المملكة العربية السعودية
وزارة التعليم
جَامِعَةُ أمّ القُرىٰ

031

Courses descriptive for MSc in Clinical Toxicology

قسم علم الأدوية والسموم
DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY
FACULTY OF MEDICINE
UMM AL-QURA UNIVERSITY
كلية الطب
UQU MED

المملكة العربية السعودية
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Semester 1
Integrated course (A)

Pharmacology

Total credit hours: 3

الرقم : ..... التاريخ : ..... المشفوعات : .....

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)
(Pharmacology, introduction and advanced principles)		(3/-/3)
Prerequisite		**credit.hrs**
None		3

Objectives

The candidate have to identify and describe kinetics and dynamic with adverse actions

Description

drugs absorption, distribution , metabolism and excretion (ADME) ,drug dosing, bioavailability and bioequivalence, pharmacogenomics, drug receptors and types of drugs (agonists or antagonist) ,the dose –response relationship and its analysis, the adverse drug reactions and interactions, monitoring of plasma/tissue levels.

Contents

1. PHARMACOKINETICS:
1. Mechanisms of drug transport.
2. Equilibrative and concentrative drug transport
3. Mechanisms of absorption, distribution, biotransformation and excretion of drugs.
4. Kinetics of absorption, distribution, biotransformation and excretion of drugs.
5. Pharmacokinetics of single and multiple doses administration and multiple drug combination
6. Pharmacokinetic parameters, Compartmental analysis of drug distribution
7. Bioavailability / bioequivalence studies
8. Instrumentations in pharmacokinetic studies
9. Pharmacogenomics
10. Chemical assay of drugs and drug metabolites

2. PHARMACODYNAMICS:
1. Receptor theory and targets of drug action
1. Agonists and types of antagonism
2. Cellular basis of quantitative pharmacology
3. Principles of structure –activity and dose –response relationships
4. Mechanism by which drugs modulate signal transduction pathways
5. Interactions between drugs and ion channels
6. Modulation of gene expression by drugs
7. Receptor – independent mechanisms of drug action
8. Molecular basis of drug action
9. Dose response and concentration response analysis
10. Disease progression models and clinical trial simulation

11. Physiological and laboratory markers of drug effect

3. ADVERSE DRUG REACTIONS AND INTERACTIONS:

1. Principles of adverse drug reactions and drug interactions.
2. Monitoring of plasma/tissue concentrations of drugs- when are these necessary; limitations.
3. Knowledge of adverse drug reactions and interactions

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor

2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)
(Pharmacology, autonomic Nervous system)		(3/-/3)

Prerequisite
None

Contact hrs.
3

Objectives:

The candidate have to identify and discuss distribution, physiology, and pharmacology of autonomic nervous system by its two divisions (adrenergic and cholinergic).

Description :

Distribution, neurotransmitters, agonist and antagonist, their effects and adverse effects

Contents:

- Anatomical, Physiological and Pharmacological divisions of ANS.
- Neurotransmitter Chemistry of the ANS

Cholinergic system

- Synthesis storage and release. & Factors affecting synthesis and release of acetylcholine .
- Cholinoceptors, Types, Molecular basis for actions.
- Acetylcholine actions and fate.
- Muscarinic agonists. Direct: actions, clinical uses and toxicity.
- Muscarinic antagonists. Indirect: actions, clinical uses and toxicity.

Adrenergic system

- Synthesis, storage, release and termination of action of adrenaline & noradrenaline.
- Basic Pharmacology of Adrenoceptor Agonists
- Types of adrenoceptors, molecular consequences of their activation.
- Classification and main therapeutic uses of sympathomimetics (Catecholamines *vs.* noncatecholamines)
- Adrenoceptor - activating agents: Basic pharmacology of sympathomimetics; noradrenaline, isoprenaline, phenylephrine
- CNS stimulant: amphetamine
- Nasal decongestants and hypertensive agents
- Therapeutic uses of dopamine and dobutamine
- Basic and Clinical Pharmacology of alpha-Adrenoceptor Antagonists
- Basic and Clinical Pharmacology of the beta-Adrenoceptor Antagonists
- Adverse Effects of alpha and beta-Adrenoceptor Antagonists

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor

2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units (lect./lab./total)
100770701 (Pharmacology, CNS psychopharmacology)	integrated course	(3/-/3)

Prerequisite
None

Contact hrs.
3

Objective: The candidate have to identify and discuss sedatives, hypnotics , anticonvulsant, antidepressants, antiparkinsonian drugs.

Description:Central neurotransmitters, antiepileptics, sedatives- hypnotics, anti depressants, antiparkinsonian

Contents:

- pharmacology of antiepileptic drugs in terms of their pharmacodynamics; pharmacokinetics; therapeutic uses, adverse effects; and potential for drug interactions & Drugs of choice in different types of epilepsy
- Classification of sedative hypnotic drugs (benzodiazepines, barbiturates, buspirone, SSRIs, other new drugs) and mechanism of action, therapeutic uses, side effects, contraindication, toxicity and additive potentiality of sedative hypnotic drugs also the antidote for sedative hypnotic drugs hypnotic drugs.
- Classification of antidepressant drugs (TCAs, MAOIs, SSRIs, others) in terms of their Mechanism of action, therapeutic uses, side effects, contraindications, drug interactions and toxicity of antidepressant drugs
- Classification of drug used for Parkinson's disease (Levodopa, MAO-B Inhibitors, Dopamine Agonists, Amantadine, Antimuscarinic Drugs COMT inhibitors) in terms of their Mechanism of action, therapeutic use and adverse effects and drug interaction with antiparkinsoneal drugs
- Understand iatrogenic parkinsonism.

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)
	(Pharmacology, CVS)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define, classify and discuss hypertension and antihypertensive drugs, cardiac dysrhythmias and antiarrhythmic drugs as well as cardiac angina and anti angina drugs

Description: Hypertension , cardiac arrhythmia, cardiac ischemia

Contents:

•Definition hypertension & Classes of hypertension (AHA)
• the role of rennin angiotensin system in the pathogenesis of HT
• the goals of therapy & antihypertensive drug classes
•mechanism of actions of major classes of antihypertensive drugs
•therapeutic uses, serious adverse reactions and precautions, treatment advantages, and drug interactions of: Diuretics, Sympatholytics, Ca channel blockers,
Vasodilators, ACEIs and ARBs
•management of hypertensive emergency and therapy for HT with compelling indications
Therapy Cardiac dysrhythmias and antiarrhythmic drugs
• cardiac action potential and role of ion channels opening and closure
•mechanisms of arrhythmogenesis & types of arrhythmias
•Vaughan-Williams classification of anti-arrhythmic drugs
•therapeutic uses, serious adverse reactions and precautions, treatment advantages, and drug interactions of:
1 Class I – Na+ channel blockers
2 Class II – B- adrenoreceptor blockers
3 Class III-K+ channel blocker
4 Class IV – Ca2+ channel blockers
5 Class V – digitalis-like drugs
Clinical guidelines in treatment of cardiac arrhythmia,
Cardiac ischemia & Anti-ischemic Drugs
Types of cardiac ischemia
•Know ACC/AHA classifications of angina
Therapeutic uses, serious adverse reactions and precautions, treatment advantages, and drug interactions of:
1 Organic nitrates
2 Calcium channel blockers
3 Beta-adrenergic antagonists
4 Other drugs
• ACC/AHA guidelines in management of angina pectoris

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)
	(Pharmacology, Renal)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objectives:

The candidate have to describe and discuss site of action of various types of diuretics, the mechanism of action, therapeutic uses, and adverse effects.

Description:

Thiazide diuretics, loop diuretics , potassium sparing diuretics, Osmotic diuretics, urinary tract infection

Content:

• Site of diuretic actions

• mechanism of action, kinetics, therapeutic uses and adverse effect of Thiazide, and Loop diuretics

•Mechanism of action, kinetics, therapeutic and adverse effect of Potassium sparing and Osmotic diuretics

• Drug interaction with potassium sparing diuretics

Treatment of Urinary tract Infection

Mechanism of action , therapeutic uses, and adverse effects of:

1 DNA Gyase inhibitors (Quinolones, Ofloxacin, Norfloxicin, Ciprofloxacin and Sparfloxacin)

2 Inhibitors of folate metabolism (sulfonamide and trimethoprim)

3 Urinary tract antiseptics: Nitrofurantoin, Nalidixic acid, Methenamine and Mandelic Acid & effect of altering of urine pH on other drugs

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)
	(Pharmacology, respiratory)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objectives: The candidate have to explain and discuss the etiology of bronchial asthma and how to manage

Description: Bronchial asthma, drugs used in treatment of bronchial asthma , drugs contraindicated in bronchial asthma

Contents:

Drugs used in treatment of Bronchial Asthma:
•Classification and strategies of drug treatment of bronchial asthma
•Mechanism of action, therapeutic uses, adverse reactions, treatment advantages, and drug interactions of:
1 B-adrenergic agonists
2 Methylxanthines
3 Anticholinergics
4 Mast cell stabilizers
5 Corticosteroids
6 Leukotriene pathway inhibitors
7 Monoclonal antibody
•Guidelines in management of bronchial asthma
• List drugs contraindicated in bronchial asthma

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)
	(Pharmacology, GIT)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objectives: The candidate have to explain and discuss the etiology and how to manage peptic ulcer **Description:** Gastric secretion, peptic ulcer, antisecretory drugs, mucosal protective drugs, H. pylori

Content:

Drugs used for reduction of gastric acid secretion

•Mechanism of action, uses , adverse effects and drug interaction of drugs used for reduction of acid secretion:

1 H-K ATPase inhibitors
2 H2 receptor antagonists
3 Antimuscarinc
4 Prostaglandins analogues
5. Antacids

Drugs to enhancement of mucosal resistance

•Mechanism of action, uses , adverse effects and drug interaction of drugs used for enhancement of Mucosal Resistance:

1 Sucralfate
2 Prostaglandine
3 Colloidal Bismuth
4. Carbenoxolone

Antimicriobial treatment for eradication of H. pylori and peptic ulcer treatment

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units (lect./lab./total)
100770701	integrated course (pharmacology, anti-inflammatory Antimicrobial)	(6/-/6)
Prerequisite		**Contact hrs.**
None		6

Objectives: The candidate have to classify and discuss the pharmacology of nonsteroidal anti-inflammatory drugs, and antimicrobial drugs
Description: Nonsteriodal drugs, antimicrobial drugs, cytotoxic drugs
Content:
Nonsteroidal anti-inflammatory drugs and Gout:
Nonsteroidal anti-inflammatory drugs
- The inflammatory response
- Aspirin actions, used and adverse effects
- Selective and non-selective COX inhibitors (NSAIDs)
- Antipyretic analgesics; actaminophen
- Slow acting anti-inflammatory drugs (DMARDs)
- General principles of antimicrobial therapy & Antimicrobial resistance
- Mechanism of action of Antimicrobial drugs
Cell wall synthesis inhibitors:
- B-lactam antibiotics: penicillins, cephalosporines, cephamycins, monobactams, carbapenems
- Vancomycin and other polypeptide antibiotics
Protein synthesis inhibitors:
- Macrolides, Chloramphenicol,Tetracycline Aminoglycosides
Nucleic acid synthesis inhibitors:
- Quinolones and fluroquinolones
- Sulphonamides and Trimethoprim.
Treatment of tuberculosis and leprosy:
- Anti-mycobacterial drugs (1st and 2nd line drugs) Isoniazid and Rifampicin
- Anti-leprotic drugs
Antiprotozoal drugs:
- Antiamoebics , antileishmania ,antitrypanisoma
- Drugs for guirdiasis, trichmoniasis, and Plasmodium
Anthelminthic agents: nematodes, trematodes , cestodes
Antifungal drugs:
- Systemic and topical antifungal drugs
Antiviral drugs:
- Viral replication and mechanism of action of antiviral drugs
Antiviral therapy for common viral infections: influenza, herpes, CMV, Hepatitis
- Antiretroviral drugs for HIV infections

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Course No.	Course Title	Course Units
100770701	integrated course	(lect./lab./total)

(Pharmacology, cancer chemotherapy and cytotoxic drugs)

(6/-/6)

Prerequisite	Contact hrs.
None	6

Objective: The candidate have to classify and discuss the cancer chemotherapeutic and cytotoxic agents

Description : Cell cycle, Cancer chemotherapy, cytotoxic drugs

Content:
Cancer chemotherapy and cytotoxic drugs:
- Cell cycle and malignant growth
- Classification & mechanism of action of cytotoxic drugs, Adverse effects & toxicity of cytotoxic drugs
- Alkylating agents and antimetabolites
- Cytotoxic antibiotics and natural agents
- Hormones and anti-hormones in treatment of cancer

References:

1. Basic and Clinical Pharmacology 13th E Dec 23, 2014 by Bertram Katzung and Anthony Trevor
2. Goodman and Gilman's The Pharmacological Basis of Therapeutics, Twelfth Edition Jan 10, 2011 by Laurence Brunton and Bruce Chabner

Integrated course (A)

Pathophysiology

Total credit hours: 3

Course No.	Course Title	Course Units
100770702	integrated course	(lect./lab./total)
(Pathophysiology, cell biology, genetics Underlying mechanism of pain)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain and define what is pathology science, cell injury and death, adaptation

Description : Cell pathology, cell injury, cell death & cell adaptation

Content:

A) Introduction to pathology:

1. Definition (pathology, general pathology & systemic pathology)
2. Differences between health & disease
3. Pathological study of the disease
4. Cause & / etiology of the disease (congenital & acquired)
5. Pathogenesis of the disease
6. Morphological changes (gross & microscopic)
7. Methods of studying morphologic alterations in tissues (autopsy, biopsy & cytology)

B) Cell Injury, Cell Death, and Adaptations:

1. Define cell injury, causes & types of cell injury
2. Pathogenesis of cell injury
3. Discuss causes, pathogenesis, morphology & fate of fatty change, cloudy swelling, hydropic degeneration
4. Compare between fatty change & stromal fatty infiltration

C) Cell Injury, Cell Death, and Adaptations:

1. Recognize forms of irreversible cell injury & identify differences between necrosis & apoptosis
2. Identify disturbance of pigmentation & pathological calcification

Required Text:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
100770702	integrated course	(lect./lab./total)
(Pathophysiology, inflammation & infection)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define and classify types of inflammations and the chemical mediators of inflammation.
Description: Inflammation, chemical mediators of inflammation.
Content:

A) Acute inflammation

1. Definition of inflammation, causes of inflammation & the nomenclature of inflammation
2. Classification of inflammation
3. Clinical picture & cardinal signs of acute inflammation (local & systemic)
4. Vascular changes in the pathogenesis of acute inflammation
5. Difference between exudate & transudate
6. The steps of leucocyte cellular events
7. Definition of chemotaxis & chemotactic agents
8. Chagocytosis, its steps & causes of its failure

B) Chemical mediators of inflammation

1. Definition & Classification of chemical mediators & example of different mediators
2. the role of plasma & cellular derived mediators

C) Types of acute inflammation

1. The different morphologic patterns of inflammation
2. Pathogenesis of suppurative inflammation (e.g. an abscess & explain pathogenesis , its morphology & complications)
3. Outcomes of acute inflammation
4. Defference between acute & chronic inflammation

D) Granulomatous inflammation

1. Definition of granulomatous inflammation (pathogenesis, morphologic & etiologic types)

Required Text:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
100770702	integrated course	(lect./lab./total)
(Pathophysiology, immune process, allergy)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define, classify and discuss what is immune system and types of hypersensitivity reactions.
Description: Immune system, hypersensitivity reactions.
Content:
1. Introduction to immunology
2. Types of hypersensitivity reactions (type I, II, III & IV)

Lymphoid tissue
1. Causes of lymphadenitis
2. Classification of lymphoma
3. Comparison between reactive nodal hyperplasia and lymphoma
4. Difference between Hodgkin and non- Hodgkin lymphoma
5. Subtypes of Hodgkin lymphoma

Required Text:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course (Pathophysiology, CVS disorders) (3/-/3)	(lect./lab./total)
Prerequisite		**Contact hrs.**
None		3

Objectives: The candidate have to discuss the pathphysiology of a common cardiovascular diseases such as hypertension , heart failure , ischemic heart disease, valvular heart diseases, cardiomyopathy , pericardial diseases and peripheral vascular diseases.

Description: Hypertension, heart failure, ischemic heart disease, cardiomyopathy , valvular diseases, pericardial diseases, peripheral vascular diseases.

Content:

A) Hypertensive heart disease

1. The definition of hypertension and its different types
2. The pathophysiology of cardiac hypertrophy
3. The morphology and clinical picture of Systemic Hypertensive Heart Disease
4. The morphology of Pulmonary Hypertensive Heart Disease (Cor Pulmonale)

B) Heart failure

1. The pathogenesis of heart failure
2. The causes & morphology of Right-Sided Heart Failure
3. The causes & morphology of left-Sided Heart Failure

C) Ischemic heart disease

1. The pathogenesis, morphology and complication of Angina pectoris & Myocardial Infarction

D) Valvular heart disease

1. The different patterns of valvular lesion (stenosis and regurgitation or incompetence)
2. The major etiologies of acquired heart valve disease
3. The pathogenesis and diagnosis of rheumatic heart diseases
4. The cardiac manifestations of acute and chronic rheumatic heart disease
5. The pathogenesis and morphologic patterns of infective endocarditis
6. Acute and subacute infective endocarditis

E) Cardiomyopathies

1. The types of cardiomyopathies
2. The pathogenesis and morphology of Dilated cardiomyopathy
3. The pathogenesis and morphology of Hypertrophic Cardiomyopathy
4. The morphology of Restrictive Cardiomyopathy

F) Pericardial disease

1. The morphology and clinical picture of Pericarditis
2. The causes of Pericardial Effusions

Required Text:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, endocrine metabolic disorders)		(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to discuss the pathophysiology of pancreatic gland diseases such as (diabetes mellitus, pancreatitis), thyroid gland diseases (hyperthyroidism, thyroiditis, tumors)
Description: diabetes mellitus, pancreatitis, hyperthyroidism, thyroiditis, thyroid tumors
Contents:

A) Diseases of endocrine pancreas (Diabetes mellitus)

1. The classification of diabetes mellitus
2. The normal insulin physiology and glucose homeostasis
3. The pathogenesis of type 1 and type 2 diabetes mellitus
4. Comparison between type 1 and type 2 diabetes mellitus
5. The pathogenesis of the complications of diabetes
6. The morphology of diabetes and its complications with special emphasis on diabetic nephropathy, retinopathy, and neuropathy.

B) Diseases of the pancreas

1. Causes of acute pancreatitis
2. The pathogenesis, morphology and clinical picture of acute pancreatitis.
3. The etiology, pathogenesis, and morphology of chronic pancreatitis

C) Diseases of the thyroid gland

1. Causes of hyperthyroidism
2. The pathogenesis,morphology, and clinical picture of Grave's disease
3. The different types of thyroiditis
4. The pathogenesis, morphology, and clinical feature of Hashimoto's thyroiditis.
5. The classification of tumors of the thyroid gland
6. The characteristic morphological features of thyroid adenoma and multinodular goiter
7. The different morphological types of thyroid carcinoma
8. The nuclear characteristics of papillary thyroid carcinoma
9. The required criteria for the diagnosis of follicular thyroid carcinoma

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, upper respiratory disorders)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to discuss the pathophysiology of upper respiratory tract diseases
Description: obstructive and restrictive lung disease, chronic bronchitis and bronchial asthma, emphysema
Contents:
Obstructive and restrictive lung diseases
1. Classification of obstructive lung diseases
2. Differences between obstructive & restrictive lung diseases
3. Types, causes and complications of bronchial asthma
4. The morphology of bronchial asthma
5. Definition of chronic bronchitis
6. The clinical types and complications of chronic bronchitis
7. The pathogenesis of chronic bronchitis
8. The morphology of chronic bronchitis
9. Definition of emphysema
10. The anatomical types & pathogenesis of emphysema with emphasis on the characteristic features of each type
11. The morphology of emphysema
12. Complications of emphysema
13. Comparison between different types of obstructive lung diseases
14. Classification of restrictive lung diseases

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, Lower respiratory disorders)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to discuss the pathophysiology of lower respiratory tract diseases

Description: pneumonia , lung abscess, pulmonary tuberculosis, pleural effusion, pneumothorax, mesothelioma

Contents:

A) pulmonary infection

1) The defense mechanisms that protect against bacterial pneumonia
2) Classification of pneumonia
3) The morphology of lobar pneumonia
4) Comparison between lobar pneumonia & bronchopneumonia
5) Complications of pneumonia
6) The causes (predisposing conditions), morphology and complications of lung abscesses.

B) Tuberculosis

1. Discuss the pathogenesis of tuberculosis as regards causative organism, mode of infection and classification of TB
2. Describe the tissue reaction in tuberculosis, including tubercle formation, morphology & fate.
3. Enumerate methods of spread in TB
4. Identify primary tuberculosis
5. Review the pathogenesis, common sites, morphology (primary tuberculous complex) and fate of the primary pulmonary TB
6. Define secondary TB
7. Discuss morphological features and complications of chronic fibrocaseous pulmonary TB
8. Define miliary TB

C) Diseases of pleura

1) The different conditions causing pleural space accumulations, identify the type of fluid and a common association with each
2) The fate of each type of pleural effusion
3) Definition pneumothorax and identify its types and causes
4) Pleural tumors and discuss the pathology of mesothelioma

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, Musculoskeletal disorders)		(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to discuss the pathophysiology of musculosketal diseases
Description: osteoporosis, Paget Disease, rickets and osteomalacia, osteomyelitis hyperparathyroidism
Contents:
1. The etiology, pathogenesis, and morphology of osteoporosis
2. Description of Paget Disease
3. Comparison between rickets and osteomalacia
4. Bone changes which occur in hyperparathyroidism
5. Description of osteomyelitis

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, gastrointestinal disorders-1)		(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to discuss the pathophysiology of gastrointestinal diseases
Description: Hiatus Herni, gastroesophageal reflux, oesophageal, varices Barrett's oesophagus, carcinoma of the oesophagus, pyloric stenosis, gastritis, peptic ulcer, gastric carcinoma
Contents:

A) Pathology of the esophagus

1. Types of Hiatus Hernia as regards their pathogenesis & morphology
2. Tthe complications of hiatal hernias
3. Pathology of gastroesophageal reflux
4. Definition of oesophageal varices and the pathogenic mechanisms involved in their formation
5. The complications of oesophageal varices
7. Identification of Barrett's oesophagus and Pathology of achalasia also Classification of Barrett's oesophagus
8. The sites of carcinoma of the oesophagus in descending order of frequency
11. The different etiologic factors involved in its pathogenesis
12. The gross morphology of carcinoma of oesophagus

B) Gastric pathology

1. Congenital pyloric stenosis and identify its pathogenesis & clinical settings.
2. Causes, pathogenesis, and pathological features of gastritis
3. Types of chronic gastritis as regards its pathogenetic mechanisms & morphology
4. The pathogenesis and morphology of peptic ulcer
5.The predisposing factors of gastric carcinoma
6. The gross picture of gastric carcinoma
7. Classification of gastric carcinomas according to (depth of invasion, gross appearance & histologic subtypes)

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, gastrointestinal disorders-2)		(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to discuss the pathophysiology of gastrointestinal diseases
Description: inflammatory bowel diseases, Crhon's disease & Ulcerative colitis acute appendicitis, intestinal polyps and adenomas, colonic carcinoma, cirrhosis hepatocellular carcinoma, cholecystitis & cholelithiasis
Contents:

C) Intestinal pathology

1. The pathologenesis, morphology, clinical features,complications of Meckel diverticulum and Hirschsprung disease inflammatory bowel diseases
2. Differences between Crhon's disease & Ulcerative colitis
3. The etiology, growth and microscopic pictures, and complications of diverticular disease.
4. The etiology, pathological features and complications of acute appendicitis
5. The gross & microscopic picture of intestinal polyps and adenomas
6. List the pathological types of colonic carcinoma

D) Liver and gall bladder pathology

1. Etiology, pathophysioloy, gross & complications of viral hepatitis
2. The different types, pathogenesis, gross and microscopic changes & complications of cirrhosis
3. Predisposing factors, gross & microscopic picture, spread and complications of hepatocellular carcinoma
4. The pathogenesis, morphology and complications of cholecystitis & cholelithiasis

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, renal and urinary tract disorders)		(3/-/3)

Prerequisite
None

Contact hrs.
3

Objective: The candidate have to discuss the pathophysiology of renal and urinary tract diseases

Description: Nephrotic Syndrome, Glomerulonephritis, Pyelonephritis, polycystic kidney, Renal Stones and Hydronephrosis, renal cell carcinoma, Wilms Tumor.

Contents:

A) Glomerular diseases

1. The clinical manifestations and Classification of renal diseases.
2. The Classification of glomerular diseases and the pathogenesis of Glomerular Injury
3. Causes & clinical picture of Nephrotic Syndrome
4. Chronic Glomerulonephritis
5. List types and causes of renal failure

B) Diseases affecting tubules and interstitium

1. The diseases which affecting tubules and interstitium
2. Define Acute Pyelonephritis
3. The clinical course of Acute Pyelonephritis
4. The pathogenesis and morphology of Acute Pyelonephritis
5. Definition acute tubular necrosis (ATN)

C) Cystic diseases of the kidney

1. The different types of cystic diseases of the kidney
2. The morphology, pathogensis, and clinical picture of autosomal dominant (adult) polycystic kidney disease
3. Comparison between autosomal dominant (adult) polycystic kidney disease & Autosomal Recessive (Childhood) Polycystic Kidney Disease

D) Urinary outflow obstruction

1. The pathogenesis, causes, and pathologic features of Renal Stones
2. Causes and morphology of Hydronephrosis

E) Tumors of the kidney and urinary bladder

1. The different types of renal cell carcinoma
2. The pathogensis and morphology of renal cell carcinoma
3. The pathogensis and morphology of Wilms Tumor
4. The morphology of tumors of the urinary bladder

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Course No.	Course Title	Course Units
10070702	integrated course	(lect./lab./total)
(Pathophysiology, Reproductive system disorders)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to discuss the pathophysiology of reproductive system diseases

Description: uterine bleeding, tumors of the uterine corpus, ovarian tumors, hyperplasia of the prostate, testicular tumors

Contents:

A) Female genital tract

1. The causes of dysfunctional uterine bleeding
2. The different types of endometrial hyperplasia and their related microscopic pictures.
3. The tumors of the uterine corpus
4. The WHO classification of ovarian tumors

B) Male genital tract

1. The pathogenesis, morphology and staging of nodular hyperplasia of the prostate
2. The main types of testicular tumors

References:

1. McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (2010). Pathophysiology: The biologic basis for disease in adults and children (6th ed.). Maryland Heights, MO:Mosby. ISBN: 978-0- 323-06584-9.
2. Hogan, M. A., Bower, M., Hill, K., & Holm, K. S. (2008). Pathophysiology: Reviews & rationales (2nd ed.). Upper Saddle River, NJ: Preason. ISDN: 978-0-13-1789732-2.

Integrated course
Research Methodology
Credit hrs.= 3

Course No.	Course Title	Course Units
10070704	integrated course	(lect./lab./total)

(Research Methodology, Research Fundamental and Terminology) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and describe some research fundamental and some terms about scientific research.

Description: types of research studies, Scientific Method and Non-Scientific Method of research

Contents:

- Introduction
- Meaning of Research
- Objectives of Research
- Features of a Good Research Study
- Types of Research Studies
- Scientific Method
- Comparison of the Scientific Method and Non-Scientific Method
- Research Methods and Research Methodology
- Organizing the Research Function

References

Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013
Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
	(Research Methodology, fundamentals and terminology)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to explain and define the research fundamentals and research terminology .

Description: Types of Research Studies, Scientific Method and Non-Scientific Method, Research Methods and Research Methodology

Contents:

- Introduction
- Meaning of Research
- Objectives of Research
- Features of a Good Research Study
- Types of Research Studies
- Scientific Method and Non-ScientificMethod
- Research Methods and Research Methodology
- Organizing the Research Function

References

Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013
Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)

(Research Methodology, importance of research and management research)(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and explain the research fundamentals and research terminology .

Description: Management Research

Contents:

- Role of Research Method and Research Methodology in Business/ Industry
- Defining Management Research
- Current Status of Research in kingdom

References

Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013
Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
(Research Methodology, limitations of research defining research problem and formulation of hypothesis)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain how to conduct a research process..
Description: Formulation of the Problem, Formulation of Hypothesis, Developing the Research Plan
Contents:

- Research process
- Formulation of the Problem
- Formulation of Hypothesis
- Developing the Research Plan

References
Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013
Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
	(Research Methodology, research design)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to explain how to conduct a research design.
Description Types of Research Designs, Formal Type of Experiments
Contents:

- Research Design Defined
- Types of Research Designs
- Natural Experiments
- Formal Type of Experiments
- What is Experimentation?
- Conducting an Experiment
- Evaluation of Experiments
- Selecting Relevant Variables
- Strategy for Designing Marketing
- Validity of Experiments Research Program
- Categorization of Experimental Research Designs

References

Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013
Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
	(Research Methodology, Data collection)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain how to collect the data.
Description Types of data(primary and secondary), survey conduction.
Contents:

- Types of Data
- Distinction between Primary Data and Secondary Data
- Data Collection Procedure for Primary Data
- Major Steps in Conducting a Survey
- Methods for Secondary Data Collection
- Schedule Method

References:

- Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)

(Research Methodology, sampling and samplimg distribution) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to explain how to make sampling.
Description sampling and sampling distribution.
Contents:

- Introduction
- The Sampling Process
- Why Sampling?
- Types of Sampling

References:

- Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
(Research Methodology, attitude measurement and scales and data presentation)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to describe how to measure the attitude and the types of scales and data presentation.

Description attitude survey and types of scales and data presentation.

Contents:

- Attitude
- Attitude Survey
- Types of Scales
- Nominal Scale
- Presentation of Data
- Oral Presentation

References:

- Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)

(Research Methodology, statistical analysis and data interpretation) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to describe how to make statistical analysis and interpret the data.

Description statistical analysis and data interpretation.

Contents:

- Introduction
- Hypothesis Testing
- One Tailed Test
- Chi-square Test
- Yate's Correction
- The Coefficient of
- Determination
- Analysis of Variance (ANOVA)

References:

- Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
	(Research Methodology, multivariate analysis of data) (3/-/3)	
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to describe how to make multivariate analysis of data.
Description Multiple Linear Regressions, Discriminant Analysis
Contents:

- Introduction
- Various Multivariate Techniques
- Multiple Linear Regressions
- Discriminant Analysis

References:

- Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
(Research Methodology, model building and decision making)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain how to make model building and decision making.
Description Model Building and Decision Making

Contents:

- Introduction
- Model Building and Decision Making
- Important Decision Making
- Techniques in Multivariate Analysis

References:

- Textbook: Dipak Kumar Bhattacharyy, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)

(Research Methodology, writing and formulating of reports) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to describe how to write and formulate a reports.
Description: Report Format, Report Presentation

Contents:

- Types of Research Reports
- Guidelines for Writing a Report
- Report Format
- Sample Research Report on Launching Strategies of E-Z
- Instant Shelters in KSA
- Printing and Binding of survey Reports
- Time Factor
- Report Presentation
- Meaning and Applications of Research Findings
- Some Practical Tips for Doing a Research

References:

- Textbook: Dipak Kumar Bhattachary, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)

(Research Methodology, additional statistics in research) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to describe the other types of statistics.
Description: Probability, Poisson Distribution.
Contents:

- Probability
- Poisson Distribution

References:

- Textbook: Dipak Kumar Bhattachary, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Course No.	Course Title	Course Units
10070705	integrated course	(lect./lab./total)
(Research Methodology, factor analysis)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain how to analyze factors.
Description: factor analysis.
Contents:

- Definition and Concepts
- Estimating Communalities
- Framing the problem for Factor Analysis
- Principal Factors vs Principal Analysis Components
- Purposes of Factor Analysis
- Eigen Values
- Scree Test
- Principal Factors Analysis
- Factor Analysis as a Classification Method
- Factor Loadings
- Rotating the Factor Structure
- Mathematical Approach

References:
Textbook: Dipak Kumar Bhattachary, Research Methodology Paperback . 2013,Publisher: Excel Books; Third edition

Integrated course

Clinical Biochemistry

Total Credit hrs. = 3

Course No.	Course Title	Course Units
10070703	integrated course (Clinical biochemistry, biochemistry of diseases)	(lect./lab./total) (3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain the biochemistry of various diseases

Description: metabolism of carbohydrates , fat and proteins

Contents:
Review of clinical aspects of carbohydrates, Lipids, Proteins and Amino Acids metabolism, Enzymes Integration of Metabolism and Genetic Metabolism

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)

(Clinical biochemistry, clinical chemistry laboratory and organ system)(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and discuss the interpretation of the laboratory data of various body organs

Description: biochemical data interpretation

Contents:
The place of clinical biochemistry in medicine
Interpretation of the laboratory data of:
Cardiovascular Circulatory System
Respiratory Tract
Liver
Renal System
Digestive System
Endocrine System
Bone
Central Nervous System

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
	(Clinical biochemistry, Diabetes Mellitus)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to describe and discuss the glucose metabolism and diabetes Mellitus tests

Description: Diabetes Mellius tests

Contents:

- Glucose challenge test and Other Diagnostic Tests.
- Tests of Diabetes Control and Disease Progression

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
	(Clinical biochemistry, type 1 Diabetes M.)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and discuss type 1 diabetes Mellitus.

Description: type 1 Diabetes Mellius tests

Contents:

- Microalbuminuria
- Glycated Hemoglobin

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
(Clinical biochemistry, other carbohydrate metabolic disorders)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define and explain the other forms of carbohydrate metabolism disorders

Description: other carbohydrate metabolism disorders (Glycogen Storage Disorders Fructosuria,GALACTOSEMIA)

Contents:

- Glycogen Storage Disorders
- Fructosuria
- GALACTOSEMIA
- Additional Testing to Aid Interpretation of Carbohydrate Disorders

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
(Clinical biochemistry, renal control of acid – base balance)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define and discuss the role of kidney in control of acid-base balance.

Description: NEPHRITIS, NEPHROTIC SYNDROME, AZOTEMIA, RENAL FAILURE, RENAL FAILURE, ELECTROLYTE, KIDNEY STONES.

Contents:

Basic renal functions:

- CREATININE METABOLISM
- GLOMERULAR NEPHRITIS
- NEPHROTIC SYNDROME
- AZOTEMIA
- TYPES AND ASPECTS OF RENAL FAILURE
- CALCULATION OF FRACTIONAL EXCRETION OF SODIUM
- THE ROLE OF ELECTROLYTES Sodium, Potassium, Chloride, Bicarbonate
- RENAL TUBULAR ACIDOSIS
- ELECTROLYTE ANALYSIS
- Calculation of Anion Gap,
- Use of Anion Gap
- Electrolyte Critical Values
- Abnormal Sodium Levels, Abnormal Potassium Levels
- RENAL IMPACT ON WATER AND ELECTROLYTES PHYSIOLOGY: HORMONAL AND RENAL CONTROL OF ELECTROLYTES AND MINERALS
- Water and Electrolytes
- KIDNEY STONES

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
(Clinical biochemistry, assessment of cardiovascular disorders)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain how to asses the cardiovascular disorders

Description: lipid profile, and biomarkers of acute myocardial infarction

Contents:

- Biomarkers of ACUTE MYOCARDIAL INFARCTION,
- LIPIDS AND LIPOPROTEINS
- The Role of HDL
- Physiological Changes in Lipid and Lipoprotein Levels
- Diabetes and Cardiac Disease
- National Cholesterol Education Program
- C-Reactive Protein
- Primary and Secondary Hyperlipoproteinemia
- Apoproteins, Hypoalphalipoproteinemia, Hyperbetalipoproteinemia
- Abnormalities With Apoprotein E
- Abetalipoproteinemia

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
(Clinical biochemistry, assessment of respiratory disorders)		(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain and discuss how to asses the respiratory disorders
Description: arterial blood gases, acid –base status, oxygen-carrying capacity, respiratory distress syndrome, toxic gases
Contents:
COLLECTION AND HANDLING OF ARTERIAL BLOOD GASES
ASSESSMENT FOR ARTERIAL BLOOD GASES
Calculations in Arterial Blood Gas Analysis
Arterial Collection,
Venous Versus Arterial Samples
ACID-BASE STATUS
Metabolic Acid-Base Disturbances,
Respiratory Acid-Base Disturbances
Approach to Interpreting Acid-Base Disturbance
VENTILATION AND PCO2 RELATIONSHIP
OXYGENATION STATUS
Oxygen-Carrying Capacity and Content
Shift to the Right
RESPIRATORY DISORDERS
Chronic Bronchitis, Acute on-Chronic CO2 Retention,
Fetal Lung Maturity
Respiratory Distress Syndrome
ANALYSIS OF OXYGENATION,
TOXIC GASES
Cyanide Poisoning,
Carbon Monoxide Poisoning
Distribution of Gases via Circulation of Erythrocytes
Pathological Effects of Carbon Monoxide,
Analysis of Carboxyhemoglobin
Indirect Analysis of CO in a Venous Whole Blood Sample
Determining p50

References:

1. Required Text(s)

Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone

2. Essential References

1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.

2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units

10070703 integrated course (lect./lab./total)

(Clinical biochemistry, assessment of nutrition and digestive function)(3/-/3)

Prerequisite	**Contact hrs.**
None	3

Objective: The candidate have to explain and discuss how to asses the nutrition and digestive functions.

Description: vitamins, trace elements, anemias, malabsorption, Zollinger-Ellison syndrome, Bulimia Nervosa.

Contents:

A) **Nutrition**:

NITROGENOUS BIOMARKERS OF NUTRITIONAL STATUS
VITAMINS
TRACE ELEMENTS
NUTRITIONAL DISORDERS
VITAMIN A METABOLISM
Vitamin A Night Blindness
VITAMIN-RELATED MACROCYTIC ANEMIA
Testing Strategies for Macrocytic Anemia
PHYSIOLOGICAL AND NUTRITIONAL CHANGES WITH AGE
PREDIABETES AND METABOLIC SYNDROME

B) **Digestive disorders**:

GASTROINTESTINAL TRACT MALABSORPTION
GASTRIC FLUID ANALYSIS
ZOLLINGER-ELLISON SYNDROME
CYSTIC FIBROSIS
GASTRIC FLUIDS AND ELECTROLYTE LEVELS
OTHER ELECTROLYTE DISTURBANCES
RESULTING FROM GASTROINTESTINAL DISTURBANCES
Intestinal Loss
Bulimia Nervosa

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070703	integrated course	(lect./lab./total)
(Clinical biochemistry, adrenal hormones and adrenal medulla disorders)(3/-/3)		
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to explain and discuu how to asses the adrenal medulla function and adrenal medulla disorders.

Description: Pheochromocytoma, Neuroblastoma, Thyriod hormone.

Contents:

- Pheochromocytoma
- Neuroblastomas
- LABORATORY TESTING FOR ADRENAL MEDULLARY DISORDERS
- ROLE OF ENDOCRINE GLANDS IN THYROID FUNCTION
- Thyroid-Stimulating Hormone:
- Pituitary Hormone
- Thyroid Hormone Metabolism,
- Hypothyroidism

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Course No.	Course Title	Course Units
10070704	integrated course	(lect./lab./total)
	(Clinical biochemistry, testing for thyroid disorders)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to explain how to asses the thyroid gland disorders.

Description: Thyroid Function Testing, HYPERTHYROIDISM, MINERAL METABOLISM
Contents:

- Thyroid Function Testing
- Enzyme-Multiplied Immunoassay Technique (EMIT)
- Historical Methods of Thyroid Testing
- HYPERTHYROIDISM
- DISORDERS OF WATER BALANCE
- MINERAL METABOLISM
- PREANALYTICAL VARIATIONS IN HORMONE TESTING

References:

1. Required Text(s)
Clinical Biochemistry (an illustrated colour text). Allan Gaw – Churchill Livingstone
2. Essential References
1- Clinical Chemistry, 3rd edition-1998. By William Marshall. Mosby-London.
2- Clinical Chemistry: in Diagnosis & Treatment, 6th edition-1994.

Integrated course Biostatistics
Credit hrs.=3

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)

(Biostatistics, introduction& data, types of data, types of variable) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and explain the types of biostatistics and the variables.
Description: types of biostatistics and variables.
Contents:
1- Define biostatistics and its types.
2- Define a variable and identify different types of variables.

References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, introduction to epidemiology)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and explain the epidemiology.
Description: population and samples.
Contents:
3- Define population and sample, and identify some types of samples.
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)

(Biostatistics, measures of central tendency, mean, median .and mode) (3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and describe the measures of central tendency.
Description: measures of central tendency.
Contents:
4- Define and determine the various measures of central tendency.
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, methods of data presentation)	(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to describe the methods of data presentation.
Description: tabular presentation, graphic presentation.
Contents:

1- Describe the basic concepts and some methods of the tabular presentation of data.
2- Describe the basic concepts and some methods of the graphical presentation of data.

References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, Measures of dispersion , Range, variance, standard deviation and coefficient of variance)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define the definition and describe the measures of dispersion.
Description: various measures of dispersion .
Contents:
3- Define and determine the various measures of dispersion.
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, Normal Distribution)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to describe the normal distribution and its characteristics.
Description: normal distribution .
Contents:

1- Define normal distribution and describe the characteristics.

References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
(Biostatistics, standard errors and confidence interval)		(3 /-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define and explain the standard error and confidence interval.
Description: standard error and confidence interval .
Contents:

1- Outline the basic concepts of hypothesis testing.
2- Describe the meaning and uses of hypothesis testing of arithmetic means.

References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, P value and level of significance)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to identify the level of significance.
Description: testing of proportion .
Contents:

1- meaning and uses of hypothesis testing of proportion.
2- Define epidemiology
3- Describe various study design for application in toxicology field.

Describe various measures used in epidemiology and Hands on practice of the same.
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, hypothesis testing power)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to discuss the hypothesis of testing power.
Description: testing power .
Contents:
4- Define and determine the various measures of dispersion.
5- Define normal distribution and describe the characteristics.
6- Outline the basic concepts of hypothesis testing.
7- Describe the meaning and uses of hypothesis testing of arithmetic means.
8- Describe the meaning and uses of hypothesis testing of proportion.
9- Define epidemiology
10- Describe various study design for application in nursing field.
Describe various measures used in epidemiology and Hands on practice of the same
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)

(Biostatistics, Test of significance Z test, t test Choosing test of significance)

(3/-/3)

Prerequisite	Contact hrs.
None	3

Objective: The candidate have to define and describe the tests of significance
Description: measures of dispersion, ,hypothesis testing,epidemiology .
Contents:
11- Define and determine the various measures of dispersion.
12- Define normal distribution and describe the characteristics.
13- Outline the basic concepts of hypothesis testing.
14- Describe the meaning and uses of hypothesis testing of arithmetic means.
15- Describe the meaning and uses of hypothesis testing of proportion.
16- Define epidemiology
17- Describe various study design for application in nursing field.
Describe various measures used in epidemiology and Hands on practice of the same

References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course **(Biostatistics, Chi square test)**	(lect./lab./total) (3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define and describe the Chi square test
Description: measures of dispersion, ,hypothesis testing, epidemiology .
Contents:
18- Define and determine the various measures of dispersion.
19- Define normal distribution and describe the characteristics.
20- Outline the basic concepts of hypothesis testing.
21- Describe the meaning and uses of hypothesis testing of arithmetic means.
22- Describe the meaning and uses of hypothesis testing of proportion.
23- Define epidemiology
24- Describe various study design for application in nursing field.
Describe various measures used in epidemiology and Hands on practice of the same
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Course No.	Course Title	Course Units
10070706	integrated course	(lect./lab./total)
	(Biostatistics, Choosing test of significance)	(3/-/3)
Prerequisite		**Contact hrs.**
None		3

Objective: The candidate have to define and describe the Chi square test
Description: measures of dispersion, ,hypothesis testing, epidemiology .
Contents:
25- Define and determine the various measures of dispersion.
26- Define normal distribution and describe the characteristics.
27- Outline the basic concepts of hypothesis testing.
28- Describe the meaning and uses of hypothesis testing of arithmetic means.
29- Describe the meaning and uses of hypothesis testing of proportion.
30- Define epidemiology
31- Describe various study design for application in nursing field.
Describe various measures used in epidemiology and
Hands on practice of the same
References:

- Text Book: Daniel, W. W. and C. L. Cross. 2013. Biostatistics: a foundation for analysis in the health sciences, 10 ed. New York: John Wiley and Sons.

Semester 2

CLINICAL TOXICOLOGY I

Credit hours = 6

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance, drug development and drug safety)(10/-/10)		
Prerequisite		**Contact hrs.**
Integrated course		10

Objectives: the candidate have to describe stages of drug development
Description: preclinical and clinical testing of drugs, post-marketing, Surveillance the pharmaceutical industry.

Contents

١- preclinical and clinical testing of drugs
٢- outlines of post-marketing, Surveillance and the role of the pharmaceutical industry.

References

١- Clinical Toxicology: Principles and Mechanisms, Second EditionHardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance, adverse drug reactions)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to discuss adverse reactions of drugs
Description: adverse drug reaction
Content: causes, detection, management, and avoidance of Type A and Type B adverse drug reactions
References

١- Clinical Toxicology: Principles and Mechanisms, Second EditionHardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance, drug-drug interaction)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to discuss adverse reactions of drugs
Description: drug- drug interaction
Content: the cause, detection, management and avoidance of drug interactions
References

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance, pharmacogenetics)		(5/-/5)
Prerequisite		**Contact hrs.**
Integrated course		5

Objectives: the candidate have to describe and explain effect of genetics on drug dynamics and kinetics

Description: pharmacogenetics

Content:

1- genetic influences upon pharmcodynemics and pharmacokinetics of xenobiotics
2- the influence of genetic susceptibility on drug induced diseases.

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
	(Drug safety and Pharmacovigilance,topical, herbal,homeopathic and OTC medications)	(5/-/5)
Prerequisite		**Contact hrs.**
Integrated course		5

Objectives: the candidate have to discuss the pharmacology of topical, herbal and OTC medications
Description: topical, herbal and OTC medications
Content: the adverse reactions, interactions and toxicity in overdose of topical, herbal, homeopathic and OTC medications
References:
١-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,mechanism of toxicity)		(3/-/3)
Prerequisite		**Contact hrs.**
Integrated course		3

Objectives: the candidate have to describe the mechanism of toxicity
Description: how drugs and chemicals cause toxicity
Content:

1- how drugs and chemicals cause toxicity
٢. important factors predisposing to toxicity and the role of toxicity testing

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course (Drug safety and Pharmacovigilance ,toxicokinetics and toxicodynamics)	(lect./lab./total) (4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to discuss the principals of pharmacokinetics and dose response relationship

Description: pharmacokinetics, dose-response relationship

Content:

١. the basic principles of pharmacokinetics and their application to toxicity

٢. the principles of drug action and dose response relationships in normal and excessive dose

References:

١. Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢. Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Risk assessment and risk mangment)		(3/-/3)
Prerequisite		**Contact hrs.**
Integrated course		3

Objectives: the candidate have to describe how to asses and manage the risk
Description: risk assessment and management
Content:

١ . the estimate exposure and its implications on safety
٢ .the principle of risk assessment and risk management

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,carcinogenesis)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to describe and discuss the process resulting and factors modulating chemical carcinogenesis.
Description: processes resulting and factors modulating carcinogenesis
Content:
١. the processes resulting in chemical carcinogenesis and the major classes of chemical carcinogens
٢. modulating factors for chemical carcinogenesis and quantitative of aspects
References:

١. Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢. Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Reproductive toxicology)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to identify and discuss the agents affecting the male and female reproductive system.

Description: teratology and Mutagenicity

Content:

Agents affecting male and female reproductive capacity and the principles of teratology and Mutagenicity

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Analgesics)		(3/-/3)
Prerequisite		**Contact hrs.**
Integrated course		3

Objectives: the candidate have to identify and discuss the agents that killing the pain
Description: NSAIDs and opioid analgesics
Content:
The management of poisoning and adverse drug reactions associated with paracetamol, aspirin and other NSAIDs and with opioid analgesics

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Antidepressants)		(3/-/3)
Prerequisite		**Contact hrs.**
Integrated course		3

Objectives: the candidate have to explain and discuss the toxicity of antidepressants
Description: tricyclic antidepressants, monoamine oxidase inhibitors (MAOIs) and SSRIs
Content:
the management of poisoning and adverse drug reactions associated with tricyclic antidepressants, monoamine oxidase inhibitors (MAOIs) and SSRIs
References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Psycho active drugs)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to define and discuss the toxicity of psychoactive drugs
Description psychoactive drugs
Content:
the toxicity of psychoactive drugs in normal dose and overdose and management of toxicity
References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,drugs affecting ANS)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to define and discuss the toxicity of cholinergic and drenergic systems and the management .

Description cholinergic and adrenergic systems

Content:

the toxicity of cholinergic, anticholinergic, antiserotonergic, anticholenergic, sympathomimetic, and antihistaminergic agents in normal dose and overdose and the management of the toxicity of these agents

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Animal and plant toxins)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to define and discuss the toxicity of animals and plants
Description the toxicity of certain amphibians, molluscs, fish, mammals, insects, spiders, reptiles, and veterinary products **and** toxicity of plants and fungi
Content:
١.the toxicity of certain amphibians, molluscs, fish, mammals, insects, spiders, reptiles, and veterinary products.
٢. the toxicity of plants and fungi.
References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
Prerequisite	**(Drug safety and Pharmacovigilance ,Drugs affecting CNS)**	(4/-/4) **Contact hrs.**
Integrated course		4

Objectives: the candidate have to define and discuss the toxins affecting CNS and how to manage..

Description Muscle relaxants and anticonvulsants

Content:

the management of poisoning and adverse drug reactions associated with muscle relaxants and anticonvulsants..

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Drugs affecting CVS)		(4/-/4)
Prerequisite		**Contact hrs.**
Integrated course		4

Objectives: the candidate have to define and discuss the toxins affecting CVS and how to manage..

Description toxic agents affecting CVS

Content:

the toxicity of cholinergic, anticholinergic, antiserotonergic, anticholenergic, sympathomimetic, and antihistaminergic agents Digitals, Anticoagulants, Antihypertensives, Antiarrhythmics, Calcium channel blockers, Diuretics agents in normal dose and overdose and the management of the toxicity
of these agents.

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
	(Drug safety and Pharmacovigilance ,Drugs affecting Respiratory system)	(5/-/5)
Prerequisite		**Contact hrs.**
Integrated course		5

Objectives: the candidate have to identify and discuss the toxins affecting Respiratory system and how to manage..

Description theophylline

Content:

the management of poisoning and adverse drug reactions associated with theophylline.

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
		(4/-/4)

(Drug safety and Pharmacovigilance ,Drugs affecting Endocrine system)

Prerequisite	Contact hrs.
Integrated course	4

Objectives: the candidate have to describe and discuss the toxins affecting endocrine system and how to manage..

Description oral hypoglycemic drugs

Content:

To describe the management of poisoning and adverse drug reactions associated with the oral hypoglycemic agents.

References:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070707	clinical toxicology I course	(lect./lab./total)
(Drug safety and Pharmacovigilance ,Chemotherapy)		(5/-/5)
Prerequisite		**Contact hrs.**
Integrated course		5

Objectives: the candidate have to explain and discuss the toxicity chemotherapeutic agents and how to manage..

Description toxicity of chemotherapeutic agents

Content:

To illustrate the toxicity of the antibiotics, anticancer and antihistamine agents in normal dose and overdose and the management of the toxicity of these agents. **References**:

١- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

٢- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Semester 3

CLINICAL TOXICOLOGY II

Credit hours= 8

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology ,diagnosis of poisoning)	(2/-/2)
Prerequisite		**Contact hrs.**
Clinical toxicology I		2

Objectives: the candidate have to explain and discuss the signs and symptoms and how to diagnose acute and chronic toxicity in man.
Description: clinical features and diagnosis of acute and chronic poisoning in man
Content:

1. the clinical features of acute and chronic poisoning in man
2. the role of the laboratory in diagnosis of poisoning in man

References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
(Management and prevention of toxicology, management of poisoning I)		(2/-/2)
Prerequisite		**Contact hrs.**
Clinical toxicology I		2

Objectives: the candidate have to discuss the principals of management of acute and chronic poisoning in man.

Description: management of acute and chronic poisoning in man

Content:

the principles of general management of the poisoned patient

References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, management of poisoning 2)	(2/-/2)
Prerequisite		**Contact hrs.**
Clinical toxicology I		2

Objectives: the candidate have to discuss the principals of management of acute and chronic poisoning in man.
Description: management of acute and chronic poisoning in man
Content:
1. the role of prevention of absorption in poisoning
2. procedures for termination of drug action or enhancement of elimination

References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course (Management and prevention of toxicology, Antidotes)	(lect./lab./total) (2/-/2)
Prerequisite		**Contact hrs.**
Clinical toxicology I		2

Objectives: the candidate have to clarify and explain the mechanism of action and actions of antidotes

Description: antidotes

Content:

the mechanism of action, uses and adverse effects of available antidotes

References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, prevention of poisoning)	(2/-/2)
Prerequisite		**Contact hrs.**
Clinical toxicology I		2

Objectives: the candidate have to describe how to prevent the poisoning
Description: measures for poisoning prevention
Content:
The measures to avoid poisoning in children and adults in the home, workplace and community
References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, Regulatory toxicology)	(6/-/6)
Prerequisite		**Contact hrs.**
Clinical toxicology I		6

Objectives: the candidate have to describe the regulatory and legal aspects of toxicology
Description: measures for poisoning prevention
Content:
The importance of regulatory and legal aspects of toxicology, including government committees and other statutory bodies
References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)

(Management and prevention of toxicology, Classification and epidemiology of poisoning)

(6/-/6)

Prerequisite	Contact hrs.
Clinical toxicology I	6

Objectives: the candidate have to describe how to classify of poisoning and outline epidemiology of poisoning

Description: classification and epidemiology of poisoning

Content:

1. To describe a practical classification of poisoning
2. To outline the epidemiology of poisoning at National and International level

References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
(Management and prevention of toxicology, Industrial toxicology I)		(6/-/6)
Prerequisite		**Contact hrs.**
Clinical toxicology I		6

Objectives: the candidate have to describe and discuss how to outline toxicological risks in workplaces and how to prevent using biological monitoring
Description: toxicological risks in workplaces, biological monitoring
Content:

1. the toxicological risks in the workplace and strategies for prevention of toxicity.
2. the principles of biological monitoring

References:

1- Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2- Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
(Management and prevention of toxicology, Industrial toxicology 2)		(6/-/6)
Prerequisite		**Contact hrs.**
Clinical toxicology I		6

Objectives: the candidate have to describe and discuss how to outline toxicological risks in workplaces and how to prevent using biological monitoring

Description: heavy metals and metaloids

Content:

the dangers of heavy metals and metalloids and the treatment of poisoning

References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, Forensic toxicology)	(12/24/36)
Prerequisite		**Contact hrs.**
Clinical toxicology I		12

Objectives: the candidate have to describe and discuss how to understand pharmacology and able to analyze problems in forensic toxicology

Description: forensic toxicology

Content:

1. the principal areas where pharmacology and law overlap
2. problems in forensic pharmacology and decide on the key issues

References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
(Management and prevention of toxicology, Pesticide)		(10/-/10)
Prerequisite		**Contact hrs.**
Clinical toxicology I		10

Objectives: the candidate have to explain how to outline the toxicity of pesticides .
Description: pesticides
Content:
the toxicity of fertilizers, fungicides, herbicides, insecticides, and animal repellents and rodenticides
References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile
2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, Risks in environment 1)	(5/-/5)
Prerequisite		**Contact hrs.**
Clinical toxicology I		5

Objectives: the candidate have to explain and describe how to outline the toxicity of environment.

Description: environment toxicities

Content:

the toxicology of food, soil and water contamination and clinical aspects
of physical risks in the environment, particularly heat, cold and ionizing radiation

References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile

2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, Risks in environment 2)	(5/-/5)
Prerequisite		**Contact hrs.**
Clinical toxicology I		5

Objectives: the candidate have to explain and describe how to outline the toxicity of environment(aromatics , gases, chemicals).
Description: toxicities of environment
Content:
1. the toxicity of aromatic and aliphatic hydrocarbons
2. the toxicity of gases including carbon monoxide, nitrogen oxides..etc
3. the toxicity of chemical warfare agents an the clinical aspects of management of exposed individuals

References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile
2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)

(Management and prevention of toxicology, Management of chemical incidence)

(10/-/10)

Prerequisite	Contact hrs.
Clinical toxicology I	10

Objectives: the candidate have to discuss how to describe the environmental health dimensions
Description: management chemical incidence
Content:
the toxicological, environmental health and public health dimensions of a major chemical incident and how such events should be coordinated exposed individuals
References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile
2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Course No.	Course Title	Course Units
10070708	clinical toxicology II course	(lect./lab./total)
	(Management and prevention of toxicology, analytical toxicology)	(12/24/36)
Prerequisite		**Contact hrs.**
Clinical toxicology I		12

Objectives: the candidate have to discuss how to explain analytical toxicology
Description: analytical toxicology
Content:
1. the principles of analytical toxicology, including drug screening and hair analysis
2. the role of the biochemistry and toxicology laboratory in the diagnosis and management of poisoning

References:

1-Clinical Toxicology: Principles and Mechanisms, Second Edition Hardcover– February 15, 2010 by Frank A. Barile
2-Principles And Practice Of Toxicology In Public Health Paperback – July 26, 2013 by Ira S. Richards , Marie Bourgeois

Semester 4
Training and research project
Credit hours= 12

Name of course	Course No.	Management and prevention of toxicology	units
1-Training at toxicology centers and departments 2-Research project (thesis&assay)	10070709	Training and research project	12

Training goals:

The training should culminate such that the trainee has the following:

- The knowledge of the principles and the practice of clinical toxicology related to drug and poisons analysis within biological samples
- The knowledge of the theory and application of variety of instruments used for the identification and quantification of drugs or poisons
- The trainee can be conduct ascertain their knowledge of pharmacology, toxicology and interpretation of results
- The trainee should be able to examine and manage of real poisoned cases

Some of the subject matter emphasized in training includes:

- Evidence receiving and handling of samples
- Lab. procedures and practice overviews
- Blood, body fluids and tissue samples processing and analysis
- Toxic agents screenings
- Blood alcohol analysis
- Controlled substances analysis
- Quantitative and qualitative drug and chemical screening
- Immunoassay
- Spectrophotometery
- Gas chromatography quantitation
- HPLC
- Mass spectrometry quantitation
- Examining new testing and promising managing methods
- Data review and analysis
- Examination and management of at least 10 real poisoned cases