COURSE SPECIFICATIONS

Faculty of Pharmacy

Bachelor of Pharmacy

Fourth Year – First Term

2017-2018

CONTENTS:

COURSE SPECIFICATIONS

Bioassay (1)

Fourth Year-First Term
2017-2018

Course Specification of Bioassay (1)

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Pharmacology & Toxicology Department

Academic year/Level: Fourth year /First term

Date of specification approval: October 2017

B- Basic information:

Title: Bioassay (1) Code:840

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to summarize methods of biological assay and standardization of pharmaceutical compounds.

2-Intended Learning Outcomes of Bioassay (1) (lLOs):

A- Knowledge and Understanding	
a1	Illustrate basic principles for biostatistics
a2	Describe methods of biological assay and standardization of pharmaceutical compounds
a3	Outline methods of biostatistical analysis drugs
B- Professional and Practical skills	
b1	Handle chemicals used in biological assay in a safe way
b2	Apply operation techniques for basic laboratory equipments and chemicals used in biological assay pharmaceutical compounds and screening of pharmacological activity
C- Intellectual skills	
c1	Select the appropriate methods used for biological assay of hormones.
c2	Analyze experimental results using suitable statistical methods
D- General and Transferable skills	
d1	Work effectively as a member of a team.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	--Pharmacological screening and standardization	- Behavioral tests
2	Pharmacological screening and standardization	Behavioral tests
3	Pharmacological screening and standardization	Behavioral tests
4	Design of clinical studies	Behavioral tests
5	Design of clinical studies	Biostatistics
6	Biostatistics	Biostatistics
7	Biostatistics	Biostatistics
8	Biostatistics	Biostatistics
9	Biostatistics	Biostatistics
10	Biostatistics	Biostatistics
11	Drug approval process	Practical exam
12	Revision	
13	Open discussion	
14	Activity	
15	Revision	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activity, open discussion)

F- Student Assessment Methods:

1- Written exam to assess a1, a2, a3, c1, c2

2- Activity to assess d1

3- Practical exam to assess b1, b2, d1

4- Oral exam to assess a1, a2, a3, c1, c2

Assessment schedule:

Assessment (1): Written exam	Week 16
Assessment (2): Activity	Week 14
Assessment (3): Practical exams	Week 11
Assessment (4): Oral exams	Week 16

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	60	60%
Practical exam and activities	25	25%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, Laboratory equipment (kymograph, organ bath, water bath, thermometer) and Chemicals.

H- List of References:

1- Course Notes: Student book of Bioassay (1) approved by Pharmacology & toxicology department (2017).

- Practical notes of Bioassay (1) approved by Pharmacology & toxicology department (2017).

2- Essential Books:

i- Bioassay Techniques for Drug Development; Atta-ur-Raham, Iqbal Choudhary M. and Thomson W.J.; Hardwood academic (2001).

ii- Essential Medical Statistics (second edition); Kirkwood B.R., Sterne J.A.C.; Blackwell Science Inc, Main street, USA (2003)

3- Recommended books:

i- Lippincott illustrated reviews-pharmacology (six edition) (2009).

4- Periodicals and websites:

- Aquilina A. The extemporaneous compounding of paediatric medicines at Mater Dei Hospital. Journal of the Malta College of Pharmacy Practice.Issue 19, 28 – 30, 2013.

http://canadianpharmacistsletter.therapeuticresearch.com/ce/ceCourse.asp ...

Course Coordinator: Prof.Dr. Salah Gharib

Head of Department: Prof.Dr. Mohamed Mohamed Baraka

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 29 / 10 / 2017م

Date:

Matrix I of Bioassay 1 course

Course contents		ILOs of Bioassay 1 course							
		Knowledge and understanding			Professional and practical skills		Intellectual skills		General and transferable skills
		a1	a2	a3	b1	b2	c1	c2	d1
Lectures									
1	Pharmacological screening and standardization		x				x		
2	Pharmacological screening and standardization		x				x		
3	Pharmacological screening and standardization		x				x		
4	Design of clinical studies		x				x		
5	Design of clinical studies		x				x		
6	Biostatistics	x		x				x	
7	Biostatistics	x		x				x	
8	Biostatistics	x		x				x	
9	Biostatistics	x		x				x	
10	Biostatistics	x		x				x	
11	Biostatistics	x		x				x	
12	Drug approval process		x						
Practical sessions									
1	Behavioral tests				x	x			x
2	Behavioral tests				x	x			x
3	Behavioral tests				x	x			x
4	Behavioral tests				x	x			x
5	Biostatistics							x	x
6	Biostatistics							x	x

7	Biostatistics							x	x
8	Biostatistics							x	x
9	Biostatistics							x	x
10	Biostatistics							x	x
11	Activity	x		x				x	x

Matrix II of Bioassay 1 course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods		Method of assessment		
						Lecture	Practical session	Written exam	practical exam	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a2	- Pharmacological screening and standardization	Student book Essential books	x		x		x
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A13		Design of clinical studies						
2.17	Methods of biostatistical analysis and pharmaceutical calculations.	A35	a1	Biostatistics	Student book Essential books	x		x		x
			a3		Practical notes		x		x	

3.2	Handle and dispose chemicals and pharmaceutical preparations safely.	B2	b1	Behavioral tests	Practical notes		x		x	
3.8	Apply techniques used in operating pharmaceutical equipment and instruments.	B13	b2		Practical notes		x		x	
4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C8	c1	Design of clinical studies	Student book Essential books Recommended books	x		x		x
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C17	c2	Drug approval process	Student book Essential books Recommended books	x		x		x
5.3	Work effectively in a team.	D4	d1	- Behavioral tests - Activity	Practical notes		x		x	

Course Coordinator: Prof. Salah Gharib

Head of Department: Prof.Dr. Mohamed Mohamed Baraka

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 29 / 10 / 2017م

COURSE SPECIFICATIONS

Clinical Biochemistry

Fourth Year-First Term
2017-2018

Course Specification of Clinical Biochemistry

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Biochemistry Department

Academic year/Level: Fourth year/First term

Date of specification approval: 25 /9/ 2017

B- Basic information:

Title: Clinical Biochemistry Code: 240

Credit Hours: ---

Lectures : 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to discuss disorders of metabolism, their clinical features and diagnosis.

2-Intended Learning Outcomes of Clinical Biochemistry (lLOs):

A- Knowledge and Understanding	
a1	Describe different functions of body organs and different diseases.
a2	Define various enzymes changes in different diseases.
a3	Outline disorders of carbohydrates, lipids and protein metabolism.
a4	Illustrate etiology and clinical features of endocrine system and bone diseases.
a5	Identify the importance of some enzymes determination in diagnosis of diseases.
a6	Mention different markers of tumor markers.
B- Professional and Practical skills	
b1	Handle chemicals and biological samples safely.
b2	Perform laboratory tests to identify various diseases.
C- Intellectual skills	
c1	Apply good laboratory practice in pharmacy practice.
c2	Assess different analytical methods used for different metabolites and biological samples.
c3	Analyze and interpret quantitative data in a suitable form.
c4	Integrate scientific information from different sources in clinical biochemistry practice.
D- General and Transferable skills	
d1	Develop both written and oral communication.
d2	Evaluate information from different sources to improve professional abilities.
d3	Work effectively as a member of a team.
d4	Write reports and present it.
d5	Develop critical thinking and problem solving abilities.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	Introduction to clinical biochemistry and quality control measures	Lab safety rules & Introduction to clinical biochemistry
2	• Clinical aspects associated with carbohydrate metabolism disorders • Diagnostic markers for carbohydrates disordered diseases	DNA and Polymerase chain reaction
3	- Lipids and lipoproteins metabolism overview - Lipoprotein disordered diseases -Diagnostic markers for lipids disordered diseases	Case study on lipid disorders
4	• Introduction to clinical enzymology • Factors affecting non-functional - plasma enzymes levels • Enzymes in hepatic and hepato-biliary disorders and acute pancreatitis. • Enzymes in malignancy, bone disorders, cardiac disorders, skeletal muscles disorders	Liver function tests
5	• Plasma proteins • Total protein abnormalities • Methods of investigation of plasma proteins (chemical, physical, electrophoresis)	Determination of serum Albumin level
6	•Diagnostic value of Inflammatory proteins and immunoglobulins •Bone diseases	• Urine analysis
7	• Metabolic aspects of cancer • Tumor markers	Activity
8	• Organ biology o Kidney functions, diseases and Kidney function tests o Heart function tests	Case study 2
9	• Organ biology o Liver functions, Liver diseases and Liver function tests	•Determination of serum bilirubin level

10	Introduction to endocrinology • Diseases of different glands and their diagnostic laboratory tests o Pitutary gland	•Complete blood count and Interpretation of CBC
11	•Diseases of different glands and their diagnostic laboratory tests o Pitutary gland (continue) o Thyroid gland o parathyroid gland	•Case study 3
12	•Diseases of different glands and their diagnostic laboratory tests o Adrenal gland,	Practical exam (1) (sheet)
13	• Diseases of different glands and their diagnostic laboratory tests o Pancrease – Gonads	Practical exam (2)
14	Revision	
15	Open discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (Activities, case study, Open discussion...)

F- Student Assessment Methods:

1- Written exam to assess a1, a2, a3, a4, a5, a6, c3, c4

2- Activity to assess d2, d3, d4, d5

3- Practical exam to assess b1, b2, c1, c2, c3, d1, d2, d3, d4, d5

4- Oral exam to assess a1, a2, a3, a3, a4, a5, a6, c3, c4, d5

Assessment schedule:

Assessment (1): Written exam	Week 16
Assessment (2): Activity	Week 7
Assessment (3): Practical exams & sheet	Week 12, 13
Assessment (4): Oral exams	Week 16

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	60	60%

Sheet	5	5%
Students participation & activity	5	5%
Practical exam	15	15%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- For lectures : Black (white) boards, data show, air conditioned classroom**.**
- For practical: Well-equipped labs (spectrophotometer, water bath, centrifuge) and Chemicals

H- List of References:

1- Course Notes: Student book of Clinical Biochemistry1 approved by biochemistry department 2017.

- Practical notes of Clinical Biochemistry1 approved by biochemistry department 2017.

2- Essential books:

i- Clinical biochemistry: An illustrated colour text book (fourth edition); Murphy M.J., Cowan R.A., O'Reilly D. St. J., Stewart M.J, Shepherd J.; Churchil Livingstone Elsevier (2008).

ii- Text book of Biochemistry with clinical correlations (fifth edition); Devlin T.M.; A John Willey& Sons Inc. (2002).

iii- Medical Biochemistry (third edition); Baynes J.W., Domoiniczak M.H.; Mosby Elsevier (2009).

3- Recommended books:

i- Lippincott's Illustrated Review Biochemistry (fifth edition); Ferrier D.R., Harvey R.A.; Lippincott Williams & Wilkins (2010).

ii- Tietz Fundamentals of Clinical Chemistry Fundamentals (fifth edition) ; Burtis C.A., Ashwood E.R.; W.B. Saunders company (2005).

iii- Essentials of medical biochemistry with clinical cases; Bahagavan N.V, Chung-Eun Ha; Elsevier Inc. (2011).

4- Periodicals and websites:

Indian J. of Clinical Biochemistry

Egyptian J. of biochem. and molecular biology.

Annals of Clinical Biochemistry

Arab J. of Laboratory Medicine,

J. of Cardiovascular diseases.

www.Pubmed.Com

www.sciencedirect.com.

Course Coordinator: Prof. Dr. Nahla younis

Head of Department: Prof. Dr. Sahar Elsweify

Date:

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 25 / 9 /2017 م

Matrix I of Clinical biochemistry course

Course Contents		ILOs of clinical biochemistry course																
		Knowledge and understanding						Professional and practical skills		Intellectual skills				General and transferable skills				
Lectures		a1	a2	a3	a4	a5	a6	b1	b2	c1	c2	c3	c4	d1	d2	d3	d4	d5
1	• Introduction to clinical biochemistry and quality control measures	x																
2	• Clinical aspects associated with carbohydrate metabolism disorders • Diagnostic markers for carbohydrates disordered diseases			x		x						x	x					
3	• Clinical aspects associated with carbohydrate metabolism disorders • Diagnostic markers for carbohydrates disordered diseases			x		x												
4	• Introduction to clinical enzymology • Factors affecting non-functional - plasma enzymes levels • Enzymes in hepatic and hepato-biliary disorders and acute pancreatitis. • Enzymes in malignancy, bone disorders, cardiac disorders, skeletal muscles disorders	x	x			x	x					x	x					
5	• Plasma proteins • Total protein abnormalities • Methods of investigation of plasma proteins (chemical, physical, electrophoresis)			x		x						x	x					

6	• Diagnostic value of Inflammatory proteins and immunoglobulins • Bone diseases					x													
7	• Metabolic aspects of cancer • Tumor markers	x					x												
8	• Organ biology o Kidney functions, diseases and Kidney function tests o Heart function tests	x																	
9	• Organ biology o Liver functions, Liver diseases and Liver function tests	x										x	x						
10	Introduction to endocrinology • Diseases of different glands and their diagnostic laboratory tests o Pitutary gland	x			x														
11	• Diseases of different glands and their diagnostic laboratory tests o Pitutary gland (continue) o Thyroid gland o parathyroid gland	x			x	x							x						
12	• Diseases of different glands and their diagnostic laboratory tests o Adrenal gland,	x			x	x							x						
13	• Diseases of different glands and their diagnostic laboratory tests o Pancrease – Gonads	x			x														
Practical sessions																			
1	Good laboratory practice Clinical biochemistry							x	x	x	x			x					
2	•DNA and Polymerase chain reaction							x	x	x	x		x	x					
3	• Liver function tests							x	x	x	x	x		x					

4	• Determination of serum Albumin level							x	x	x	x	x		x				
5	• Urine analysis							x	x	x	x	x		x				
6	Activity (Case study- Report)													x	x	x	x	x

Matrix II of Clinical biochemistry course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment		
						Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam
2.11	Principles of body function in health and disease states as well as basis of genomic and different biochemical pathways regarding their correlation with different diseases.	A24	a1	Liver functions - Liver diseases - Kidney functions - Kidney diseases	Student book Essential books	x			x		x
				Introduction to clinical biochemistry and quality control measures							
				Metabolic aspects of cancer	Student book Essential books	x			x		x

			a2	Introduction to clinical enzymology- Factors affecting non-functional plasma enzymes levels- Enzymes in hepatic and hepato-biliary, cardiac, acute pancreatitis, bone, skeletal muscles disorders and malignancy	Student book Essential books	x			x		x
		A25	a3	Hyperglycemia- Hypoglycemia- Glycogen disorder diseases	Student book Essential books	x			x		x
				Plasma proteins- Total protein abnormalities	Student book Essential books	x			x		x
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmaco-therapeutic approaches	A27	a4	Introduction to endocrinology • Diseases of different glands and their diagnostic laboratory tests o Pitutary gland	Student book Essential books	x			x		x
				Diseases of different glands and their diagnostic laboratory tests o Pitutary							

				gland (continue) o Thyroid gland o parathyroid gland						
				Diseases of different glands and their diagnostic laboratory tests o Adrenal gland,	Student book Essential books	x			x		x
				Diseases of different glands and their diagnostic laboratory tests o Pancrease – Gonads							
		A28	a5	• Diagnostic markers for carbohydrates disordered disease	Student book Essential books	x			x		x
				Methods of investigation of plasma proteins (chemical, physical, electrophoresis)- Diagnostic value of inflammatory proteins and immunoglobulins	Student book, essential books	x			x		x

			a6	Enzymes in hepatic and hepato-biliary, cardiac, acute pancreatitis, bone, skeletal muscles disorders and malignancy	Student book Essential books	x			x		x
				Liver function tests- Kidney function tests- Heart function diseases	Student book Essential books	x			x		x
				Tumor markers	Student book Essential books	x			x		x
3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	Clinical biochemistry- Good laboratory practice	Practical notes		x			x	
3.6	Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infectious diseases.	B9	b2	• Liver function tests • Determination of serum albumin level • Urine analysis	Practical notes		x			x	

	Program ILOs ExceedingNARS	B10									
4.2	Comprehend and apply GLP,GPMP, GSP and GCP guidelines in pharmacy practice	C3	c1	Clinical biochemistry-Good laboratory practice	Practical notes		x			x	
4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C4	c2	• Liver function tests • Determination of serum albumin level • Urine analysis	Practical notes		x			x	

4.13	Analyze and interpret experimental results as well as published literature	C16	c3	Diagnostic markers for carbohydrates disordered diseases- - Liver function tests- Kidney function tests- Heart function tests- Enzymes in acute pancreatitis, bone, skeletal muscles disorders and malignancy- Methods of investigation of plasma proteins (chemical, physical, electrophoresis)- Diagnostic value of inflammatory proteins and immunoglobulins- Tumor markers	Student book Essential books	x			x		x
				Liver function tests •Determination of serum albumin level • Urine analysis	Practical notes		x			x	

4.14	Analyze and evaluate evidence-based information needed in pharmacy practice	C17	c4	Diagnostic markers for carbohydrates disordered diseases- Diagnostic markers for lipids disordered diseases-Liver function tests- Kidney function tests- Heart function tests- Enzymes in acute pancreatitis, bone, skeletal muscles disorders and malignancy- Methods of investigation of plasma proteins (chemical, physical, electrophoresis)- Diagnostic value of inflammatory proteins and immunoglobulins- Tumor markers	Student book, essential books	x			x		x
				DNA and polymerase chain reactions	Practical notes		x			x	

5.1	Communicate clearly by verbal and written means	D1	d1	Clinical biochemistry-Good laboratory practice - Liver function tests •Determination of serum albumin level • Urine analysis	Practical notes		x			x	
5.2	Retrieve and evaluate information from different sources to improve professional competencies	D3	d2	Activity (Case study-Report)	Recommended books Internet		x	x		x	
5.3	Work effectively in a team	D4	d3	Activity (Case study-Report)	Recommended books Internet		x	x		x	
5.9	Implement writing and presentation skills	D11	d4	Activity (Case study-Report)	Recommended books Internet		x	x		x	

5.1O	Implement writing and thinking, problem- solving and decision-making abilities.	D12	d5	Revision- open discussion	Student book Essential books Recommended books Internet	x		x			x
				Activity (Case study- Report)	Recommended books Internet		x	x		x	

Course Coordinator: Prof. Dr. Nahla younis

Head of Department: Prof. Dr. Sahar Elsweify

Date:

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 25 / 9 /2017 م

Course Specification

Hospital pharmacy and Clinical pharmacy-1

Fourth Year-First Term

2017-2018

Course specification of Hospital pharmacy and clinical pharmacy-1

University: Zagazig **Faculty: Pharmacy**

A- Course specifications:

Program (s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Pharmacy Practice Department

Academic year Level: Fourth year/First semester

Date of specification approval: September 2017

B- Basic information:

Title: Biopharmaceutics and physical pharmacy-1 Code: 640

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to illustrate duties of pharmacists, different pharmaceutical services and different medication distribution systems in hospital pharmacy setting. In addition, the student will be able to describe hospital formulary, different adverse drug reactions and drug allergy and different types of medication errors and how to manage these errors.

2- Intended Learning Outcomes of Hospital pharmacy and clinical pharmacy-1 (ILOs)

A- Knowledge and Understanding	
a1	List the responsibilities and duties of pharmacists and pharmacy services in the hospital pharmacy setting
a2	Outline different medication distribution systems
a3	Describe good dispensing practices of narcotics, vaccines and radiopharmaceuticals
a4	Enumerate different medication errors
a5	Explain proper documentation and drug filing systems.
B- Professional and Practical skills	
b1	Experience different duties of hospital pharmacist
b2	Handle pharmaceutical preparations safely
b3	Compound different extemporaneous preparations safely and effectively
C- Intellectual skills	
c1	Analyze common hazardous situations contributing to medication errors
c2	Solve different problems related to parentral admixtures
D-General and Transferable skills	
d1	Communicate effectively with patients and health care team members
d2	Improve the pharmacist thinking , decision making and problem solving abilities
d3	Work effectively in a team

D- Contents:

Week No.	Lecture contents (2 hrs/week)	Practical session (2hrs/week)
1	- Orientation to hospital pharmacy	Introduction
2	- Introduction to Hospital pharmacy -Responsibilities of hospital pharmacist	Translating Medication Orders
3	- Pharmacy and therapeutic committee - Hospital formulary	Extemporaneous compounding
4	- Hospital drug distribution systems	Extemporaneous compounding
5	- Dispensing Process	Hospital Pharmacy Practice Site Visit (Activity, report writing)
6	Dispensing of radiopharmaceuticals	Electrolyte solutions: Milliequivalents, Milimoles and Milliosmoles
7	Dispensing of vaccines	Dry powders for reconstitution
8	Dispensing of controlled drugs	Parentral admixtures
9	IV admixture and TPN	Parenteral Nutrition (Problem solving)
10	Medication errors	Medication errors (Case study)
11	Medication errors (Cont.)	Drug Interactions Checker (internet search & report writing)
12	Pharmacovigilance and adverse drug reactions	**Practical exam**
13	-Rational drug use	
14	- Revision	
15	Open Discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Self learning (Activities, open discussion)

F- Student Assessment methods:

1- Written exams to assess: a1, a2, a3, a4, a5, c1, d2

2- Activity to assess: b1, d1, d2,d3

3- Practical exams to assess: b1, b2, b3, c2, d2

4- Oral exam to assess: a1, a2, a3, a4, a5, c1, d2

Assessment schedule

Assessment (1): Written exam	Week 16
Assessment (2): Activity	Week 5
Assessment (3): Practical exams	Week 12
Assessment (4): Oral exams	Week 16

Weighting of Assessment

Assessment method	Marks	Percentage
Written exam	60	60%
Practical exam and activities	25	25%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities required for teaching and learning:

• For lectures : Black (white) boards, data show, air conditioned classroom

• For practical: Well-equipped labs

• Hospital pharmacy (Zagazig University Hospital)

H- List of References:

1- Course Notes: Student book of Hospital pharmacy and clinical pharmacy -1 approved by pharmacy practice department (2017)

2- Essential Books:

- Mark G. Brunton, Hospital Pharmacy Practice for Technician, Jones & Bartlett Learning, USA, 2015.
- Jackson M, Lowey A. Handbook of extemporaneous preparation. A guide to pharmaceutical compounding. Published by Pharmaceutical Press, 2010.
- Brown TR. Handbook of institutional pharmacy practice.4th edition, American Society of Health System Pharmacists. Bethesda, Maryland, 2006.

3- Recommended Books:

- Martindale, "The extra pharmacopeia". 31st edn., by James, E.F Reynolds. And Kathleen Parfitt, Royal Pharmaceutical Society, London (2007).
- Non-prescription drugs, Po Alain Li Wan, 2nd ed., Oxford Blackwell Scientific publications (1990).
- Cohen MR. Medication Errors. Causes, Prevention, and Risk Management; 8.1-8.23.
- Holdford DA, Brown TR. Introduction to Hospital & Health System. American Society of Health System Pharmacists. Bethesda, Maryland.

4- Periodicals and websites:

- Aquilina A. The extemporaneous compounding of paediatric medicines at Mater Dei Hospital. Journal of the Malta College of Pharmacy Practice.Issue 19, 28 – 30, 2013.
- Flynn E, Barker KN, Carnahan BJ. National observational study of prescription dispensing accuracy and safety in 50 pharmacies. J Am Pharm Assoc. 2003; 43:191–200.
- Ukens C. Deadly dispensing: an exclusive survey of Rx errors by pharmacists. Drug Topics. March 13, 1997:100–11.
- Strategies for Communicating Effectively with Patients, Volume 2016, Course No. 230.

http://canadianpharmacistsletter.therapeuticresearch.com/ce/ceCourse.asp...
https://www.allaboutcareers.com/careers/job-profile/hospital-pharmacist
https://www.slideshare.net/AbdRhmanGamilgamil/pharmacy-practice-67234967
https://www.drugs.com/drug_interactions.html
www.usp.org/reporting/review/qr66.pdf

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Dr. Gehan Fathy Attia

Date: م 2017/ 9 / تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I of Hospital pharmacy and clinical pharmacy-1 course

Course Contents		ILOs of Hospital pharmacy course												
		knowledge and understanding					Professional and practical skills			Intellectual skills		Transferable and general skills		
Lectures		**a1**	**a2**	**a3**	**a4**	**a5**	**b1**	**b2**	**b3**	**c1**	**c2**	**d1**	**d2**	**d3**
1	Orientation to hospital pharmacy	x												
2	Introduction to Hospital pharmacy -Responsibilities of hospital pharmacist	x												
3	Pharmacy and therapeutic committee - Hospital formulary	x												
4	Hospital drug distribution systems		x											
5	Dispensing Process	x		x										
6	Dispensing of radiopharmaceuticals													
7	Dispensing of vaccines	x		x										
8	Dispensing of controlled drugs	x		x										
9	IV admixtures and TPN	x												
10	Medication errors				x					x				
11	Pharmacovigilance and adverse drug reactions	x		x		x				x				
12	Rational drug use	x		x		x								
Practical session														
1	Translating Medication Orders						x					x	x	x

2	Extemporaneous compounding						x	x	x			x	x	x
3	Electrolyte solutions: Milliequivalents, Milimoles and Milliosmoles										x	x	x	x
4	Dry powders for reconstitution						x				x	x	x	x
5	Parentral admixtures						x				x	x	x	x
6	Parenteral Nutrition (Problem solving)						x				x	x	x	x
7	Medication errors (Case study)						x			x		x	x	x
8	Drug Interactions Checker (internet search & report writing)						x			x		x	x	x
9	Hospital Pharmacy Practice Site Visit (Activity, report writing)						x					x	x	x

Matrix II For Hospital pharmacy and clinical pharmacy-1 course

NARS		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment		
						Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A8	a1	Orientation to hospital pharmacy Introduction to Hospital pharmacy -Responsibilities of hospital pharmacist Pharmacy and therapeutic committee - Hospital formulary Dispensing Process Dispensing of vaccines Dispensing of controlled drugs IV admixtures and TPN Pharmacovigilance and adverse drug reactions Rational drug use	Student book Essential books	x			x		x
2.2	Physico-chemical properties of various substances used in preparation of medicines including active and inactive ingredients as well as biotechnology and radio-labeld product	A9	a3	Dispensing of radiopharmaceuticals Dispensing of vaccines Dispensing controlled drugs Rational drug use	Student book Essential books	x			x		x
2.9	Principles of hospital pharmacy including I.V. admixtures, TPN and drug distribution system	A20	a1	Orientation to hospital pharmacy Introduction to Hospital pharmacy -Responsibilities of hospital	Student book Essential books	x			x		x

			a2	pharmacist Pharmacy and therapeutic committee - Hospital formulary Hospital drug distribution systems Dispensing Process Dispensing of radiopharmaceuticals Dispensing of vaccines Dispensing of controlled drugs IV admixtures and TPN							
2.20	Principles of proper documentation and drug filing systems.	A39	a4 a5	Introduction for hospital pharmacists Responsibilities of hospital pharmacists The hospital formulary Dispensing of controlled drugs Medication errors Pharmacovigilance and adverse drug reactions	Student book Essential books	x			x		x
3.2	Handle and dispose chemicals in a safe way.	B2	b2	Extemporaneous compounding	Practical notes		x				
3.3	Compound, dispense, label, store and distribute medicines	B4	b1	Translating Medication Orders Extemporaneous compounding Electrolyte solutions:	Practical notes		x			x	

	effectively and safely		b3	Milliequivalents, Milimoles and Milliosmoles Electrolyte solutions: Dry powders for reconstitution Parentral admixtures Parenteral Nutrition (Problem solving) Drug Interactions Checker (internet search & report writing)							
					Practical notes and student book	x	x	x	x	x	x
4.1	Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.	C1	c1	Medication errors Pharmacovigilance and adverse drug reactions Rational drug use	Student book Essential books	x			x		x
4.10	Calculate and adjust dosage and dose regimen of medications	C13	c2	Electrolyte solutions: Milliequivalents, Milimoles and Milliosmoles Parentral admixtures Parenteral Nutrition (Problem solving)	Practical notes and student book		x			x	
5.1	Communicate clearly by verbal and means	D1	d1	Translating Medication Orders Extemporaneous compounding Electrolyte solutions: Milliequivalents, Milimoles and	Practical notes and internet		x	x		x	x

5.3	Work effectively in a team.	D4	d3	Milliosmoles Electrolyte solutions: Dry powders for reconstitution Parentral admixtures Parenteral Nutrition (Problem solving) Drug Interactions Checker (internet search & report writing)				x		x	
5.10	Implement writing and thinking, problem-solving and decision-making abilities.	D12	d2					x			

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Dr. Gehan Fathy Attia

Date: 2017/ 9 / تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Medicinal Chemistry (1)

Fourth Year-First Term

2017-2018

Course Specification of Medicinal Chemistry (1)

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Medicinal chemistry Department

Academic year/Level: Fourth year /First term

Date of specification approval: 22/8/2017

B- Basic information:

Title: Medicinal Chemistry (1) Code: 340

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to demonstrate physicochemical properties of drugs in relation to biological action, total synthesis, mechanism of action, and adverse reactions. In addition, students will be able to explain the basics of medicinal chemistry through identification of the chemistry and uses of different drug classes (Antibiotics, antiseptics, disinfectants, antiprotozoals, antimalarials, anthelminitics, antifungals& sulfonamides).

2-Intended Learning Outcomes of Medicinal Chemistry (1) (lLOs):

A- Knowledge and Understanding	
a1	Describe the chemistry of different drug classes (Antibiotics, antiseptics, disinfectants, antiprotozoals, antimalarials, anthelminitics, antifungals&sulfonamides).
a2	Outline the synthetic pathways of some of the aforementioned drugs.
a3	Recognize mode of action & SAR of the aforementioned drugs.
B- Professional and Practical skills	
b1	Handle basic laboratory equipments, chemicals effectively and safely.
b2	Identify the impurities of active substances in samples.
b3	Establish a research study for assay and analysis of impurities according to pharmacopeial standards.
C- Intellectual skills	
c1	Apply GLP guide lines in pharmacy practice through learning different analytical techniques.
c2	Evaluate quantitative and qualitative methodology of authentic samples.
c3	Evaluate quantitative and qualitative methodology of pharmaceutical preparations.
D- General and Transferable skills	
d1	Work effectively as a member of a team with other students.
d2	Write reports and present it.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	Introduction to medicinal chemistry (physicochemical properties in relation to biological action).	-Laboratory safety measures
2	Antiprotozoal agents (antiamoebic, antitrichomonal, antigiardial agents, antileshmanial & antitrypanosomal agents).	-Tests for Purity Limit test for chloride (E.p. & B.p.)
3	Antimalarials (4-amino quinolines, 8-aminoquinolines, acridine derivatives, biguanides & pyrimidine derivatives).	Limit test for sulphate (E.P)
4	Anthelminitics (drugs active for nematodes & cestodes).	Limit test for sulphate (B.P)
5	Anthelminitics (drugs active for trematodes & antibelharzials).	Limit test for iron (E.P.) **-Activity(case study)**
6	Sulphonamides.	Limit test for lead (E.P)
7	Antifungals.	Limit test for lead (B.P)
8	Antibiotics (B-lactam penicillin antibiotics)	Test for heavy metals (E.p.). **Activity 2 (case study)**
9	Antibiotics (B-lactam antibiotics, cephalosporins & aminoglycosides)	Revision scheme 1
10	Antibiotics (macrolide, fused ring, conjugated polyene compounds & poly peptide antibiotics).	Revision scheme 2
11	Antibiotics (sulphur containing antibiotics & unclassified antibiotics)	**Practical exam**
12	Antiseptics& disinfectants (alcohol, aldehyde, acids, oxidizing agents, chlorine containing compounds, phenolic compounds, cationic surfactants).	**Practical exam**
13	Antiseptics& disinfectants (dyes, nitrofurans derivatives, mercury containing compounds & floroquinolones)	
14	Revision	

15	open discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activity, case report)

F- Student Assessment Methods:

1- Written exam to assess a1, a2, a3, c3

2- Activity to assess d1, d2

3- Practical exam to assess b1, b2, b3, c1, d1, d2

4- Oral exam to assess a1, a2, a3, c3

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 5,11
Assessment (3): Practical exams	Week 6,12
Assessment (4): Oral exams	Week 16

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	60	60%
Practical exam and activities	25	25%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, overhead projectors, Data show, Laboratory equipment (Nessler tubes) and Chemicals.

H- List of References:

1- Course Notes: Student book of Medicinal chemistry (1) approved by medicinal chemistry department 2017

- Practical notes of Medicinal chemistry (1) approved by medicinal

chemistry department 2017

2- Essential Books:

i- Wilson & Griswold's Textbook of Organic: Medicinal and Pharmaceutical Chemistry; Wilson, Charles Owens; Beale, John Marlowe; Block, John H.; Block, John H.; Griswold, Ole; Wiley-Interscience (2009).

ii- Foye's Principles of Medicinal Chemistry; Williams, David A., William O. Foye, and Thomas L. Lemke; Lippincott Williams and Wilkins (2009).

iii- B.p. &U.S Pharmacopia (1988-2007)

3- Recommended books

i- An Introduction to Medicinal Chemistry; Patrick, Graham L, Oxford (2009)

4- Periodicals, Web Sites, etc

http://www.ncbi.nlm.nih.gov/sites/entrez

http://journals.tubitak.gov.tr/chem/index.php

http://www.pharmacopoeia.co.uk/

www.Pubmed.Com

www.sciencedirect.com

Course Coordinator: Prof. Dr./ Sobhy M. El-Adl.

Head of Department: Prof. Dr./ Mohammed Baraka.

Date: 22/8/2017 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

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Matrix I of Medicinal chemistry 1 course

Course Contents		ILOs of Medicinal chemistry 1course										
		Knowledge and understanding			Professional and practical skills			Intellectual skills			General and transferable skills	
Lectures		a1	a2	a3	b1	b2	b3	c1	c2	c3	d1	d2
1	Antibiotics (B-lactam antibiotics penicillins)	x	x	x								
2	Antibiotics (B-lactam antibiotics cephalosporins) & aminoglycosides	x	x	x								
3	Antibiotics (macrolide , fused ring , conjugated polyene compounds , poly peptide antibiotics)	x	x	x								
4	Antibiotics (sulphur containing antibiotics, unclassified antibiotics) Antiseptics&disinfectants (alcohol,aldehyde,acids)	x	x	x								
5	Antiseptics & disinfectants (chlorine containing compounds, phenolic compounds, cationic surfactants, dyes, nitrofurans derivatives)	x	x	x						x		
6	Antiseptics & disinfectants (floroquinolones)	x	x	x						x		
7	Antiprotozoal agents (antiamoebic , antitrichomonal , antigiardial agents , antileshmanial ,antitrypanosomal agents)	x	x	x								
8	Antimalarials (4-amino quinolines 8-aminoquinolines)	x	x	x								
9	Antimalarials (acridine derivatives , Biguanides , pyrimidine derivatives)	x	x	x								

10	Anthelminitics (drugs active for nematodes &cestodes)	x	x	x								
11	Anthelminitics (drugs active for trematodes antibelharzial) &Antifungals	x	x	x								
12	Antifugals & sulfonamides	x	x	x						x		
Practical sessions												
1	Laboratory safety measures				x							
2	Limit tests for chlorides , sulphates , iron , lead				x	x	x	x	x	x	x	x
3	Test for heavy metals				x	x	x	x	x			x
4	Activity (case study)										x	x

Matrix II of Medicinal chemistry 1 course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Methods of assessment		
						Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1	Antibiotics (B-lactam antibiotics penicillins)	Student book	x			x		x
				Antibiotics (B-lactam antibiotics cephalosporins) & aminoglycosides	Student book	x			x		x
				Antibiotics (macrolide , fused ring , conjugated polyene compounds , poly peptide antibiotics)	Student book	x			x		x
				Antibiotics (sulphur containing antibiotics , unclassified antibiotics). Antiseptics&disinfectants (alcohol,aldehyde,acids)	Student book Essential books Internet	x		x	x		x
				Antiseptics & disinfectants (chlorine containing compounds, phenolic compounds, cationic surfactants, dyes, nitrofurans derivatives)	Student book	x			x		x
				Antiseptics & disinfectants (floroquinolones)	Student book	x			x		x

				Antiprotozoal agents (antiamoebic , antitrichomonal , antigiardial agents , antileshmanial ,antitrypanosomal agents)	Student book	x			x		x
				Antimalarials (4-amino quinolines 8-aminoquinolines)	Student book	x			x		x
				Antimalarials (acridine derivatives , Biguanides , pyrimidine derivatives)	Student book	x			x		x
				Anthelminitics (drugs active for nematodes &cestodes)	Student book	x			x		x
				Anthelminitics (drugs active for trematodes antibelharzial) &. Antifungals	Student book, essential books	x		x	x		x
				Antifugals & sulfonamides classification	Student book	x			x		x
				sulfonamides	Student book	x			x		x
2.5	Principles of drug design, development and synthesis.	A15	a2	Antibiotics (B-lactam antibiotics penicillins)	Student book	x			x		x
				Antibiotics (B-lactam antibiotics cephalosporins) & aminoglycosides	Student book	x			x		x
				Antibiotics (macrolide , fused ring , conjugated polyene compounds , poly peptide antibiotics)	Student book Essential books Internet	x		x	x		x

				Antibiotics (sulphur containing antibiotics , unclassified antibiotics). Antiseptics&disinfectants (alcohol,aldehyde,acids)	Student book	x			x		x
				Antiseptics & disinfectants (chlorine containing compounds, phenolic compounds, cationic surfactants, dyes, nitrofurans derivatives)	Student book	x			x		x
				Antiseptics & disinfectants (floroquinolones)	Student book	x			x		x
				Antiprotozoal agents (antiamoebic , antitrichomonal , antigiardial agents , antileshmanial ,antitrypanosomal agents)	Student book	x			x		x
				Antimalarials (4-amino quinolines 8-aminoquinolines)	Student book	x			x		x
				Antimalarials (acridine derivatives , Biguanides , pyrimidine derivatives)	Student book	x			x		x
				Anthelminitics (drugs active for nematodes &cestodes)	Student book	x		x	x		x
				Anthelminitics (drugs active for trematodes antibelharzial) &. Antifungals	Student book	x			x		x
				Antifugals & sulfonamides classification	Student book	x			x		x
				sulphonamides	Student book	x			x		x
2.13	Pharmacological properties of drugs	A30	a3	Antibiotics (B-lactam antibiotics penicillins)	Student book	x			x		x

	including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.			Antibiotics (B-lactam antibiotics cephalosporins) & aminoglycosides	Student book	x			x		x
				Antibiotics (macrolide , fused ring , conjugated polyene compounds , poly peptide antibiotics)	Student book	x			x		x
				Antibiotics (sulphur containing antibiotics , unclassified antibiotics). Antiseptics&disinfectants (alcohol,aldehyde,acids)	Student book, Internet	x		x	x		x
				Antiseptics & disinfectants (chlorine containing compounds, phenolic compounds, cationic surfactants, dyes, nitrofurans derivatives)	Student book	x			x		x
				Antiseptics & disinfectants (floroquinolones)	Student book	x			x		x
				Antiprotozoal agents (antiamoebic , antitrichomonal , antigiardial agents , antileshmanial ,antitrypanosomal agents)	Student book	x			x		x
				Antimalarials (4-amino quinolines 8-aminoquinolines)	Student book	x			x		x
				Antimalarials (acridine derivatives , Biguanides , pyrimidine derivatives)	Student book	x			x		x
				Anthelminitics (drugs active for nematodes &cestodes)	Student book	x			x		x
				Anthelminitics (drugs active for trematodes antibelharzial) &. Antifungals	student book Internet	x		x	x		x

				Antifugals & sulfonamides	Student book	x			x		x
				sulphonamides	Student book	x			x		x
3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	Laboratory safety measures	Practical notes		x			x	
3.4	Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins.	B6	b2	Limit tests for chlorides , sulphates , iron , lead	Practical notes		x			x	
				Test for heavy metals	Practical notes		x			x	
3.11	Conduct research studies and analyze the results.	B17	b3	Limit tests for chlorides , sulphates , iron , lead	Practical notes		x	x		x	

				Test for heavy metals	Practical notes		x	x		x	
4.1	Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.	C1	c1	Limit tests for chlorides , sulphates , iron , lead	Practical notes		x			x	
				Test for heavy metals	Practical notes		x			x	
4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C4	c2	Limit tests for chlorides , sulphates , iron , lead	Practical notes		x			x	
				Test for heavy metals	Practical notes		x			x	

4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C5	c3	Antiseptics & disinfectants (chlorine containing compounds, phenolic compounds, cationic surfactants, dyes, nitrofurans derivatives) Antiseptics & disinfectants (floroquinolones) Antifugals & sulfonamides Limit tests for chlorides , sulphates , iron , lead in Pharmaceutical product	Student book Practical notes	x	x		x	x	x
5.3	Work effectively in a team	D4	d1	Limit tests for chlorides , sulphates , iron , lead	Practical notes		x			x	
				Activity	Internet Recommended books		x	x		x	
5.9	Implement writing and presentation skills	D11	d2	Limit tests for chlorides , sulphates , iron , lead	practical notes		x			x	
				Test for heavy metals	Practical notes		x			x	
				Activity	Internet Recommended books		x	x		x	

Course Coordinator: Prof. Dr./ Sobhy M. El-Adl.

Head of Department: Prof. Dr./ Mohammed Baraka.

Date: 22/8/2017 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Course Specification

Natural products 1

Fourth Year-First Term

2017-2018

Course Specification of Natural products I

University: **Zagazig** **Faculty:** **Pharmacy**

A- Course specifications:

Program (s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Pharmacognosy

Academic year Level: Fourth year/First term

Date of specification approval: October 29, 2017

B- Basic information:

Title: Natural products I code: 740

Credit Hours: ---

Lectures: 3 hrs/week

Practical: 3.5 hrs/week

Tutorials: ---

Total: 6.5 hrs/week

C- Professional information:

1-Overall aim of the course:

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

demonstrate comprehensive knowledge, clear understanding and competent skills in dealing with natural products isolated or in their sources specially volatile oils and certain sub-classes of lipids e.g. fixed oils , fats , waxes , eicosanoides , steroids , carotenoides , vitamins, resin and resin combinations in addition to minerals and antioxidants

2-Intended learning outcomes (ILOs):

A- Knowledge and Understanding	
a1	Define certain classes of natural products and pharmaceutical products containing them e.g. volatile , fixed oils , fats , waxes , eicosanoides , steroids , carotenoides , vitamins , resins and resin combinations in addition to minerals and antioxidants.
a2	State and classify certain classes of natural products e.g. volatile , fixed oils , fats , waxes , eicosanoides , steroids , carotenoides , vitamins , resins and resin combinations in addition to minerals and antioxidants.
a3	Describe the chemistry of the above mentioned classes
a4	List the pharmacological properties (biological activities) and contra-indications of the above mentioned classes.
a5	Describe different analytical techniques used in natural products determination for the above mentioned classes
a6	Name the methods of isolation, purification and identification of natural volatile oils.
a7	Recognize volatile oils as a type of alternative medicine(aromatherapy)
a8	Describe natural and pharmaceutical products containing vegetable and fixed oils, lipids, waxes, vitamins and steroids
B- Professional and Practical skills	
b1	handle chemicals, solvents, and equipment in a safe way
b2	Choose the proper pharmaceutical terms and abbreviations for certain classes of natural products e.g. volatile , fixed oils , fats , waxes , eicosanoides , steroids , carotenoides , vitamins , resins and resin combinations in addition to minerals and antioxidant
b3	Examine volatile oil components
b4	Examine different volatile and fixed oils, vitamins and resins
b5	Prepare a lab research report on a natural products analysis
C- Intellectual skills	
c1	Estimate certain classes of naturally occurring products e.g. volatile , fixed oils , fats , waxes , eicosanoides , steroids , carotenoides , vitamins , resins and resin combinations in addition to minerals and antioxidants.
c2	Predict the suitable method for isolation and purification of different oils, vitamins and other natural components
D- General and Transferable skills	

d1	Communicate clearly by verbal and written means
d2	Use writing and presentation skills
d3	Show effectivness in a team work
d4	Choose, evaluate , integrate information from different sources.
d5	Demonstrate critical thinking, problem-solving and decision making abilities.

D-Course Content:

Week No.	Lecture contents (3hrs/lec)	Practical (3.5hrs/lab)
1	**-VOLATILE OILS** - Occurrence, physical properties. - Preparation and determination. - Chemistry and uses. - Classification of vol. Oils components.	-Safety measures
2	**-VOLATILE OILS** - Classification of vol. Oils components. Hydrocarbons. Oxygenated components.	-Preparation of volatile oils -Determination of purity of volatile oils
3	**-VOLATILE OILS** -Classification of vol. Oils components. Oxygenated components.	-Assay of Cineol in Eucalyptus oil
4	**-VOLATILE OILS** - Classification of vol. Oils components. -Oxygenated components. N and S containing components.	-Assay of benzaldehyde in bitter almond oil
5	**Lipids (fixed oils, fats &waxes)** - Definition and nomenclature - Classification - Sources, properties and distribution. - Preparation of fixed oils	-Assay of ascaridol in chenopodium oil
6	**Lipids (fixed oils, fats &waxes)** - Chemistry and biological values of individual fatty acids - Artificial fats(fat substitutes)	Assay of Eugenol in clove oil -**Activity (internet research**): search for and select the suitable methods for extraction and assay of pharmaceutically important fixed oils
7	**Vitamins** Definition, classification Chemistry of fat soluble vitamins. Sources of fat soluble vitamins Biological value and deficiencies of fat soluble vitamins.	**Activity**: Problem solving session involving fixed and volatile oils.
8	**Vitamins** Chemistry of water soluble vitamins. Sources of water soluble vitamins Biological value and deficiencies of water soluble vitamins.	-Assay of vitamins (1)
9	**Minerals** Classification, source, biological functions, possible interactions.	-Assay of vitamins (2)
10	**Natural carotenoids** - Definition and nomenclature - Classification and chemistry - Natural sources - Biological role and pharmaceutical uses	Activity: Search report on the assay of a vitamin.

11	**Natural eicosanoides** - Definition and nomenclature - Classification and chemistry - Sites of formation - Biological role and pharmaceutical uses	**Practical exam**
12	**Resins and resin combinations** - Definition - Classification and chemistry - Biological origin - Pharmaceutical uses.	
13	**Natural antioxidants** - Definitions and classification - Biological role . - Antioxidant recovery.	
14	Revision	
15	Formative Written Exam	

E-Teaching and learning methods:

- Lectures
- Practical sessions
- Self learning (activity)

F-Student assessment:

1-Written exam to assess: a1, a2, a3, a4, a5, a6, a7, a8, c1,c2

2- Activity to assess: d1, d2, d3, d4, d5

3-Practical exam to assess: b1, b2, b3,b4,b5, c1, c2, d1, d2

4-Oral exam to assess: a1, a2, a3, a4, a5, a6, a7, a8, c2, d1

Assessment schedule:

Assessment (1): Written exam	Week 16
Assessment (2): Activity	Week 6,7 ,10
Assessment (3): Practical exam	Week 11
Assessment (4): Oral exam	Week 16

Weighing of assessment:

Assessment method	Marks	Percentage
Written exam	90	60 %
Practical exam including activity (internet research group ; 5-10 each)	40	26 %
Oral exam	20	14 %
Total	150	100 %

G-Facilities required for teaching and learning:

•For lectures: Black (white) boards, overhead projectors, data show.

• For Labs: Chemicals, glassware, instruments, Digital balances, water bathes.

H-List of References:

1- Course notes:

Student book of natural product I approved by Pharmacognosy department (2017).

2 -Essential (textbooks):

- Kalia A. N. Textbook of Industrial Pharmacognosy.Published by CBS, 2009.
- Kuhn M. A. and Winston D. Herbal Therapy Supplements; 2nd Ed. Published by Lippincott, Williams & Wilkins, 2008.
- Barton, D and Nakanishi, K, Comprehensive Natural Products Chemistry. Published by Elsevier Science Ltd., 1999.
- Kaufmann P.B et al. Natural Products from Plants. Published by CRC Press, 1999.
- Torssel K.B.G. Natural Products Chemistry.Published by Apotekars Press ,1997.

- Robbers, J.E., Speedie, M. K. and Tyler. V. E. Pharmacognosy and Pharmacobiotechnology. Published by Williams & Wilkins, 1996.

3- Recommended Books:

i-The Hand Books of Natural Flavonoids; Harborne, J.,B. and Baxter, H, ;John Wiley &Sons Ltd.(1999)

ii- Natural Products Isolation; Canell ,R.J. P ,Humana Press. (1998).

iii-Chromatographic Analysis of pharmaceuticals; Adamovics ,J.A ;2nd Ed (1997)

vi-Phytochemical Resourses for Medicine and Agriculture; Nigg,H.N. and Seigler ,D.; Plenum Press (1992)

v-Medicinal Natural Products; A Biosynthetic Approach. Dewick, P.M.; John Wiley &Sons (1998)

4- Periodicals and websites:

- **Periodicals** :Fitotherapia**,** Die Pharmazie , Journal of Natural Products Phytochemistry ,Planta medica
  - http:// www.elsevier.com/phytochem
  - http:// www.elsevier.com/phytomed
  - http:// www.wiley.co.uk.
  - http:// www.sciencedirect.com

Course Coordinator: Prof. Dr. Azza Mohommed E-Shafae

Head of Department: Prof. Dr. Azza Mohommed E-Shafae

Date: 29 / 10 /2017 م تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I of Natural Products-1 Course

Course Contents		ILOs of Natural Products-1 Course																			
		Knowledge and understanding								Professional and practical skills					Intellectual skills		Transferable and general skills				
		a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	b5	c1	c2	d1	d2	d3	d4	d5
Lectures																					
VOLATILE OILS																					
1	- Occurrence, physical properties.	x																			
2	- Preparation and determination.	x	x			x	x								x	x					
3	- Chemistry and uses.	x	x				x	x	x												
4	- Classification of vol. Oils components.	x	x																		
FIXED OILS, LIPIDS AND WAXES																					
5	- Sources and properties.			x																	
6	- Preparation.			x		x															
7	- Chemistry and uses in pharmacy.			x		x		x								x					
VITAMINS AND MINERALS																					
8	- Definition and general functions.			x																	
9	- Sources and distribution.			x																	

10	- Biological value.			x																
11	- Chemistry and classification.			x		x		x												
12	- Mineral			x				x												
13	- NATURAL STEROIDS AND RELATED HORMONES			x		x		x												
Course Contents		**ILOs of Natural Products-1 course**																		
		Knowledge and understanding								**Professional and practical skills**					**Intellectual skills**		**Transferable and general skills**				
		a1	**a2**	**a3**	**a4**	**a5**	**a6**	**a7**	**a8**	**b1**	**b2**	**b3**	**b4**	**b5**	**c1**	**c2**	**d1**	**d2**	**d3**	**d4**	**d5**
14	- NATURAL CAROTENOIDS				x	x		x													
15	- NATURAL PROSTAGLADINES.				x	x		x													
16	- RESINS AND RESIN COMBINATION				x	x		x													
	NATURAL ANTIOXIDANTS																				
17	- Introduction				x																
18	- Sources of oxidants.				x																
19	- Mechanism of action.				x			x													
20	- Sources of antioxidants				x																
Practical																					
21	- Safety measures									x											
22	- Preparation of volatile oils										x	x	x								

23	- Determination of purity of volatile oils										x	x	x				x					
24	- Assay of Cineol in Eucalyptus oil										x	x	x		x		x					
25	- Assay of benzaldehyde in bitter almond oil										x	x	x		x		x					
26	- Assay of ascaridol in chenopodium oil										x	x	x		x		x					
27	- Assay of Eugenol in clove oil										x	x	x		x		x					
28	- Assay of vitamins (1)											x	x				x					
29	- Assay of vitamins (2)											x	x				x					
30	- Assay of vitamins (3)																x					
31	- Activity: Pridect suitable methods of assay of oil													x		x	x	x	x	x	x	x
32	- Activity																x	x	x	x	x	

Matrix II of Natural Products-1

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Weighting of assessment		
						Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam
Lectures											
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1	VOLATILE OILS - Occurrence, physical properties. - Preparation and determination. Chemistry and uses. - Classification of vol. oils components.	Student book	x			x		x
			a2	VOLATILE OILS - Preparation and determination. - Chemistry and uses. - Classification of vol. Oils components.	Student book	x			x		x
			a3	FIXED OILS, LIPIDS AND WAXES	Student book	x			x		x

				-Sources and properties. -Preparation. -Chemistry and uses in pharmacy. VITAMINS AND MINERALS - Definition and general functions. -Sources and distribution. -Biological value. -Mineral NATURAL STEROIDS AND RELATED HORMONES							
			a4	NATURAL CAROTENOIDS NATURAL PROSTAGLADINES. RESINS AND RESIN COMBINATION NATURAL ANTIOXIDANTS -Introduction -Sources of oxidants. -Mechanism of action. -Sources of antioxidants	Student book	x			x		x
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a5	VOLATILE OILS - Preparation and determination. FIXED OILS, LIPIDS AND WAXES -Preparation. -Chemistry and uses in pharmacy. VITAMINS AND MINERALS -Chemistry and	Student book	x			x		x

				classification. - NATURAL STEROIDS AND RELATED HORMONES - NATURAL CAROTENOIDS - NATURAL PROSTAGLADINES. RESINS AND RESIN COMBINATION							
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A12	a6	VOLATILE OILS - Preparation and determination. -Chemistry and uses.	Student book	x			x		x
2.13	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	A30	a7	VOLATILE OILS -Chemistry and uses. FIXED OILS, LIPIDS AND WAXES -Chemistry and uses in pharmacy. VITAMINS AND MINERALS -Chemistry and classification. -Mineral -NATURAL STEROIDS AND RELATED	Student book	x			x		x

				HORMONES NATURAL CAROTENOIDS -NATURAL PROSTAGLADINES. RESINS AND RESIN COMBINATION - NATURAL ANTIOXIDANTS Mechanism of action.							
2.15	Basis of complementary and alternative medicine	A32	a8	VOLATILE OILS -Chemistry and uses.	Student book	x			x		x
Practical											
3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	- Safety measures	Practical notes		x			x	
3.4	Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins.	B5	b2	- Preparation of volatile oils. - Determination of purity of volatile oils - Assay of Cineol in Eucalyptus oil. - Assay of benzaldehyde in bitter almond oil - Assay of ascaridol in chenopodium oil - Assay of Eugenol in clove oil	Practical notes		x			x	
			b3	- Preparation of volatile oils. - Determination of purity of volatile oils	Practical notes		x			x	

				- Assay of Cineol in Eucalyptus oil. - Assay of benzaldehyde in bitter almond oil - Assay of ascaridol in chenopodium oil - Assay of Eugenol in clove oil - Assay of vitamins (1) - Assay of vitamins (2)						
			b4	- Preparation of volatile oils. - Determination of purity of volatile oils - Assay of Cineol in Eucalyptus oil. - Assay of benzaldehyde in bitter almond oil - Assay of ascaridol in chenopodium oil - Assay of Eugenol in clove oil - Assay of vitamins (1) - Assay of vitamins (2)	Practical notes		x			x	
3.11	Conduct research studies and analyze the results	B17	b5	- Activity: Pridect suitable methods of assay of oils - Activity:	Internet, essential and recommended books.			x			

4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C4	c1	VOLATILE OILS - Preparation and determination. - Assay of Cineol in Eucalyptus oil. - Assay of benzaldehyde in bitter almond oil - Assay of ascaridol in chenopodium oil - Assay of Eugenol in clove oil	Practical notes		x			x	
4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C7	c2	VOLATILE OILS - Preparation and determination. FIXED OILS, LIPIDS AND WAXES - Chemistry and uses in pharmacy. - Activity: Pridect suitable methods of assay of oil	Student book	x			x		x
5.1	Communicate clearly by verbal means.	D1	d1	- Determination of purity of volatile oils - Assay of Cineol in Eucalyptus oil. - Assay of benzaldehyde in bitter almond oil - Assay of ascaridol in chenopodium oil - Assay of Eugenol in clove oil - Assay of vitamins (1) - Assay of vitamins (2) - Assay of vitamins (3)	Practical notes		x			x	

				- Activity: Pridect suitable methods of assay of oil - Activity:							
5.2	Retrieve and evaluate information from different sources to improve professional competencies.	D3	d4	Activity	Internet, essential and recommended books			x			
5.3	Work effectively in a team	D4	d3	- Determination of purity of volatile oils - Assay of Cineol in Eucalyptus oil.	Internet, essential and recommended books.			x			
5.9	Implement writing and presentation skills	D11	d2	- Assay of benzaldehyde in bitter almond oil - Assay of ascaridol in chenopodium oil - Assay of Eugenol in clove oil - Assay of vitamins (1) - Assay of vitamins (2) - Assay of vitamins (3) - Activity: Pridect suitable methods of assay of oil - Activity:							
5.10	Demonstrate critical thinking, problem-solving and decision-making abilities	D12	d5	-Activity: Pridect suitable methods of assay of oil - Activity:	Internet, essential and recommended books.			x			

Course Coordinator: Prof. Dr. Azza Mohommed E-Shafae

Head of Department: Prof. Dr. Azza Mohommed E-Shafae

Date: م 2017/ 10 / 29 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Toxicology (1)

Fourth year – First Term

2017-2018

Course Specification of Toxicology (1)

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Pharmacology and Toxicology department

Academic year/Level: Fourth year /First term

Date of specification approval: October 2017

B- Basic information:

Title: Toxicology (1) Code: 841

Credit Hours: ---

Lectures : 2 hrs/week

Practical: 1hr/week

Tutorials: ---

Total: 2.5 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, the student will be able to explain the mechanism of toxicity, target organ and treatment with different drug groups as well as forensic chemistry applications.

2-Intended Learning Outcomes of Toxicology (1) (lLOs):

A- Knowledge and Understanding	
a1	Outline the basic mechanism of toxicity.
a2	Define forensic chemistry and its basic applications.
a3	Illustrate the response of different body systems to toxicity.
a4	Demonstrate the toxic effects of some drug groups and other agents.
a5	Describe the basic approach for the treatment of toxicity.
B- Professional and Practical skills	
b1	Handle and dispose chemicals safely.
b2	Assess toxicity profiles of some xenobiotics.
b3	Detect the presence of poisons in purified samples.
b4	Monitor the toxic effects of some agents on blood and tissue samples.
C- Intellectual skills	
c1	Determine the risk of drug use according to the target organ of toxicity.
c2	Integrate information from different sources to solve forensic chemistry problems.
D- General and Transferable skills	
d1	Work effectively as a member of team.

D- Contents:

Week No.	Lecture content (2 hrs/week)	Practical session (1 hr/week)
1	- Introduction to toxicology	Dermatology cases
2	- Approach to treatment	Dermatology cases
3	- Blood as target organ	- Forensic tests
4	- Toxic response of immune system	- Forensic tests
5	- Toxic responses of the respiratory system	Forensic tests
6	Toxic responses of the nervous system	Forensic tests
7	Toxic responses of the visual system	Tissue and blood spots
8	- Toxic responses of the liver	Tissue and blood spots
9	- Toxic responses of the kidney	Activity
10	Toxic responses of the heart & vascular system	Activity
11	Toxic effects of pesticides	Practical exam
12	Toxic effects of metals	
13	Toxic effects of solvents & vapors	
14	- Animal poisons & Food Poisoning - Forensic chemistry	
15	Revision & discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Group discussion, activity

F- Student Assessment Methods:

1- Written exams to assess: a1, a2, a3, a4, a5, c1, c2

2- Activity to assess: d1

3- Practical exam to assess: b1, b2, b3, b4, d1

4- Oral exam to assess: a1, a2, a3, a4, a5, c1

Assessment schedule

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 9,10
Assessment (3): Practical exams	Week 11
Assessment (4): Oral exams	Week 16

Weighting of Assessment

Assessment method	Marks	Percentage
Written exam	60	60%
Practical exam and activities	25	25%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, overhead projectors, Data show, Laboratory equipment and Chemicals.

H- List of References:

1- Course Notes: Student book of Toxicology (1) approved by Pharmacology and toxicology department (2017)

- Practical notes of Toxicology (1) approved by Pharmacology and toxicology department (2017)

2- Essential Books (Text Books)

i- Goodman & Gilman's: The pharmacological basis of therapeutics (tenth edition); Hardman, Limbird, Gillman; McGraw-Hill Companies USA

(2001).

ii- The Basic Science of Poison (fifth edition); Klassen C.; McGraw-Hill Companies USA (1996).

3- Recommended Books (Text Books)

i- Integrated Pharmacology; Curtis, Suiter, Walker, Hottman; Mosby, London, UK (1997).

4- Periodicals and websites:

- Aquilina A. The extemporaneous compounding of paediatric medicines at Mater Dei Hospital. Journal of the Malta College of Pharmacy Practice.Issue 19, 28 – 30, 2013.

http://canadianpharmacistsletter.therapeuticresearch.com/ce/ceCourse.asp

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Course Coordinator: Prof. Dr. Salah Gharib

Head of Department: Prof.Dr. Mohamed Mohamed Baraka

Date: 29 / 10 /2017 م تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I for Toxicology 1 course

Course contents		ILOs for Toxicology 1 course											
		Knowledge and understanding					Professional and practical skills				Intellectual skills		General and transferable skills
Lectures		a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	d1
1	Introduction to Toxicology	x											
2	Approach to treatment					x							
3	Blood as target organ			x									
4	Toxic response of immune system			x							x		
5	Toxic responses of the respiratory system			x							x		
6	Toxic responses of the nervous system			x							x		
7	Toxic responses of the visual system			x							x		
8	Toxic responses of the liver			x							x		
9	Toxic responses of the kidney			x							x		
10	Toxic responses of the heart & vascular system			x							x		
11	Toxic effects of pesticides				x								
12	Toxic effects of metals, solvents & gases				x								
13	Animal poisons & Food Poisoning				x								
14	Forensic chemistry		x									x	
Practical sessions													
15	Dermatology cases							x					x
16	Forensic tests						x	x	x				x

17	Tissue and blood spots						x	x	x	x			x
18	Activity												x

Matrix II of Toxicology 1 course										
National Academic Reference Standards (NARS)		**Program ILOs**	**Course ILOs**	**Course contents**	**Sources**	**Teaching and learning methods**		**Method of assessment**		
						Lecture	Practical session	Written exam	Practical exam	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A7	a1	Introduction to toxicology	Student book Essential books	x		x		x
			a2	- Forensic chemistry	Student book Essential books Recommended books	x		x		x

2.11	Principles of body function in health and disease states as well as basis of genomic	A24	a3	- Toxic responses of the blood & immune system	Student book	x		x		x
	and different biochemical pathways regarding their correlation with different diseases.			- Toxic responses of the liver	Essential books					
				- Toxic responses of the kidney Toxic responses of the respiratory & nervous systems						

				- Toxic responses of the skin, endocrine & visual system						
				- Toxic responses of the heart & vascular system						
2.13	Pharmacological properties of drugs including mechanisms of action, therapeutic	A30	a4	- Toxic effects of pesticides	Student book	x		x		x
	uses, dosage, contra-indications, ADRs and drug interactions.			- Toxic effects of metals & solvents	Essential books					

				- Animal and food poisoning						
2.16	Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	A33	a5	- Approach to treatment	Student book Recommended books	x		x		x
3.2	Handle and dispose chemicals and pharmaceutical preparations safely.	B2	b1	Forensic tests Tissue and blood spots	Practical notes		x		x	

3.7	Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens	B11	b2	Dermatology cases	Practical notes		x		x	
				Forensic tests						
				Tissue and blood spots						
		B12	b3	Forensic tests	Practical notes		x		x	
				Tissue and blood spots						
			b4	Tissue and blood spots	Practical notes		x		x	
4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.	C12	c1	- Toxic responses of the blood & immune system	Student book	x		x		x

				- Toxic responses of the liver	Essential books					
				- Toxic responses of the kidney						
				- Toxic responses of the respiratory & nervous systems						
				- Toxic responses of the skin, endocrine & visual system						
				- Toxic responses of the heart & vascular system						

4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C17	c2	- Forensic chemistry	Student book	x		x		x
5.3	Work effectively in a team.	D4	d1	Dermatology cases Forensic tests Tissue and blood spots Activity	Practical notes		x		x	

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