz &amp; ulman reactions, grignard reagent,</li> </ul>	

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		briefing on insecticides (structure of DDT)	
4.	<b>Alcohols, phenols &amp; ethers</b>	<ul style="list-style-type: none"> <li>▪ Nomenclature, classification, physical properties, preparation of absolute ethanol.</li> <li>▪ Reactions of alcohols : with metals( Na), with <math>PX_5, SOCl_2</math>, substitution by HX, <math>HNO_3</math>, <math>H_2SO_4</math>, elimination, ester formation, oxidation reduction, chemical tests ( lucas, dichromate, victormayer)</li> <li>▪ Preparing (diethyl ether, epoxide) ethers as solvents.</li> <li>▪ Aromatic substitution in phenols, acidity of phenols, importance), Differences between alcohols and phenols.</li> </ul>	
5.	<b>Aldehydes and Ketones</b>	<ul style="list-style-type: none"> <li>▪ Nomenclature, physical properties.</li> <li>▪ reactions: - Nucleophilic addition ( <math>H_2O</math>, <math>HCN, NH_3</math>, <math>RNH_2</math>, hydrazine, grignard reagent ) – oxidation reduction reactions</li> <li>▪ Methods of identification and how to differentiate between them( tollen's test)</li> </ul>	
6.	<b>Carboxylic Acids and their derivatives</b>	<ul style="list-style-type: none"> <li>▪ Nomenclature, physical properties (acidity), acid base reactions to form salts.</li> <li>▪ Esters: Nomenclature, Fischer esterification, saponification, ammonolysis, reduction of esters.</li> </ul>	

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		<ul style="list-style-type: none"> <li>▪ halogens of acids:- preparation ( reaction of SOX2, PCI5 with the carboxylic acid) – reactions: with ( H2O, ROH, NH3)</li> <li>▪ Acid anhydrides: - origin, reactions with (H2O, ROH, NH3), Aspirin synthesis.</li> <li>▪ Amides: Nomenclature, basicity, reactions (with H2O, reduction).</li> </ul>	
7.	<b>Amines</b>	<ul style="list-style-type: none"> <li>▪ Nomenclature, physical properties ( basicity), classification, preparation ( alkylation of NH3, reduction of nitrills, amides &amp; nitro compounds)</li> <li>▪ Reactions: - with strong acids, acylation and sulfonation of aromatic amines.</li> <li>▪ Hinesburg test for distinguishing amines,</li> <li>▪ Reactions of amines with nitrous acid to form diazonium and coloring pigments ( Azo dyes)</li> </ul>	





## Organic Chemistry: ( Practical part )

Unit Number	Unit Name	Unit Content	Time Needed
1.	Separation of mixture of water / Acetone by	<ul style="list-style-type: none"> <li>▪ Simple distillation</li> <li>▪ Fractional distillation</li> </ul>	
2.	Purification of iodine or Naphthalene by sublimation		
3.	Extraction of caffeine from tea leaves		
4.	Separation of methyl orange from methylene blue by column chromatography Separation of Amino acids by thin layer chromatography and paper chromatography		
5.	a. Synthesis of Aspirin from salicylic acid b. Determination of the acid in aspirin by titration . c. Determination of Aspirin & paracetamol concentration using spectrophotometer		
6.	Determination of the melting point of the following organic compounds: salicylic acid, benzoic acid , urea, acetanilide, sodium benzoate		
7.	Determination of Vit. (C ) by iodometric titration method		



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### Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	15%	--/--/----
	Second Exam	15%	--/--/----
	Practical part	20%	--/--/----
	Final Exam	50%	--/--/----

### Teaching language:

- ❖ English

### Teaching Methodology:

- ❖ Lectures

### Text Books & References:

1. H. Hart Organic chemistry 12<sup>th</sup> Ed Boston Houghton Mifflin company, 2007
2. T. W. Graham , Solomon's Organic chemistry 4<sup>th</sup> , 3d New York John Willey, 1988
3. Morrison and Boyd Organic chemistry Boston, London, Sydney, Toronto Allyn and Bacon, INC.
4. H. Hart laboratory manual Organic chemistry, A short course Boston Houghton Mifflin company, 2007



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## Paramedical Program

<b>Specialization</b>	<b>Common</b>
<b>Course Number</b>	<b>21104121</b>
<b>Course Title</b>	<b>Microbiology</b>
<b>Credit Hours</b>	<b>(3)</b>
<b>Theoretical Hours</b>	<b>(2)</b>
<b>Practical Hours</b>	<b>(3)</b>



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**Brief Course Description:**

- ❖ This course deals with the most important characteristics of microorganisms and the most important diseases that they cause, methods of infection, prophylaxis , concepts of immunity, vaccination, bacterial resistance to antibiotics, basics of disinfection and sterilization with clarification of mechanisms of action of antibiotics, most important uses of them in addition to prophylactic treatment of some diseases.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. To realize classifications of microorganisms, characteristics and factors affecting their growth and multiplication.
2. To realize methods of disinfections and sterilization and the most important disinfectants and how to use them
3. To understand the classification and mechanisms of actions of most important antibiotics in addition o their side effects, consequences of their abuse, and concept of bacterial resistance.
4. To understand basics of immunity and vaccination
5. To realize most important types of pathogenic bacteria, viruses, parasites.



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## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	<b>Introduction to microbiology</b>	<ul style="list-style-type: none"> <li>▪ Introduction and taxonomy</li> <li>▪ Classification of microorganisms, characteristics of bacteria, viruses, fungi and parasites.</li> <li>▪ Structure of microbe cell and its metabolism.</li> </ul>	
2.	<b>Bacteria</b>	<ul style="list-style-type: none"> <li>▪ Morphology and features of bacteria</li> <li>▪ Physical and chemical factors affecting growth and killing of bacteria</li> </ul>	
3.	<b>Sterilization and Disinfection</b>	<ul style="list-style-type: none"> <li>▪ Sterilization and sterilization equipments that utilize heat, radiation, filtration.</li> <li>▪ Pasteurization and its types</li> <li>▪ Disinfectants and antiseptic</li> </ul>	
4.	<b>Bacterial infection</b>	<ul style="list-style-type: none"> <li>▪ Definition of bacteria</li> <li>▪ ( pathogenic and non pathogenic )</li> <li>▪ Relation between bacteria and infected person, bacterial virulence</li> <li>▪ Bacterial secretions ( toxic and enzymatic )</li> <li>▪ Distribution of non pathogenic bacteria in human body and its importance in (GIT , respiratory system, skin ... etc</li> </ul>	
5.	<b>Immunity and vaccination</b>	<ul style="list-style-type: none"> <li>▪ Body resistance to infection ( external and internal resistance )</li> <li>▪ Antigens and antibodies, complements</li> <li>▪ Natural and acquired immunity, sensitivity</li> </ul>	

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		<ul style="list-style-type: none"> <li>▪ Immunization against infectious diseases.</li> <li>▪ Serum diagnosis to infectious bacterial infections typhoid, brucellosis, ...</li> </ul>	
6.	<b>Pathogenic bacteria</b>	<ul style="list-style-type: none"> <li>▪ Briefing on most important pathogenic bacterial genus that infected human being</li> <li>▪ Routes of infection, diagnosis, prophylaxis</li> <li>▪ Collecting samples in disease condition</li> <li>▪ Bacterial tests of water, Food</li> </ul>	
7.	<b>Pathogenic viruses</b>	<ul style="list-style-type: none"> <li>▪ General characteristics of viruses</li> <li>▪ Classification of viruses</li> <li>▪ Structure and chemical composition of viruses</li> <li>▪ Multiplication of viruses</li> <li>▪ Effects of physical and chemical factors on viruses</li> <li>▪ Briefing on the most important viruses that infected man, routes of infection , diagnosis, prophylaxis</li> <li>▪ Serum diagnosis of virus diseases.</li> </ul>	
8.	<b>Pathogenic parasites</b>	<ul style="list-style-type: none"> <li>▪ Life cycle of most important parasite that infected man.</li> <li>▪ Transmission of parasite.</li> <li>▪ Briefing of the most important helminths, protozoa.</li> </ul>	
9.	<b>Mycology</b>	<ul style="list-style-type: none"> <li>▪ Most important fungi that infected man.</li> </ul>	

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### Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

### Teaching language:

❖ English

### Teaching Methodology:

1. Lectures
2. PowerPoint presentation
3. Discussion

### Text Books & References:

#### References:

1. E-Jawetz, J.T – Meluick, E-A-Adelberg – Review of Medical Microbiology, 16<sup>th</sup> edition – 1984
2. Microbiology for the Allied Health Professions Adrian N.C and Delaat , 3<sup>rd</sup> edition on lea 2 Febiger 1984 , U.S.A
3. Essentials of Microbiology, Raul, J. Camo and Jaima S. Colome west publishing company 1988 U.S.A.
4. A short text book of Medical Microbiology D.C Turk, L.A Porter, B. I Duerden and T.M.s Reid, 5<sup>th</sup> edition Hodder and Stoughton 1984 England.
5. Basic Microbiology, bolk and Wheeler, 4<sup>th</sup> edition J.B Lippincott company, 1980 U.S.A
6. review of medical microbiology and immunology, warren levinson, Mc Graw Hill, 9<sup>th</sup> edition,2004.



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# Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104131
<b>Course Title</b>	Pathophysiology
<b>Credit Hours</b>	(3)
<b>Theoretical Hours</b>	(3)
<b>Practical Hours</b>	(0)



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### Brief Course Description:

- ❖ This course focuses on the Physiologic changes that occur due to internal and external environmental stresses, pathological processes and the response that produce signs and symptoms. Underlying concepts and principles common to health deviations in all major physiological systems are presented. The content is based on common health problems, including the special health needs of children and the elderly The student will explore a variety of concepts of path physiology, which will be utilized in clinical decision making and action related to nursing courses.

### Course Objectives:

Upon the completion of the course, the student will be able to:

1. Understand the etiology and pathogenesis of disease entities and stressors as they affect humans
2. Understand the impact of heredity, age, physical mobility and life-style on the development of disease in individuals.
3. Understand the major alteration in normal body functions that are produced by disease processes and stressors
4. Explain bodily responses / reactions to internal and external environmental stressors in terms of adaptation
5. Use knowledge of disease processes to provide rationale for clinical nursing interventions.



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**Detailed Course Description:**

Unit Number	Unit Name	Unit Content	Time Needed
1.	<ul style="list-style-type: none"> <li>▪ <b>Alteration in integrated body function</b> <ul style="list-style-type: none"> <li>– State selye's definition of stress</li> <li>– Define the term stressor</li> <li>– Cite the factors that influence the nature of stress response</li> <li>– Compare specific and non-specific stress responses</li> <li>– Explain interactions of the nervous system in mediating the stress response</li> <li>– Describe the stress response of the various body system</li> <li>– Explain the purpose of adaptation</li> <li>– Describe components of a simple control system</li> <li>– Describe the function of a negative feedback system</li> <li>– List factors the influence an individual's adoptive capacity</li> <li>– Cite cannon's for features of homeostasis</li> <li>– Contrast anatomic and physiologic reserve</li> </ul> </li> <li>▪ <b>Alteration in activities tolerance</b> <ul style="list-style-type: none"> <li>– describe the body's physiologic response to exercise and work</li> <li>– differentiate between acute and chronic fatigue</li> <li>– define chronic fatigue syndrome</li> <li>– describe the effect of gravity on the body</li> <li>– describe the effect of immobility and prolonged bed-rest n the body system</li> <li>– discuss changes in fluids and electrolyte balance associated with immobility and prolonged bed-rest</li> <li>– discuss changes in sensory perception that are consequences immobility and prolonged bed-rest</li> </ul> </li> </ul>		
2.	<ul style="list-style-type: none"> <li>▪ <b>Alteration in body defenses</b> <ul style="list-style-type: none"> <li>– Describe the mechanisms of heat production in the body</li> <li>– Define the terms conduction, radiation, convection, and evaporation and relate them to the mechanisms for heat loss from the body</li> <li>– Describe the four stage of fever</li> <li>– Explain what is meant by intermittent, sustained and relapsing fevers</li> <li>– State the relation ship between body temperature and heart</li> </ul> </li> </ul>		

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	<p>rate</p> <ul style="list-style-type: none"><li>– Differentiate between the physiological mechanisms involved in fever and hyperthermia</li><li>– List the possible mechanisms of malignant hypothermia</li><li>– Define hypothermia</li><li>– Explain the reason that children can sometimes survive asphyxia and submersion hypothermia</li><li>– Compare the manifestations of mild moderate, and severe hypothermia and relate changes in physiologic functioning that occur with decreased body temperature</li></ul> <p>▪ <b>Alteration in skin function and integrity</b></p> <ul style="list-style-type: none"><li>– describe a variety of skin rashes and lesions</li><li>– cite two theories used to explain the physiology of pruritus</li><li>– differentiate between strawberry hemangioma and a port wine stain hemangioma in terms of appearance and outcome</li><li>– state three contributing factors in acne vulgaris</li><li>– describe the lesions of pruritus</li></ul> <p>▪ <b>Acquired immunodeficiency syndrome</b></p> <ul style="list-style-type: none"><li>– briefly trace the history of the AIDS epidemic</li><li>– state the virus responsible for AIDS and explain how it differs from other viruses</li><li>– describe the mechanisms of HIV transmission and relate them to the need for public awareness and concern regarding the spread of AIDS.</li><li>– Describe the alterations in immune function that occur in persons with AIDS</li><li>– Explain the possible significance of a positive antibody test for HIV infection</li><li>– Describe the universal precautions for HIV infection</li><li>– List the four stages of AIDS and describe the symptoms of each stage</li></ul> <p>▪ <b>disorders of white blood cells and lymphoid tissue</b></p> <ul style="list-style-type: none"><li>– Define leucopenia, neutropenia, granulocytopenia and a plastic anemia</li></ul>	
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	<ul style="list-style-type: none"> <li>- Cite two general causes of neutropenia</li> <li>- Describe the mechanisms of symptom production in neutropenia</li> <li>- Use the predominant cell type and classification as acute or chronic to describe the four general types of leukemia</li> <li>- Explain the manifestation of leukemia in terms of altered cell differentiation</li> <li>- State the warning signs of acute Leukemia</li> <li>- Describe the signs and symptoms of Hodgkin's disease, non Hodgkin's lymphoma</li> <li>- Describe the Lymphoproliferative disorders that occur with Multiple myeloma</li> <li>▪ <b>disorders of homeostasis</b> <ul style="list-style-type: none"> <li>- state two causes of impaired platelet function</li> <li>- state the five stages of homeostasis</li> <li>- state the causes and effects of increased platelet function</li> <li>- describe the manifestations of thrombocytopenia</li> <li>- state three common defects of coagulation factors and the causes of each</li> </ul> </li> </ul>	
3.	<ul style="list-style-type: none"> <li>▪ <b>The red blood cell and alteration in oxygenation transport</b> <ul style="list-style-type: none"> <li>- describe the manifestations of anemia and their mechanisms</li> <li>- compare polycythemia vera and secondary polycythemia</li> </ul> </li> <li>▪ <b>Alterations in blood flow</b> <ul style="list-style-type: none"> <li>- list five mechanisms of blood vessels obstruction</li> <li>- describe vessel changes that occur with atherosclerosis</li> <li>- list risk factors in atherosclerosis</li> <li>- cite two current theories used to explain the pathogenesis of atherosclerosis</li> <li>- state the sign and symptoms of chronic peripheral of acute arterial occlusion</li> <li>- distinguish among berry aneurysms, aortic aneurysms and dissecting aneurysms</li> <li>- differentiate between the mechanisms of ischemia in</li> </ul> </li> </ul>	



	<p>Raynaud's syndrome and thromboangitis obliterans</p> <ul style="list-style-type: none"> <li>– state the signs and symptoms of Peripheral vascular disease</li> <li>– state the signs and symptoms of venous insufficiency</li> <li>– describe the pathology involved in venous thrombosis</li> <li>– cite two causes pressure sores</li> <li>– explain why pressure sores develop bony prominences.</li> </ul> <ul style="list-style-type: none"> <li>▪ <b>alterations in blood pressure</b></li> <li>▪ <b>Alterations in cardiac function, heart failure and circulatory shock</b></li> <li>▪ <b>Alterations in respiratory function</b></li> <li>▪ <b>Alterations of ventilation, impaired gas exchange and respiratory failure</b></li> </ul>	
4.	<p><b>Alterations in fluids and electrolytes</b></p>	<ul style="list-style-type: none"> <li>▪ Compare the pathology and manifestations of diabetes insipidus and the syndrome of inappropriate ADH</li> <li>▪ Describe the causes of fluids volume deficit</li> <li>▪ Describe the effects of fluids volume deficit on the body system</li> <li>▪ Cite the causes of hyponatremia and hypernatremia</li> <li>▪ Cite the causes of hypokalemia and hyperkalemia</li> </ul>
5.	<p><b>Alterations in genitourinary function</b></p>	<ul style="list-style-type: none"> <li>▪ Alterations in urine elimination</li> <li>▪ Alterations in structure and function of male genitourinary system</li> <li>▪ Alterations in structure and function of female reproductive system</li> <li>▪ Sexually transmitted diseases</li> </ul>



**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures, handouts , Audiovisuals aids

**Text Books & References:**

**References:**

1. Porth, C. (1994) . Pathophysiology : Concepts of altered health states 4<sup>th</sup> edition. Philadelphia: JB Lippincott.



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## Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104141
<b>Course Title</b>	Pharmacology 1
<b>Credit Hours</b>	(3)
<b>Theoretical Hours</b>	(3)
<b>Practical Hours</b>	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Brief Course Description:**

- ❖ Drugs (specifications, effects, mechanisms of action side effects) role in treatment and diagnosis of drugs. Drugs effecting Autonomic Nervous system, cardiovascular system ( Hypotensive agents, anti Angina pectoris, Anti Arrhythmias, Anticoagulants, haemostatic agents, hypolipidimics, heart failure drugs .

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. Drugs ( indications, mechanisms of action, side effects, toxicity )
2. Dosage and its relation with drugs effects and toxicity
3. Mechanisms of action of different drugs
4. Drugs affecting Autonomic Nervous system
5. Drugs affecting cardiovascular system



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**Detailed Course Description:**

Unit Number	Unit Content	Time Needed
1.	<ul style="list-style-type: none"> <li>▪ Definitions ( Drugs, Nomenclature of drugs, toxicity, drug combination, drug incompatibility, drug abuse</li> <li>▪ Habituations, addictions )</li> <li>▪ Drugs in pregnancy</li> <li>▪ Drugs in lactation</li> </ul>	
2.	<ul style="list-style-type: none"> <li>▪ Effective dose</li> <li>▪ Toxic dose</li> <li>▪ Therapeutic index</li> <li>▪ Normal distribution</li> <li>▪ Factors affecting dose</li> </ul>	
3.	<ul style="list-style-type: none"> <li>▪ Pharmacokinetics ( absorption, distribution, metabolism, excretion)</li> </ul> <p>Pharmacodynamics (receptor, Agonist, Antagonist)</p>	
4.	<ul style="list-style-type: none"> <li>▪ Drugs affecting Autonomic Nervous system</li> <li>▪ Introduction on Autonomic Nervous system ( its parts, distribution, nerves , neurotransmitters , )</li> <li>▪ sympathetic Nervous system ( receptors &amp; their distribution)</li> <li>▪ Sympathomimetic drugs (effects, medical indications toxicity )</li> </ul> <p>(epinephrine, norepinephrine, isoproterenol, dopamine, dobutamine, phenylphrine, ephedrine, xylometazoline, oxymetazoline, amphetamines: (methamphetamine, methylphenidate,)</p> <p>Sympatholytic drugs: (phentolamine, tolazoline, ergotamine, ergometrine, phenoxybenzamine, prazosin, terazosin, doxazosin_</p> <p>BB: propranolol, metoprolol, atenolol, nadolol, timolol, labetalol, carvedilol</p> <ul style="list-style-type: none"> <li>▪ Para sympathetic system ( its receptors ) drugs acting as parasympathomimetics ( action, medical indication, toxicity )</li> <li>▪ (acetylcholine, carbachol, bethanechol-</li> </ul>	

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	<p>muscarine,nicotine,pilocarpine,lobeline-neostigmine,physostigmine,edrophonium-ecothiophate,parathion,malathion)</p> <ul style="list-style-type: none"><li>▪ Parasympatholytics</li><li>▪ (atropine,dicyclomine,oxybutynin,scopolamine,homatropine,ipratopium</li><li>▪ gangelion blocking agents.</li></ul>	
5.	<ul style="list-style-type: none"><li>▪ Drugs affecting cardiovascular systems</li><li>▪ Drugs used in treatment of :<ul style="list-style-type: none"><li>▪ Hypertension and( Diuretias )</li><li>▪ Arrythmia</li><li>▪ Heart Failure</li><li>▪ Angina pectoris</li><li>▪ Cardic glycosides.</li><li>▪ Anti Coagulants.</li><li>▪ Hemostatic agents</li></ul></li></ul>	





**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures

**- References:**

- 1- Jordan National Drug Formula , version 1 / 2006 / [www.jfda.jo.rdu](http://www.jfda.jo.rdu)
- 2- Goodman and Gilman , The pharmacological bases of therapeutics , Graw—Hell comp.,1996.
- 3- K.D. Tripathi , Essentials of Medical pharmacology , Jaypee brothers ,1999.
- 4- Kourash Saeb- Parsy and others , Instant pharmacology , Wiley 1999.
- 5- Jamil Rayyan , Fundamentals of pharmacology , Dar – Almanahj, 2001.  
USP DI Drug Information for care professional microdex , 2001
- 6- Mary J. Mycek, Richard a. Harvey, Pamela C. Champe, Pharmacology, 2d edition, 2005 , William and Wilkings , Lippincott.
- 7- Martindale, The complete drug references, 2005, The Pharmaceutical Press



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# Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104241</b>
<b>Course Title</b>	<b>Pharmacology 2</b>
<b>Credit Hours</b>	<b>(3)</b>
<b>Theoretical Hours</b>	<b>(3)</b>
<b>Practical Hours</b>	<b>(0)</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Brief Course Description:**

- ❖ To study drugs (mechanism of action, therapeutics pharmacological effects, precaution, side effect, toxicity) of central nervous system, respiratory system, gastrointestinal drugs, histamines and antihistamines , dermatology drugs and nutrients (vitamins and minerals).

**Course objective:**

**Upon the completion of the course, the student will be able to:**

1. To study different mechanism of drugs action
2. To study drugs affect CNS
3. Drugs affecting respiratory system.
4. Drugs affecting gastrointestinal trac.
5. Identify histamines and antihistamines.
6. To study dermatology drugs and Nutrients (vitamins, proteins...)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Detailed Course Description:

Unit No.	Unit Name	Unite Content	Time Needed
1	<b>Drugs affect the central nervous system:</b>	<ul style="list-style-type: none"> <li>- Neurotransmitter of the central nervous system</li> <li>- Local and General anesthesia</li> <li>- Skeletal Muscle Relaxant</li> <li>- Sedative and hypnotics</li> <li>- Alcohols</li> <li>- Narcotic Analgesic</li> <li>- Non- Narcotic Analgesic</li> <li>- Anti- depressant drugs</li> <li>- Anti psychotic and Anxiolytic</li> <li>- Anti Parkinson</li> <li>- Anti Epilepsy</li> <li>- CNS – stimulant</li> </ul>	
2	<b>Histamine and Antihistamine</b>	<ul style="list-style-type: none"> <li>▪ Histamine receptors ,distribution, biosynthesis, degradation.</li> <li>▪ Anti histaminic               <ul style="list-style-type: none"> <li>- H<sub>1</sub> blockers (diphenhyldramine, dimenhydrinate,promethazine, terfenadrine,chlorpheniramine, cyclazine,astimazole,loratidine.)</li> <li>- H<sub>2</sub> blockers ( cimitidine, rantidine, nizatidine,famotidine)</li> <li>- Drug inhibits histamine release ( cromylon sodium)</li> </ul> </li> </ul>	
3	<b>Drugs affect the Gastro intestinal tract</b>	<ul style="list-style-type: none"> <li>- Anti acid, antiflatulants</li> <li>- Drugs used in Ulcer(antacid, mucosal protective agents, H<sub>2</sub> blockers, antimicrobial agents, prostaglandins, proton pump inhibitors, antimuscarinic drugs )</li> <li>- Antispasmodic agents</li> <li>- Laxatives and purgative</li> <li>- anti diarrhea</li> <li>- anti-vomiting</li> </ul>	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



4	<b>Drugs affect the Nutrition</b>	- Anemia drugs( Iron, folic acid, B12) minerals- vitamins– IV Nutrition	
5	<b>Drugs affect the Respiratory system</b>	- Anti tussive -Expectorant - Asthma drugs	
6	<b>Drugs affect the skin</b>	- dermatological formulations - acne, aczema, psoriasis,sunscreens	

**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures

**- References:**

- 1- Jordan National Drug Formula , version 1 / 2006 / [www.jfda.jo.rdu](http://www.jfda.jo.rdu)
- 2-Goodman and Gilman , The pharmacological bases of therapeutics , Graw—Hell comp.,1996.
- 3K.D. Tripathi , Essentials of Medical pharmacology , Jaypee brothers ,1999.
- 1- Kourash Saeb- Parsy and others , Instant pharmacology , Wiley 1999.
- 2- Jamil Rayyan , Fundamentals of pharmacology , Dar – Almanajej, 2001.
- 3- USP DI Drug Information for care professional microdex , 2001.
- 4- Mary J. Mycek,Richard a. Harvey, Pamela C. Champe, Pharmacology, 2d edition, 2005 , William and Wilkings, Lippincott
- 8 - Martindale, The complete drug references, 2005, The Pharmaceutical Press
- 9- ميسون الفاخوري ، علم الأدوية السريري ، دار المناهج / 2003

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104242</b>
<b>Course Title</b>	<b>Pharmacology 3</b>
<b>Credit Hours</b>	<b>(3)</b>
<b>Theoretical Hours</b>	<b>(3)</b>
<b>Practical Hours</b>	<b>(0)</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Brief Course Description:**

- ❖ Study of chemotherapy ,Antibiotics, Anti T. B , Anti cancer Anti amoebic , Anti malarial , Anti thelmintics , endocrine system, and reproductive system.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

- 1- Identify mechanism of action, effects, medical indications, side effects, toxicity of drugs
- 2- 2-Identify chemotherapy ( Antibiotics, Antibacterial, anti tuberculosis, Anthelmentics, Anti amoebic, anti malarial , antiviral ... )
- 3- Understand the classification mechanisms, uses, doses, side effects of different antibiotics and antibacterial.
- 4- Understand the concept of bacterial resistance and how it develops.
- 5- Identify chemotherapeutic agents used in treatment of cancers.
- 6- To study Hormones and drugs of endocrine system
- 7- To study drugs of reproductive system



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Anti Microbioal drugs	<ul style="list-style-type: none"> <li>▪ Introduction</li> <li>▪ Mechanisms of action</li> <li>▪ Rules of using these drugs</li> <li>▪ Bacterial Resistance.</li> <li>▪ Bases of classification of these drugs</li> <li>▪ Fluroqainolones. Ciprofloxacin, Ofloxacin, Norfloxacin</li> <li>▪ Sulfonamides</li> <li>▪ Penicilins</li> <li>▪ Cephalosporines</li> <li>▪ Aminoglycosides(Amikacin,streptomycin ,kanamycin,Neomycin,Tobramycin ,Gentamicine )</li> <li>▪ Tetracyclines</li> <li>▪ Chloromphenicol</li> <li>▪ Clindamycin, Lincomycin</li> <li>▪ Macrolides(Erythromycin,Azithromycine , Roxithromycin, Clarithromycin )</li> <li>▪ Vancomycin, Fusidic acid, Bacitracin, Spiramycin, Ticoplanin, Cycloserine.</li> </ul>	
2.		<ul style="list-style-type: none"> <li>▪ Drugs used in the treatment of tuberculosis</li> <li>▪ Drugs used in the treatment of Urinary tract infection</li> <li>▪ Antiseptics and disinfectants.</li> <li>▪ Anti Amaebics</li> <li>▪ Anthelmentics</li> <li>▪ Antimalarials drugs</li> <li>▪ Antifungal drugs.</li> </ul>	
3.	Antiviral drugs	<ul style="list-style-type: none"> <li>▪ Acyclovir, Valacyclovir, Fanciclovir</li> <li>▪ Penciclovir</li> <li>▪ Trifluridine</li> <li>▪ Amantadine and Rimantadine</li> </ul>	

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		<ul style="list-style-type: none"><li>▪ zidovudin</li><li>▪ Interferones.</li></ul>	
4.	<b>Anticancer and Immunosuppressive agents</b>	<ul style="list-style-type: none"><li>▪ Definition of cancer</li><li>▪ Alkylating agents</li><li>▪ Antimetabolites</li><li>▪ Plant Alkaloids</li><li>▪ Antibiotics</li><li>▪ Estrogen &amp; Androgen Inhibitors</li><li>▪ Miscellaneous Taxol, Mitotane</li></ul>	
5.	<b>Hormones</b>	<ul style="list-style-type: none"><li>▪ Pituitary gland hormones</li><li>▪ Thyroid gland hormones</li><li>▪ Parathoroid gland hormones</li><li>▪ Suprarenal gland hormones</li><li>▪ Pancreas hormones ( glucagon, insulin )</li><li>▪ Diabetes Millitus</li><li>▪ Oral Hypoglycemic drugs :<ul style="list-style-type: none"><li>▪ Bignanides</li><li>▪ Sulfonyl ureas</li><li>▪ Thiazolidinediones.</li></ul></li><li>▪ Sex hormones</li><li>▪ Oral contraceptives</li><li>▪ Drugs induced fertilization</li><li>▪ Miscellaneous</li><li>▪ Drugs used in the treatment of impotence</li><li>▪ Slidenafil</li></ul>	





### Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

### Teaching language:

- ❖ English

### Teaching Methodology:

- ❖ Lectures

### - References:

- 1- Jordan National Drug Formula , version 1 / 2006 / [www.jfda.jo.rdu](http://www.jfda.jo.rdu)
- 2-Goodman and Gilman , The pharmacological bases of therapeutics , Graw—Hell comp.,1996.
- 3-K.D. Tripathi , Essentials of Medical pharmacology , Jaypee brothers ,1999.
- 4- Kourash Saeb- Parsy and others , Instant pharmacology , Wiley 1999.
- 5-Jamil Rayyan , Fundamentals of pharmacology , Dar – Almanajej, 2001.
- 6-USP DI Drug Information for care professional microdex , 2001.
- 7-Mary J. Mycek, Richard a. Harvey, Pamela C. Champe, Pharmacology, 2d edition, 2005 , William and Wilkings, Lippincott
- 8- Martindale, The complete drug references, 2005, The Pharmaceutical Press
- 9- ميسون الفاخوري ، علم الأدوية السريري ، 2003، دار المناهج

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104151
<b>Course Title</b>	Pharmaceutics 1
<b>Credit Hours</b>	(3)
<b>Theoretical Hours</b>	(3)
<b>Practical Hours</b>	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



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**Brief Course Description:**

- ❖ Introduction to pharmaceutics and its definitions, Drug prescription and its contents, calculations, pharmaceutical measurements, weighing and measuring volumes; studying the three phases of matters (solid, liquid, gas ), properties & specification of each phase , biological and dynamical pharmacy.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. Identify pharmacy, scopes of pharmaceutical practice, pharmacist and assistant pharmacist duties.
2. Identify pharmaceutical ethics .
3. Identify pharmacopoeias and how to use.
4. Identify parts and components of drug prescription, types and criteria of dispensing.
5. Identify different pharmaceuticals calculations and performed them correctly.
6. Identify the three state of matter & the properties for each.
7. Identify methods of Administration of drugs.
8. Identify drugs pharmacokinetics and bio pharmaceutics.



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❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	<b>Introduction to pharmaceuticals</b>	<ul style="list-style-type: none"> <li>▪ Definition of Pharmacy, pharmacist, pharmaceuticals, Medication, controlled Substances, pharmaceutical dosage forms, pharmaceutical preparations.</li> <li>▪ Pharmacist role in health care</li> <li>▪ Pharmacist technician role in health care</li> <li>▪ Types of pharmacy practice setting (community pharmacy ( non institutional), drug stores, institutional pharmacy such as hospital pharmacies, drug manufacturing, medical representation, academic field governmental institution)</li> </ul>	
2.	<b>Pharmaceutical ethics and behavioural aspects of pharmacy</b>	<ul style="list-style-type: none"> <li>▪ Pharmacist – Pharmacist relation</li> <li>▪ Pharmacist – Patient relation</li> <li>▪ Pharmacist – Community relation</li> <li>▪ Pharmacist – Physician relation</li> <li>▪ Logos of Medical profession</li> <li>▪ Social and behavioural aspects of pharmacy</li> <li>▪ General pharmaceutical ethics</li> </ul>	
3.	<b>Important pharmaceutical publications ( Official books )</b>	<ul style="list-style-type: none"> <li>▪ Pharmacopeias(Arabic,National)contents and how to use.</li> <li>▪ British pharmacopoeia (B. P.)</li> <li>▪ Extra pharmacopoeia (Martindale)</li> <li>▪ State pharmacopoeia (U.S.A)</li> <li>▪ European pharmacopoeia ( E.P.)</li> <li>▪ The international pharmacopoeia</li> <li>▪ British National Formulary ( B.N.F.)</li> <li>▪ British Pharmaceutical Codex (B.P.C.)</li> <li>▪ Egyptian pharmacopoeia</li> </ul>	

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4.	<b>Dispensing and Prescription.</b>	<ul style="list-style-type: none"> <li>▪ Definition of prescription.</li> <li>▪ Types of prescriptions and criteria to dispense it.</li> <li>▪ The parts of prescription</li> <li>▪ Abbreviations.</li> <li>▪ Measures taken to deal with any mistake in any prescription</li> </ul>	
5.	<b>Pharmaceutical calculations:</b>	<ul style="list-style-type: none"> <li>▪ Pharmaceutical measurement systems: metric, avoirdupois, and apothecary systems Metric</li> <li>▪ ratio and proportion, dosage determinations, percentage preparations, reducing and enlarging formulas, dilution and concentration.</li> <li>▪ dilution from stock solution</li> <li>▪ dilution from two solution without using diluents( solvents )</li> <li>▪ Mole fraction , Molarity ,And Normality</li> <li>▪ Molar ratio between weak acid and it's salt</li> <li>▪ Molar ratio between weak base and it's salt.</li> </ul>	





6.	State of matters, and phases properties.	<ul style="list-style-type: none"> <li>▪ <b>Gaseous State :</b> <ul style="list-style-type: none"> <li>- Kinetic molecular theory</li> <li>- Real gases ,ideal gases</li> <li>- factors affecting solubility of gases in liquid (temperature &amp;pressure )</li> </ul> </li> <li>▪ <b>Liquid state :</b> <ul style="list-style-type: none"> <li>- Forces of attraction</li> <li>- Surface tension phenomena &amp;it's application</li> <li>- Types of surfactant</li> <li>- Effect of PH on ionization of weekly acidic or basic drugs &amp;their salts</li> <li>- preparation of buffer solution</li> <li>- Solubility definition</li> <li>- expression related to degree of solubility</li> <li>- factors affecting solubility</li> </ul> </li> <li>▪ <b>Solid State :</b> <ul style="list-style-type: none"> <li>- Type of solid forms (crystalline ,amorphous )</li> <li>- effect of polymorphism on stability of drugs</li> <li>- factors affecting dissolution of solid substances</li> </ul> </li> </ul>	
7.	Biopharmaceutics & pharmacokinetics	<ul style="list-style-type: none"> <li>▪ Definitions.</li> <li>▪ Routes of drug administration.</li> <li>▪ Pharmaceuticals dosage forms.</li> <li>▪ Pharmacokinetics (Drug fate in the body) <ul style="list-style-type: none"> <li>– Absorption (Henderson-Hasselbach equations)</li> <li>– Distribution</li> <li>– Metabolism</li> <li>– Excretion</li> </ul> </li> <li>▪ Bioavailability, Bioequivalence, pharmaceutical equivalence.</li> </ul>	

**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures

**Text Books & References:****References:**

1. Martin's Physical pharmacy and pharmaceutical sciences, Patric J .Siko, fifth edition, 2006, Lippincott ( Williams & Wilkens)
2. Pharmaceutical practice , A.J. Winfield, R.M.E. Richards, 3d. edition, 2005, Churchill Livingstone
3. Physical pharmacy, Alfred Martin, Bustamante, 4<sup>th</sup> edition,1993, Lippincott William & Wilkins
4. Remington ,The science and practice of pharmacy 21<sup>st</sup> edition,2004, Lippincott William & Wilkens
5. British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
6. Pharmacy technician certification quick study , Susan Moss, William A. Jr. Hopkins, Suasn . K. Moss,1999, American pharmacists association.
7. The pharmacy technician work book & certification , Perspective press ,2<sup>nd</sup> edition 2004, Morton publishing company.
8. The Science of dosage form design, Edin burgh, 2002, New Yourk, Churchill Livingston
9. Cooper and Gunn's dispensing for pharmaceutical students, S. J Carter, ed. 12, 1980

8- الصيدلة اخلاق وتشريعات ، مالك السعدي ، 1993 ، مطابع الدستور التجارية

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104251
<b>Course Title</b>	Pharmaceutics 2
<b>Credit Hours</b>	(3)
<b>Theoretical Hours</b>	(3)
<b>Practical Hours</b>	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008





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**Brief Course Description:**

- ❖ The course study different physical pharmaceutical procedures. The course deals with Pharmaceutical (liquid, semisolid, gas )dosage forms including their properties &deterioration features.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. Identify the pharmaceutical procedures
2. Identify all (semisolid, gas, liquid ) Pharmaceutical dosage forms & their uses &examples of each.
3. Knowing the advantages &disadvantages of each kind.
4. Identify the deterioration features of each kind.



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❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Physical pharmaceutical procedures	<ul style="list-style-type: none"> <li>▪ Physical procedures: size reducing, separation, Mixing, and homogenisation</li> <li>▪ Pharmaceutical procedures that need heat, cold like (crystallization, lyophilization, drying, melting, evaporation, boiling, viscosity).</li> </ul>	
2.	Pharmaceutical procedures which need solvents	<ul style="list-style-type: none"> <li>▪ Dissolving : Methods of dissolving, and types of solvent</li> <li>▪ Distillation</li> <li>▪ Extraction</li> <li>▪ Maceration</li> <li>▪ Decoction</li> <li>▪ Percolation</li> <li>▪ Digestions</li> </ul>	
3.	Liquid Pharmaceutical dosage form	<ul style="list-style-type: none"> <li>▪ Water: <ul style="list-style-type: none"> <li>- Pharmaceutical waters the Q.C. test done for purified &amp; parenteral water</li> </ul> </li> <li>▪ Aromatic Water <ul style="list-style-type: none"> <li>-method of preparations</li> <li>-examples</li> </ul> </li> <li>▪ Solutions: <ul style="list-style-type: none"> <li>- general principles in preparation of solutions</li> <li>- examples</li> </ul> </li> <li>▪ Enema</li> <li>▪ Douches</li> <li>▪ Gargles</li> <li>▪ Syrup</li> </ul>	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



		<p>-Physical &amp; chemical changes during storage &amp; use</p> <ul style="list-style-type: none"> <li>▪ Spirits                     <ul style="list-style-type: none"> <li>- Method of preparation</li> </ul> </li> <li>▪ Tinctures                     <ul style="list-style-type: none"> <li>-classifications</li> <li>-preparation</li> </ul> </li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Extracts                     <ul style="list-style-type: none"> <li>- Type (liquid, solid, semisolid )</li> <li>a. Elixir</li> <li>b. Parental Preparation                             <ul style="list-style-type: none"> <li>-How to sterile after the preparation</li> <li>-additives used in parental preparation &amp;examples for each</li> <li>-the Q.C. tests applied at parental preparation</li> </ul> </li> <li>-the desirable properties of a good parental preparation</li> <li>c. Ophthalmic Drops                             <ul style="list-style-type: none"> <li>-the desirable properties of good ophthalmic drop</li> </ul> </li> <li>d. Ear ,Nose Drops</li> <li>e. Suspension                             <ul style="list-style-type: none"> <li>-the properties of a good suspension</li> <li>-the role of suspending agent</li> <li>-stability of suspension</li> </ul> </li> </ul> </li> <li>▪ Lotions                     <ul style="list-style-type: none"> <li>-main component of lotion</li> </ul> </li> <li>▪ Emulsions                     <ul style="list-style-type: none"> <li>-types of emulsion (o/w, w/o )</li> <li>-methods of preparation</li> <li>-role of emulsifying agent types</li> <li>-form of instability of emulsions</li> <li>-factors affecting stability of emulsion</li> <li>-methods for identifying emulsion type</li> </ul> </li> </ul>	



4.	<b>Semisolid Pharmaceutical dosage forms</b>	<ul style="list-style-type: none"> <li>▪ Ointment           <ul style="list-style-type: none"> <li>– Kind of bases and Properties for each</li> <li>– Methods of preparations of ointment.</li> <li>– The Q. C test</li> </ul> </li> <li>▪ Ophthalmic ointment</li> <li>▪ Creams           <ul style="list-style-type: none"> <li>– Cold cream, Vanishing cream</li> </ul> </li> <li>▪ Pastes</li> <li>▪ Liniments</li> <li>▪ Suppositories           <ul style="list-style-type: none"> <li>– Kind of bases and their properties (butter, PEG, witepsol base, glycerogelatine )</li> <li>– Methods of Preparation</li> </ul> </li> </ul>	
5.	<b>Gaseous Pharmaceutical Dosage Form</b>	<ul style="list-style-type: none"> <li>▪ Aerosol           <ul style="list-style-type: none"> <li>-types of aerosol</li> <li>-type of propellant</li> </ul> </li> </ul>	

**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures.

**Text Books &**

**References:**

- 1- Martin's Physical pharmacy and pharmaceutical sciences, Patric J .Siko, fifth edition, 2006, Lippincott ( Williams & Wilkens)
- 2- Pharmaceutical practice , A.J. Winfield, R.M.E. Richards, 3d. edition, 2005, Churchill Livingstone
- 3- Physical pharmacy, Alfred Martin, Bustamante, 4<sup>th</sup> edition,1993, Lippincott William & Wilkins
- 4- Remington ,The science and practice of pharmacy 21<sup>st</sup> edition,2004, Lippincott William & Wilkens
- 5- British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
- 6- The Science of dosage form design, Edin burgh, 2002, New Yourk, Churchill Livingston
- 7- Cooper and Gunn's dispensing for pharmaceutical students, S. J Carter, ed. 12, 1980
- 8- Gilbert & Christopher Rhodes , Modern Pharmaceutics, third edition ,1995, Publisher Marcel Dekker, Madison Avenue , New York





## Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104252
<b>Course Title</b>	Pharmaceutics 3
<b>Credit Hours</b>	(3)
<b>Theoretical Hours</b>	(3)
<b>Practical Hours</b>	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Brief Course Description:**

- ❖ To study solid pharmaceutical dosage forms , drug, stability, analysis ,packging ,and labeling. Also the course deal with drug incompatibilities. Bases of good manufacturing practice.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. To realize solid pharmaceutical dosage forms in addition to their features of deterioration
2. Good storage practice, and drug analysis.
3. To acquaint students with drug incompatibilities – different kinds of incompatibilities ( Physical, Chemical, Therapeutic)
4. Identify basis of good manufacturing practice.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1-	<b>Solid-Pharmaceutical dosage form</b>	<ul style="list-style-type: none"> <li>▪ Powders               <ul style="list-style-type: none"> <li>-problems arising in preparation or mixing of powders ( Eutectic mixtures oxidation-reduction absorption of moisture )</li> </ul> </li> <li>Effervescent Powders               <ul style="list-style-type: none"> <li>-main composition of this dosage form</li> <li>-test evaluation</li> </ul> </li> <li>▪ Capsules               <ul style="list-style-type: none"> <li>-types (hard, soft, enteric, spansules )</li> <li>-the Q. C. test</li> </ul> </li> <li>▪ Tablets               <ul style="list-style-type: none"> <li>-methods of preparation</li> <li>-importance &amp; types of granulation</li> <li>-excipients (role &amp;examples )</li> <li>-Types of tablets (sublingual, chewable, compound, pellets, lozenges, pastilles, effervescent sustained &amp; controlled release tablet )</li> <li>-coating of tablets (enteric, sugar, film )</li> <li>-tablet problems (sticking ,mottling lamination, capping, chipping ,hardness, weigh variation )</li> <li>-the Q.c. test of tablets.</li> </ul> </li> </ul>	
2-	<b>Drug stability, and analysis</b>	<ul style="list-style-type: none"> <li>▪ Drug stability:               <ul style="list-style-type: none"> <li>-Environmental factors affecting</li> </ul> </li> </ul>	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008





		<p>degradation (temp. humidity ,light )</p> <ul style="list-style-type: none"> <li>- Other factors (solvent, PH, additives )</li> <li>-chemical degradative routes of drugs (oxidation , racemization ,dehydration isomerization</li> <li>- The use of antioxidants &amp;preservatives &amp;examples of each                             <ul style="list-style-type: none"> <li>- Aging</li> <li>- Absorption</li> <li>- Vaporization</li> </ul> </li> <li>-Accelerated stability study</li> <li>- Prediction of shelf –life from accelerated stability study</li> <li>▪ Drug analysis:                             <ol style="list-style-type: none"> <li>1- Physical tests</li> <li>2- Chemical tests:                                     <ul style="list-style-type: none"> <li>- Acid-base titration</li> <li>- Titration by precipitation.</li> <li>- Complex titration</li> <li>- Oxidation-reduction titration.</li> </ul> </li> <li>3- Instrumental Analysis (brief fleeting look)</li> </ol> </li> </ul>	
3-	<b>packaging and labelling</b>	<ul style="list-style-type: none"> <li>▪ Packaging:                             <ul style="list-style-type: none"> <li>-definition &amp;function</li> <li>-importance of packaging</li> <li>-factors determining type of packaging</li> <li>-unit dose containers , multi dose containers</li> <li>-types of closures (roll on closures, lug cap, crown caps ) .</li> <li>-types of containers for each</li> </ul> </li> </ul>	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



		<p>Pharmaceutical dosage form</p> <p>-tamper resistance packaging</p> <ul style="list-style-type: none"> <li>▪ Lablling:             <ul style="list-style-type: none"> <li>types of labels &amp; auxiliary labels</li> </ul> </li> </ul> <p>-information to be written at labels</p> <ul style="list-style-type: none"> <li>▪ GMP in labeling &amp; packaging</li> </ul>	
4-	<b>Drug incompatibilities</b>	<ul style="list-style-type: none"> <li>▪ Physical incompatibility             <ul style="list-style-type: none"> <li>- Immiscibility</li> <li>- insolubility</li> <li>- liquefaction</li> </ul> </li> <li>▪ Chemical incompatibility             <ul style="list-style-type: none"> <li>- Oxidation</li> <li>- Hydrolysis</li> <li>- Polymerization</li> <li>- Isomerization</li> </ul> </li> <li>▪ Therapeutic incompatibility             <ul style="list-style-type: none"> <li>- Change in extent and rate of gastric and enteric absorption</li> <li>- Replacement of drugs with plasma protein</li> <li>- Induction of liver enzyme</li> <li>- Change in rate and extent of drug elimination</li> </ul> </li> </ul>	
5 -	<b>Good manufacturing practice and good quality control</b>	<ul style="list-style-type: none"> <li>▪ Definitions</li> <li>▪ Importance of good manufacturing practice and in process control</li> <li>▪ Bases of good manufacturing practice</li> </ul>	



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures , visits for a pharmaceutical industry fields

**Text Books & References:**

**References: References:**

1. Pharmaceutical practice , A.J. Winfield, R.M.E. Richards, 3d. edition, 2005, Churchill Livingstone
2. Physical pharmacy, Alfred Martin, Bustamante, 4<sup>th</sup> edition,1993, Lippincott William & Wilkins
3. Remington ,The science and practice of pharmacy 21<sup>st</sup> edition,2004, Lippincott William & Wilkins
4. British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
5. Cooper and Gunn's dispensing for pharmaceutical students, S. J Carter, ed. 12, 1980
6. Gilbert & Christopher Rhodes Modern Pharmaceutics, third edition ,1995 , Publisher Marcel Dekker , Madison Avenue, New York



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



# Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104152</b>
<b>Course Title</b>	<b>Pharmaceutics 1/ practical</b>
<b>Credit Hours</b>	<b>(1)</b>
<b>Theoretical Hours</b>	<b>(0)</b>
<b>Practical Hours</b>	<b>(3)</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Brief Course Description:**

- ❖ It is a practical course includes preparation of liquid dosage forms ( solutions, syrups, spirits, tinctures )

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. use and handle tools and lab instruments
2. use drug pharmacopoeias
3. prepare a different liquid dosage forms
4. identify these dosage forms ( properties, methods of preparation )
5. Know the components of prescriptions.
6. use additives in a right way
7. understand the aim of adding each of substance to the preparation
8. calculate the amount of the prescription components
9. Know the indications and uses of each preparation
10. understand principles and labeling of preparations and choosing the label of suitable color.





## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time needed
1.	Identification of tools , instruments available in the lab		
2.	Training on using measuring tools for ( weight & volume )		
3.	pharmacopoeias	using pharmacopoeias for getting an information about several drugs	
4.	Preparation of solutions	<ul style="list-style-type: none"> <li>▪ Simple solution ( potassium permanganate solution )</li> <li>▪ Using co-solvents : ( Gentian violet solution )</li> <li>▪ Solutions prepared by complication ( weak iodine , strong iodine solution )</li> </ul>	
5.	Preparation of Intravenous solutions	<ul style="list-style-type: none"> <li>▪ Normal saline solution</li> <li>▪ Glucose water solution</li> </ul>	
6.	Preparation of dilute solutions using stock or concentrated solutions	<ul style="list-style-type: none"> <li>▪ Preparation of dilute hydrogen peroxide solution</li> <li>▪ Preparation of dilute alcohol solution using concentrated alcohol solution</li> </ul>	
		Preparation of alcohol solution by using two alcohol solutions without using water	
7.	Tinctures	Iodine tincture	
8.	Aromatic waters	chloroform water, peppermint wate	
9.	spirits	Peppermint spirit	
10.	syrups	Simple syrup	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Evaluation Strategies:**

Exams		Percentage	Date
Exams	Med. Exam	25%	--/--/----
	Final Exam	50%	--/--/----
	Technique	10%	--/--/----
Homework and Projects		15%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Laboratory

**Text Books & References:**

**References:**

- 1- Remington's Pharmaceutical sciences , 14<sup>th</sup> ,17<sup>th</sup> ,18<sup>th</sup>.edition, Mack publishing company
- 2-Remington ,The science and practice of pharmacy 21<sup>st</sup> edition,2004, Lippincott William & Wilkens
- 3- British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
- 4-- تطبيقات عملية في علم الصيدلانيات ، ميسون الفاخوري ،2002، دار المناهج



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104253</b>
<b>Course Title</b>	<b>Pharmaceutics 2/ practical</b>
<b>Credit Hours</b>	<b>(1)</b>
<b>Theoretical Hours</b>	<b>(0)</b>
<b>Practical Hours</b>	<b>(3)</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008





**Brief Course Description:**

❖ It is a practical course includes preparing emulsions, eye drops, ear drop, lotions, Dusting powders, effervescent powder and granules, lozenges.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. handle measuring tools and instruments
2. Prepare emulsion by using dry method
3. prepare emulsion by using wet method
4. prepare emulsion by using forb's method
5. Calculate the amount of acacia as an emulsifying agent
6. understand the properties, characteristics, and methods of preparation for each dosage form
- 7- Know the uses of each formula
- 1- To understand principles of labeling and the suitable label with suitable color



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Detailed Course Description:**

Unit Number	Experience Name	Time Needed
1.	Preparation of - salicylic acid ear drop - H2O2 ear drops	
2.	Preparation of zinc sulfate eye drops	
3.	preparation of calamine lotion	
4.	Preparation of Castor oil emulsion by wet method	
5.	Preparation of paraffin oil emulsion by dry method	
6.	Preparation of peppermint oil emulsion by bottle method	
7.	Preparation of dusting powder Preparation of effervescent powders ( electrolyte mixture) Preparation granules of ( Acetyl salicylic acid )	
8.	Preparation of gelatin lozenges	



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Evaluation Strategies:**

Exams		Percentage	Date
Exams	Med. Exam	25%	--/--/----
	Final Exam	50%	--/--/----
	Technique	10%	--/--/----
Homework and Projects		15%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

Lab equipped with needed tools and instruments

**Text Books & References:**

**References:**

- 1- Remington's Pharmaceutical sciences , 14<sup>th</sup> ,17<sup>th</sup> ,18<sup>th</sup>.edition, Mack publishing company
- 2- Remington ,The science and practice of pharmacy 21<sup>st</sup> edition,2004, Lippincott William & Wilkens
- 3-British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.

4- تطبيقات عملية في علم الصيدلانيات ، ميسون الفاخوري ، 2002، دار المناهج



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104254
<b>Course Title</b>	Pharmaceutics 3 / practical
<b>Credit Hours</b>	(1)
<b>Theoretical Hours</b>	(0)
<b>Practical Hours</b>	(3)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



### Brief Course Description:

- ❖ It is a practical course includes preparing semi solid dosage forms such as liniments , lotions, ointments , creams, suppositories, shampoo.

### Course Objectives:

*Upon the completion of the course, the student will be able to:*

1. Identify semi-solid pharmaceutical dosage forms ( types, properties, method of preparation )
2. prepare these dosage form in different known method
3. know the purpose of each additive ( content ) of the formula
4. know the uses of the formula
5. know the type of bases used in suppositories, ointments and creams
6. package and label the dosage form in a suitable container and use a suitable label
7. understand the effect of emulsifying agent



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Detailed Course Description:**

Unit Number	Unit Name	Unit Content	Time Needed
1.	Liniments	<ul style="list-style-type: none"><li>Camphor liniment</li></ul>	
2.	Suppositories	<ul style="list-style-type: none"><li>Glycerin suppositories</li></ul>	
3.	Pastes	<ul style="list-style-type: none"><li>zinc oxide paste</li></ul>	
4.	Ointments	<ul style="list-style-type: none"><li>Zinc oxide ointment</li><li>Whitfield ointment</li></ul>	
5.	Creams	<ul style="list-style-type: none"><li>Cream preparation ( cold cream )</li><li>Creams (vanishing cream)</li></ul>	
6.	Cosmetics	<ul style="list-style-type: none"><li>Preparation of liquid cream shampoo</li><li>Preparation of sun block</li></ul>	



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Evaluation Strategies:**

Exams		Percentage	Date
Exams	Med. Exam	25%	--/--/----
	Final Exam	50%	--/--/----
	Technique	10%	--/--/----
Homework and Projects		15%	
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Laboratory

**Text Books & References:**

**References:**

- 1- Remington's Pharmaceutical sciences , 14<sup>th</sup> ,17<sup>th</sup> ,18<sup>th</sup>.edition, Mack publishing company
- 2-Remington ,The science and practice of pharmacy 21<sup>st</sup> edition,2004, Lippincott William & Wilkens
- 3-British Pharmacopoeia 2008, British pharmacopoeia Commission, TSO.
- 4-Wilkinson & Moore Harry`s cosmeticology, Seventh edition,Publisher, George Godwin, Chemical Publishing,1982
- 4- تطبيقات عملية في علم الصيدلانيات ، ميسون الفاخوري ، 2002، دار المناهج.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104161</b>
<b>Course Title</b>	<b>Pharmacognosy</b>
<b>Credit Hours</b>	<b>(2)</b>
<b>Theoretical Hours</b>	<b>(2)</b>
<b>Practical Hours</b>	<b>(0)</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008





**Brief Course Description:**

- ❖ Definition, history, and scope of medicinal plants, studying plants of medicinal importance , histological study of the used parts ,systems of medicinal plants classification ,methods of cultivating and collecting and preparing medicinal plants, Photosynthesis

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. Know medicinal plants and their used parts
2. Know medicinal plants therapeutic uses
3. To Identify the used part such as leaves, flowers, seeds, fruits , barks, subterranean organs , Wood and un organized parts.
4. to get acquainted with Resins and balsams.



**Detailed Course Description:**

Unit No.	Unit name	Unit Content	Time needed
1-	<b>Introduction</b>	Definition, historical briefing on medicinal plants, and its development till now	
2-	<b>Preparation of</b>	Collection, Drying, Garbling, Packaging, Storage, and Preservation.	
3-	<b>Leaves</b>	Identification of leaves and their shapes, examples ( Digitalis, Tea, Coca, Jaborandi, Buchu, Senna, Eucalyptus, Tobacco, Rosemary, Henna, Thyme, Thyme, Khat, Peppermint, Sage, Belladonna, and Bearberry leaves).	
4-	<b>Photosynthesis</b>		
5-	<b>Flowers</b>	Identification of Flowers, examples ( Chamomiles, Clove, Lavender, and Saffron)	
6-	<b>Subterranean organs</b>	Roots, Rhizomes and bulbs, Identification, Difference between them, Examples ( Rhaburb, Licorice, Ginger, Ipeca quanna, Rawolfia, Squill, and Garlic)	
7-	<b>Plant Powders types</b>	(Locopodium) Kamala, Iopulin, and Gowa powders.	
8-	<b>Barks and Woods</b>	Identification, Difference between them, Examples (Cinnamon, Cascara, Wild cherry, Pomegranate, Cinchona, Hamamelis, Sandal, Guaiacum, Quillaia, and Quassia woods).	
9-	<b>Fruits</b>	Identification, Examples (Anise, Fennel, Caraway, Cumin, Coriander, Vanilla, Cardamom, Capsicum, Lemon, and papaver fruits).	
10-	<b>Seeds</b>	Identification, Examples ( Sweet almond, Bitter almond, Soya, Black mustard, White mustard, Calabar beans, Nux vomica, Castor, Cotton, Sesame, Nutmeg, Fenugreek, Cola, Coffee, Linen, and Coco seeds).	
11-	<b>Herbs</b>	Peppermint, Belladonna, Indian hemp, and Indian tobacco.	
12-	<b>Unorganized parts</b>	Dried juice (Aloe) Dried extract (Opium, Agar) Gums ( Acacia , Tragaconth.)	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



		Resins ( Ammoniacum ,Cannabis, Ginger, Myrrh , Galbanum ) Balsams e.g. peru, Tolu,and Benzoin	
13-	Bitter principles	Artemisia, Ammi visnaga, and Ammi majus	

**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures

**Text Books & References:**

1. Prof. Makboul A. Makboul , Afaf M. Abdel- Baky, Pharmacognosy, 1998, Dar Al-Hamed
2. Trease and Evans , Pharmacognosy, 15<sup>th</sup> edition , 2005, Published by Saunders.
3. James E. Robbers, Marilyn K. Speedie, Varro E. Tyler , Pharmacognosy and Pharmacobiotechnology , international edition, 1996 , Williams and Wilkens
4. Michael Heinrich , Joanne Barnes, Simon Gibbons, Elizabeth , Williamson Fundamental of Pharmacognosy and Phytotherapy, , 2003, Churchil levingston
5. Tyler, Pharmacognosy, Ninth edition, 1988, Published by Lea and Febiger.

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



## Paramedical Program

<b>Specialization</b>	Pharmacy
<b>Course Number</b>	21104212
<b>Course Title</b>	Phytochemistry
<b>Credit Hours</b>	(2)
<b>Theoretical Hours</b>	(2)
<b>Practical Hours</b>	(0)



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



**Brief Course Description:**

- ❖ Study medical plants concerning their contents of active ingredients ( sugars glycosides, alkaloids, tannins,, fixed oil, volatile oils waxes. )

**Course Objectives:**

*Upon the completion of the course, the student will be able to:*

1. to identify active ingredients in medical plants
2. to Know the classification of active ingredients according to their chemical structure
3. to identify The medicinal plant used parts
4. to know the medical uses of the plant.



**Detailed Course Description:**

Unit No.	Unit Name	Unit Contents
1-	Carbohydrates	<p>Definition Carbohydrate importance Classification</p> <p>a- monosaccharide ( glucose, fructose, ribose, dextrose)</p> <p>b- oligosaccharide ( sucrose, maltose, lactose, lactulose, xylose)</p> <p>c- polysaccharide( starch, dextrans, glycogen, inulin, liquid glucose)</p> <p>Cellulose types such as</p> <ul style="list-style-type: none"> <li>- purified cotton</li> <li>- powdered cellulose</li> <li>- microcrystalline cellulose</li> <li>- methyl, ethyl cellulose</li> <li>- pyroxylin</li> <li>- cellulose acetate phthalate</li> <li>- oxidized cellulose</li> <li>- Na- carboxy methyl cellulose</li> <li>- Hemicellulose, pectin</li> </ul> <p>mucilages Agar , Na alginate Some compound obtained from carbohydrate metabolism ( citric acid, tartaric acid, ethanol, lactic acid, mannitol, dulcitol, sorbitol) Examples of plant containing carbohydrates: Manna, Marsh mallow root, Chondrus, Plantago seed, Locust been)</p>
2-	Glycosides	<p>its chemical structure its therapeutically importance classification according to their chemical structure</p>

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



		<p>a- phenol glycosides such as found in Bear berry leaves, Salix bark</p> <p>b- anthraquinone glycoside such as found in Frangulin, Senna, Rhubarb, Cascara sagrada, Aloe leaves</p> <p>c- Saponin glycosides Such as found in Quilaia bark, Glycyrrhiza root</p> <p>d- Flvonol glycosides Such as Rutin, Hesperidine, Diosmin, Liquiritin</p> <p>E- lactone glycosides Such as found in Coumarouna odorata Worm seed</p> <p>F- Isothio cyanate glycosides Found in mustard seeds ( black, white)</p> <p>G- Cyanophore glycosides Such as Prunasin, linamarin amygdalin,</p> <p>H- Cardiac glycosides from digitalis leaf, squill leaves, lily leaves</p>
3-	Lipids	<p>Fixed oil Acid value, saponification value, iodine number Types of fatty acids Prostaglandins Olive oil, peanut oil, safflower Oil, sunflower oil, corn oil , Coconut oil Fat related compound Lanolin, waxes( carnauba wax, lac wax, bees wax, bay berry, spermaceti,</p>



4-	Volatile oil	<p>Properties Their presence in plant uses Extraction Classification according to its chemical structure</p> <ul style="list-style-type: none"> <li>a- Hydrocarbon volatile oil , such as limonene, pinene, sabinene, myrcene,</li> <li>b- Alcohol volatile oil such as Borneol, Linalool, Zingiberol</li> <li>c- aldehyde volatile oil such as citronellal, geraniol, cinnamic aldehyde</li> <li>d- ketone aldehyde such as menthone, carvone, fenchone</li> <li>E- phenol volatile oil Eugenol, thymol</li> <li>F- phenol ether volatile oil Such as anethole, safrole</li> <li>G- Oxide volatile oil such as Cineole</li> <li>H- Ester volatile oil Geraniol , borneol</li> </ul> <p>Examples of plants contain volatile oil: Damiana leaves, Peumus buldus, Camomile flowers</p>
5-	Alkaloids	<p>Properties Their presence in plant Alkaloids tests Function</p> <ul style="list-style-type: none"> <li>a- in plant</li> <li>b- pathologically</li> </ul> <p>Classification</p> <ul style="list-style-type: none"> <li>a- Pyridine-piperidine Such as Coniine, lobeline, pelletierine, nicotine, piperine</li> </ul>





		<p>b- Tropane such as cocaine, Hyoscyamine, Hyoscine, Atropine</p> <p>c- Quinoline Quinine, quinidine, cinchonine, cinchonidine</p> <p>d- isoquinoline benzylisoquinoline (papaverine), phenyl ethyl amine (Narceine) phenanthrene ( morphine, codeine, theabine) Diisoquinoline ( protopine)</p> <p>Examples of plant containing isoquinoline alkaloids: Opium, Curare bark</p> <p>E- Indole alkaloids such as Physostigmine, brucine, reserpine, strychnine</p> <p>Plant examples such as : Vinca whole plant, Ergot root</p> <p>F- Imidazole alkaloids Pilocarpine</p> <p>G- Steroidal alkaloids such As from Veratrum Viride root, Solanum Lacinatum</p> <p>H- alkaloidal amines such As Colchicine, Capsicine, Ephedrine from, Ephedra leaves</p> <p>I- Terpenoid Such as from Aconite root</p>
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**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures

**References:**

- 1- Trease and Evans , Pharmacognosy, 15<sup>th</sup> edition , 2005, Published by Saunders.
- 2- James E. Robbers, Marilyn K. Speedie, Varro E. Tyler , Pharmacognosy and Pharmacobiotechnology , international edition, 1996 , Williams and Wilkens
- 3- Michael Heinrich , Joanne Barness, Simon Gibbons, Elizabeth , Williamson  
Fundamental of Pharmacognosy and Phytotherapy, , 2003,Churchil levingston
- 4- Tyler, Pharmacognosy, Ninth edition, 1988, Published by Lea and Febiger.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



<b>Para-Medical Professions Program</b>	
<b>Specialization</b>	<b>Common</b>
<b>Course Number</b>	<b>21113101</b>
<b>Course Title</b>	<b>First Aids</b>
<b>Credit Hours</b>	<b>(3)</b>
<b>Theoretical Hours</b>	<b>(2)</b>
<b>Practical Hours</b>	<b>(3)</b>





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### **Brief Course Description:**

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This course is designed to introduce the student into emergency medical care providing him with the knowledge and skills that make him able to do patient assessment and choose first Aid priorities and the more suitable instruments which allow him to manage Airway Obstruction, shock and bleeding, soft-Tissue injuries (wounds), soft tissue Injuries (Burns) trauma and fractures, medical emergency (Allergies Reaction) and medical emergency (Poisoning) and, environmental emergency, and altered mental status, It also introduces him to the skills needed for doing CPR.

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### **Course Objectives:**

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Upon the completion of the course, the student will be able to:

1. The general rules, ethics and basis of First Aid:
2. How to examine and assess the causality safely and effectively.
3. How to deal with common first Aid Emergency.
4. How to assess many varying emergency situations to determine what patient care is needed and to provide the necessary care.
5. How / CPR is done safely.



**Detailed Course Description:**

Time Needed	Unit name	Unit Content	Time Needed
1.	<b>Introduction</b>	<ul style="list-style-type: none"> <li>▪ Introduction to emergency medical care.</li> <li>▪ Definition of first aid.</li> <li>▪ Equipment and supplies.</li> <li>▪ Medical, legal and ethical.</li> </ul>	2 lect-theory
2.	<b>Patient assessment</b>	<ul style="list-style-type: none"> <li>▪ Primary survey.</li> <li>▪ Secondary survey for patient (trauma).</li> <li>▪ Baseline vital signs.</li> </ul>	1 lect-2hours practical 1
3.	<b>The air way</b>	<ul style="list-style-type: none"> <li>▪ Oxygen sources.</li> <li>▪ Equipment for oxygen delivery.</li> <li>▪ Masks.</li> <li>▪ Airway accessories.</li> <li>▪ Suction</li> </ul>	2 lect
4.	<b>Shock and bleeding</b>	<ul style="list-style-type: none"> <li>▪ Definition.</li> <li>▪ Assessing shock.</li> <li>▪ Causes, classification.</li> <li>▪ Emergency care for shock.</li> <li>▪ Types of bleeding.</li> <li>▪ Emergency care for bleeding.</li> <li>▪ Bleeding from (ears, nose, and mouth) and emergency care.</li> </ul>	
5.	<b>Soft – Tissue Injuries (wounds)</b>	<ul style="list-style-type: none"> <li>▪ Definition.</li> <li>▪ Closed injuries.</li> <li>▪ Open injuries.</li> <li>▪ Emergency for soft-tissue injuries(dressing and bandages</li> </ul>	
6.	<b>Soft tissue injuries</b>	<ul style="list-style-type: none"> <li>▪ Definition. Classification, and</li> </ul>	

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	(burns)	<p>Causes</p> <ul style="list-style-type: none"> <li>▪ Severity of Burns.</li> <li>▪ Emergency medical Care for Burn Patients.</li> </ul>	
7.	<b>Trauma And Fractures</b>	<ul style="list-style-type: none"> <li>▪ Fractures and Dislocation, Causes and Diagnosis.</li> <li>▪ Emergency Care for patients with Fractures.</li> <li>▪ Splinting, Principles of splinting, Equipments.</li> <li>▪ Spinal cord injury Assessment Signs and Symptoms, Emergency Medical Care of the Spine – Injured Patient.</li> </ul>	
8.	<b>Medical Emergency ( poisoning )</b>	<ul style="list-style-type: none"> <li>▪ Assessment of allergies Reactions.</li> <li>▪ Cause, signs and symptoms.</li> <li>▪ Emergency medial care for patients with Allergies Reaction.</li> </ul>	
9.	<b>Medical Emergency (poisoning )</b>	<ul style="list-style-type: none"> <li>▪ History of poisoning.</li> <li>▪ Types and signs and symptoms.</li> <li>▪ Use of activated charcoal.</li> </ul>	
10.	<b>Environmental Emergency</b>	<ul style="list-style-type: none"> <li>▪ Heat stroke, Heat Exhaustion, Heat cramps (Definition, Diagnosis, and Management).</li> <li>▪ Hypothermia (Signs and Symptoms, Emergency care)</li> <li>▪ Drowning.</li> </ul>	
11.	<b>Altered Mental Status</b>	<ul style="list-style-type: none"> <li>▪ Diabetic Emergency.</li> <li>▪ Seizures.</li> <li>▪ Emergency care of patients with Altered Mental status.</li> </ul>	

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12.	<b>Airway Obstruction</b>	<ul style="list-style-type: none"><li>▪ Choking – Heimlich Maneuver (Adults, Children)</li><li>▪ Choking.</li></ul>	
13.	<b>CPR</b>	<ul style="list-style-type: none"><li>▪ CPR (Adults, Children)</li><li>▪ CPR (Infants)</li></ul>	
14.	<b>First Aid priorities</b>	<ul style="list-style-type: none"><li>▪ Case classification &amp; triage</li></ul>	

### Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam 35% Theory & 15% Practical	50%	--/--/----
	Practical Exam	10%	--/--/----

### Teaching Methodology:

Lectures



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## Text Books & References:

### References:

1. First Aid. Taking Action MCGRAWII, NSC, 2007.
2. First Aid. CPR And AED, JONES AND BARTLETT, Thygrson, 2005.
3. First Aid. CPR, And AED Essentials. 41, AMERICAN COLLEGE OF. EMERG. Phy, 2005.
4. Airway Management Paramedic, Jones And Bartlett, Margolis, 2004
5. First Aid Manual, DK PUB, 2002.
6. د. قطاش، رشيدى حمدان وقطاش، أحمد حمدان وحسن، نوال، الاسعافات الاولية – الطبعة الأولى، مؤسسة الوراق للتوزيع والنشر، 2004م
7. د. الصفدي، عصام، الإسعافات الأولية، الأردن – الطبعة الأولى، دار اليازوري العلمية للنشر، 2001م.
8. د. فريحات، حكمت عبد الكريم والحمود، محمد طه ود. أبو الرب، صلاح، أسس الإسعاف الأولي والفوري، 1991.





# Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104271</b>
<b>Course Title</b>	<b>Toxicology</b>
<b>Credit Hours</b>	<b>(2)</b>
<b>Theoretical Hours</b>	<b>(2)</b>
<b>Practical Hours</b>	<b>(0)</b>



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**Brief Course Description:**

❖ A teaching course which deals with poisoning and types of materials which may lead to toxicity either drugs, chemicals, synthetic products, natural poisons, and the suitable antidotes.

**Course Objectives:**

Upon the completion of the course, the student will be able to:

1. be familiar with different kinds of toxicants
2. understand the dangers of poisoning and its symptoms shown in human beings, animals and plants
3. Identify the antidotes used against toxicants and their mode of action
4. Know the general methods that are used for poisoning treatment.



## Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Basics of toxicology	<ul style="list-style-type: none"> <li>▪ Definitions : toxicology, toxicant ( poison ), toxicity, antidote, examples</li> <li>▪ Types of toxicity : acute, chronic, sub acute</li> <li>▪ Methods of measurements of toxicity , acute and chronic</li> <li>▪ Toxicity degree: <ul style="list-style-type: none"> <li>▪ Very toxic substances, toxic substances, moderately toxic substances, slightly toxic substances, practically non-toxic substances</li> </ul> </li> </ul>	
2.	Classification of toxicants according to their effects on human body	<ul style="list-style-type: none"> <li>▪ skin toxicants, central nervous system toxicants, gastro intestinal toxicants, inhalation toxicants (toxicants that affect the respiratory system) blood toxicants, other toxicants (to the glands, hormones, eye) the chronic effect to toxicants (carcinogenic, teratogenic, mutation)</li> </ul>	
3.	Toxins	<ul style="list-style-type: none"> <li>▪ Toxins from plant origin, and examples</li> <li>▪ Toxins from animals origin , (scorpions, snakes, spiders, insects, fishes )</li> <li>▪ Heavy metals ( arsenic,</li> </ul>	

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		<p>mercury, lead, other metals such as iron, copper, fluorine, cobalt )</p> <ul style="list-style-type: none"> <li>▪ Pesticides and their economical importance, rodenticides, insecticides, herbicides.</li> </ul> <p><b>Insecticides :</b></p> <ul style="list-style-type: none"> <li>▪ Organic chlorinated</li> <li>▪ Organic phosphor elated</li> <li>▪ Plant origin insecticides ( pyrethrum, nicotine ) examples about them , symptoms of toxicity and treatment</li> <li>▪ (air transferred ) pollutants, carbon monoxide, symptoms of toxicity and treatment, nitrogen oxide, sulfur dioxide, ozone, solid dust materials</li> <li>▪ atomic radiations, types , illness symptoms and treatment</li> <li>▪ additive materials to food and canned products</li> <li>▪ drugs</li> </ul>	
4.	<b>General methods for treatment of poisoning</b>	<ul style="list-style-type: none"> <li>– Methods of decreasing absorption of toxic compounds</li> <li>– Methods of enhancing elimination of toxic compounds from the body</li> <li>– Washing the toxicants from the stomach ( Gastric lavage ) , kidneys, blood ... to eliminate toxic compounds</li> </ul>	



5.	Antidotes	of – Heavy metals – pesticides – Drugs – Radioactive materials – Snakes and scorpions bites	
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**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	--/--/----
Discussions and lecture Presentations			

**Teaching language:**

- ❖ English

**Teaching Methodology:**

- ❖ Lectures Discussions, quizzes and exams Field visits to hospitals Home works and home assignments

**Text Books & References:**

1. Curtis D. Klaassen, John B. Watkins , Essential of toxicology , 2003, Casarett Dou'lls
2. Hansmarquardt, Siegfried,G.Schafer, Roger O.Mcclellan & Frank Welch, Toxicology, 1999, Elsevier
3. Richard C. Dort, Medical Toxicology, 3ed edition,2003 Lippincott Williuams & Wilkins.
4. Frank, C.LU and Sam Kacew, LU'S Basic Toxicology, 2002, Taylor & Frances

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# Paramedical Program

<b>Specialization</b>	<b>Pharmacy</b>
<b>Course Number</b>	<b>21104200</b>
<b>Course Title</b>	<b>Field Training</b>
<b>Credit Hours</b>	<b>(3)</b>
<b>Theoretical Hours</b>	<b>(0)</b>
<b>Practical Hours</b>	<b>280 training hours</b>



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**Brief Course Description:**

A training course in which the student practice pharmacy profession. The scope of pharmacy practice includes controlling inventory, compounding, dispensing medications, and patient education.

**Course Objectives:**

Upon the completion of the course , the student will be familiar with

1. Pharmaceutical institutions – types, parts ( department ) , duties
2. Receiving , storing, arrangement of drugs
3. Dispensing medical prescription
4. packaging and labeling
5. recording the dispensed prescriptions
6. compounding of pharmaceutical preparations in the laboratory of the institute
7. Deal with the patient , physicians, Salesmen, and work team.
8. Identify the OTC drugs, and Controlled drugs.
9. Identify pharmaceutical ethics and legislations
10. Identify pharmaceutical ethics and legislations



**Detailed Course Description:**

Unit Number	Unit Name	Unit Content	Time Needed
1.	<b>Introducing the student to the pharmaceutical institute that he is training in it, to the followings</b>	<ul style="list-style-type: none"> <li>▪ Nature of the duties (work) that this institute is carrying on and types of these services offered to the public</li> <li>▪ Description of the departments of this institute and responsibilities and duties of each department</li> <li>▪ The official authority that is in contact with this institute and the nature of this relation</li> <li>▪ Licensing conditions ( terms ) for this pharmaceutical institute that the student is training on it.</li> <li>▪ Terms ( conditions ) needed to get declaration to practice pharmacy and assistant pharmacy professions</li> <li>▪ Records ( logbooks ) and scientific references needed to be fulfilled in this institute according to the law of pharmacy practice.</li> </ul>	
2.	<b>Training skills in the following fields</b>	<ul style="list-style-type: none"> <li>▪ How to arrange and store drugs in the appropriate places and how to preserve its cleanliness and the cleanliness of the pharmaceutical institution</li> <li>▪ Training how to practice the profession through keeping secrets of the profession and</li> </ul>	

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		<p>of the institute and secrets of the patients</p> <ul style="list-style-type: none"> <li>▪ Introduction to the obstacle and problems that the profession is facing generally and also privately the institute that he is training on it.</li> <li>▪ Importance of legislation in regulating Profession practice regarding practicing, relations and place of practicing.</li> <li>▪ Law of pharmaceutical practice such as <ul style="list-style-type: none"> <li>- Narcotics</li> <li>▪ Specification and technical conditions of pharmaceutical institutes</li> </ul> </li> </ul>	
3.	<b>Practice ( exercise ) on the followings:</b>	<ul style="list-style-type: none"> <li>▪ Dispensing the medicinal prescription and how to deal with it in all the stages ( steps) starting with its receipt from the patient until it is recorded ( written ) down in the official logbooks</li> <li>▪ Preparation of the compounding prescription in the laboratory of the pharmacy</li> <li>▪ Documenting of the dispensed prescriptions in the logbooks.</li> </ul>	
4.	<b>Identification of drugs</b>	<ul style="list-style-type: none"> <li>▪ Identify the medications <ul style="list-style-type: none"> <li>- Trade name</li> <li>- Scientific name</li> <li>- Uses</li> <li>- Dosage forms</li> </ul> </li> <li>▪ Manufacturer</li> </ul>	

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		<ul style="list-style-type: none"> <li>▪ OTC drugs</li> <li>▪ Controlled drugs</li> <li>▪ Drugs that need an ordinary prescription</li> </ul>	
5-	<b>Training skills on the following fields</b>	<ul style="list-style-type: none"> <li>▪ Follow the pharmacy system in               <ul style="list-style-type: none"> <li>- Determining the needed items</li> <li>- Ordering the needed items</li> <li>- Receiving the orders</li> <li>- storing drugs in the appropriate places                   <ul style="list-style-type: none"> <li>- Reading the prescription and medical orders</li> <li>- Dispensing the medical prescription</li> <li>- Documenting the dispensed prescriptions in the logbooks.</li> </ul> </li> </ul> </li> <li>- Quality control procedures</li> </ul>	
6.	<b>Training on communication skills</b>	<ul style="list-style-type: none"> <li>▪ Dealing with patients</li> <li>▪ Dealing with physicians</li> <li>▪ Dealing with salesmen</li> <li>▪ Dealing with work team</li> <li>▪ Solving problems</li> <li>▪ Dealing with the prescription that contains drugs incompatibility</li> </ul>	

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**Evaluation Strategies:**

Exams		Percentage	Date
Evaluation	Institution evaluation	30%	--/--/----
Discussions and Presentations	Teacher evaluation	40%	--/--/----
Home work and reports		30%	--/--/----
			--/--/----

**Teaching Methodology:**

**Text Books & References:**

- 1- Drugs in Jordan, 2003.
- 2- Jordan national Drug Formulary , 2006 , WWW. [www.jfda.jo.rdu](http://www.jfda.jo.rdu)



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