COURSE SPECIFICATIONS

Faculty of Pharmacy

Bachelor of pharmacy

(Clinical Pharmacy)

Third level – Semester 6

2018-2019

CONTENTS:

COURSE SPECIFICATIONS

phamacology-2

Third level –Semester 6

2018-2019

Course Specification of Pharmacology -II

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: **Bachelor of pharmacy, Clinical pharmacy program**

Major or Minor element of programs: Major

Department offering the program: ------

Department offering the course: **Pharmacology and toxicology department**

Academic year / Level: **3rd level, semester 6**

Date of specification approval: February 2019

B- Basic information:

Title: Pharmacology II Code: **PO 602**

Credit Hours: ------

Lectures: 2hrs/week

Practical: 1hr/week

Tutorials: ---

Total: 3hrs/week

C- Professional information:

1-Overall Aims of the Course

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

- Explain body functions as well as clinical features of different diseases that were not covered in Pharmacology (1) to determine appropriate pharmacological therapy.
- Build up comprehensive knowledge about essential bases of pharmacology and how to apply these bases in their professional life as pharmacists in community.

2-Intended Learning Outcomes of (ILOS)

A- Knowledge and Understanding	
a1	Illustrate disorders in body functions associated with various disease states.
a2	Demonstrate etiology, epidemiology and clinical features of different diseases.
a3	Describe pharmacological properties of drugs.
B- Professional and Practical Skills	
b1	Apply lab safety measures.
b2	Practice the basics handling of experimental animals & routes of drugs administration.
b3	Perform in vivo experiments to determine pharmacological properties of drugs in a professional manner.
C- Intellectual Skills	
c1	Select the proper drug in various disease conditions based on drug-related information.
c2	Assess information from different sources in the field of pharmacology.
D- General and Transferable Skills	
d1	Work effectively as a member of a team.
d2	Develop calculation skills
d3	Present information as a written report

D- Contents:

Week No.	Lecture (2hrs/week)	Practical Session (1hr/week)
1	• Degenerative disorders and spasticity.	• Lab safety measures • Handling of experimental animals and routes of drugs administration (mice)
2	• Drugs used for treatment of anxiety and sleep disorders. • Treatment of depression and mania. • Drugs used for treatment of mania and bipolar disorder	• Handling of experimental animals and routes of drugs administration (frogs)
3	• Drugs used for treatment of psychosis and anxiety.	• CNS depressants
4	• Antiepileptic drugs.	• CNS depressants
5	• Pain control with general and local anaesthetics.	• CNS stimulants
6	• Central nervous system stimulants.	• CNS stimulants
7	Midterm exam	• Analgesics
8	• Anti hyperlipidemic drugs	• Anemia
9	• Drugs used in coagulation and bleeding disorders.	• Revision
10	• Autacoids	• Activity (reports)
11	• Anti-inflammatory, antipyretic and analgesic agents.	• Practical exam
12	• Respiratory system pharmacology.	• Practical exam
13	• Gastrointestinal pharmacology.	
14	• Drugs used for treatment of anemia Hematopoietic growth factors.	
15	• Final written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Open discussion, self-learning.

F- Student Assessment Methods:

1- Written exam (midterm and final) to assess: a1, a2, a3, c1, c2

2- Activity (report) to assess d1, d3

3- Practical exam to assess: b1, b2, b3, d1, d2, d3

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

Assessment Schedule:

Assessment (1): Final written exam	Week 15
Assessment (2): Practical exam	Weeks11, 12
Assessment (3): Oral exam	Week 15
Assessment (4): Midterm exam	Week 7
Assessment (5): Activity (report)	Week 10

Weighting of Assessment:

Assessment method	Marks	Percentage
Midterm exam	**10**	**10%**
Final written exam	**50**	**50%**
Practical exam & activity	**25**	**25%**
Oral exam	**15**	**15%**
TOTAL	**100**	**100%**

F- Facilities required for teaching and learning:

- Black (white) board, data show, laboratory equipment, laboratory animals and chemicals.

H- List of References:

1- Course Notes: Student book of Pharmacology (2) approved by the Pharmacology and toxicology department (2018)

- Practical notes of Pharmacology (2) approved by the Pharmacology and toxicology department (2019)

2- Essential Books:

i- Rang &Dale pharmacology (eighth edition); Churchil Livingstone (2015).

ii- Katzung basic and clinical pharmacology (fourteenth edition); Mc Graw Hill Lang. (2017).

3- **Recommended Books**

i- Lippincott illustrated reviews-pharmacology (seventh edition) (2018).

ii- Tripathi Essentials of Medical Pharmacology (eighth edition) (2018)

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. Rasha Hassan Abdel Ghany

Head of Department: Prof. Dr. Mona Fouad Mahmoud

Date: 2019 / 2 / تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I

Course Contents		ILOs of the course										
		Knowledge and understanding			Practical skills			Intellectual skills		General and transferable and skills		
		a1	a2	a3	b1	b2	b3	c1	c2	d1	d2	d3
Lectures												
1	Degenerative disorders and spasticity.	x	x	x				x	x			
2	Drugs used for treatment of anxiety and sleep disorders. Treatment of depression and mania. Drugs used for treatment of mania and bipolar disorder	x	x	x				x	x			
3	Drugs used for treatment of psychosis and anxiety.	x	x	x				x	x			
4	Antiepileptic drugs.	x	x	x				x	x			
5	Pain control with general and local anaesthetics.	x	x	x				x	x			
6	Central nervous system stimulants.	x	x	x				x	x			
7	Mid-term	x	x	x				x	x			
8	Anti hyperlipidemic drugs	x	x	x				x	x			
9	Drugs used in coagulation and bleeding disorders.	x	x	x				x	x			

10	Autacoids	x	x	x				x	x			
11	Anti-inflammatory, antipyretic and analgesic agents.	x	x	x				x	x			
12	Respiratory system pharmacology.	x	x	x				x	x			
13	Gastrointestinal pharmacology.	x	x	x				x	x			
14	Drugs used for treatment of anemia Hematopoietic growth factors.	x	x	x				x	x			
15	Revision and open discussion	x	x	x				x	x			
Practical sessions												
1	- Lab safety measures - Handling of experimental animals and routes of drugs administration (mice)				x	x	x				x	
2	- Handling of experimental animals and routes of drugs administration (frogs)				x	x	x				x	
3	- CNS stimulants				x	x	x				x	
4	- CNS stimulants				x	x	x				x	
5	- CNS depressants				x	x	x				x	
6	- CNS depressants				x	x	x				x	
7	- Analgesics				x	x	x				x	

8	- Anemia				x							
9	- Revision				x	x	x			x	x	
10	- Activity (reports)				x	x	x			x	x	x
11	- Practical exam				x	x	x			x	x	x

Matrix II of Pharmacology II 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	Midterm exam	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1	All topics	Student book, Essential books	X			x		x	x
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	A21	a2	All topics	Student book, Essential books	X			x		x	x
2.13	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	A22	a3	All topics	Student book Essential books	X			x		x	x

3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1 b2	Laboratory safety measures	Practical notes		x			x		
3.11	Conduct research studies and analyze the results.	B17	b2 b3	All practical sessions	Practical notes		x			x		
4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.	C11	c1	All topics	Student book Essential books	x			x			x
4.13	Analyze and interpret experimental results as well as published literature.	C15	c2	All topics	Student book Essential books	x			x			x
5.3	Work effectively in a team	D4	d1	Activity and practical session	Practical notes Recommended books Internet		X	x		x		
5.9	Implement writing and presentation skills.	D11	d3	Activity	Recommended books Internet			x		x		
5.10	Implement writing and thinking, problem- solving and decision-making abilities.	D12	d2	practical session	Practical notes Recommended books Internet			x		X		

COURSE SPECIFICATIONS

Pharmaceutical technology

Third level –Semester 6

2018-2019

Course specification of Pharmaceutical Technology

University: Zagazig **Faculty: Pharmacy**

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Pharmaceutics Department

Academic year Level: Third level – Sixth semester

Date of specification approval: October 2018

B- Basic information:

Title: Pharmaceutical Technology Code: PT607

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 1 hrs/week

Tutorials: ---

Total: 3hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to explain the principles and mechanisms of different apparatus used for pharmaceutical processes

2- Intended Learning Outcomes of Pharmaceutical Technology (ILOs)

A- Knowledge and Understanding	
a1	Outline the principles of different pharmaceutical processes including: evaporation, drying, filtration, extraction, centrifugation, etc….
a2	Illustrate the mechanisms of different pharmaceutical processes including: evaporation, drying, filtration, extraction, centrifugation, etc….
a3	Enumerate the apparatus used in evaporation, drying, filtration, extraction, centrifugation, etc….
a4	Describe the structure and technique of different apparatus used in evaporation, drying, filtration, extraction, centrifugation, etc….
B- Professional and Practical skills	
b1	Suggest the appropriate apparatus for different pharmaceutical processes
b2	Demonstrate different apparatus used in evaporation, drying, filtration, extraction, centrifugation, etc….
C- Intellectual skills	
c1	Differentiate between different techniques and apparatus used for different pharmaceutical processes
c2	Identify advantages and disadvantages of apparatus used in evaporation, drying, filtration, extraction, centrifugation, etc….
D- General and Transferable skills	
d1	Demonstrate critical thinking, decision making and problem solving skills

D- Contents:

Week No.	Lecture contents (2 hrs/lec.)	Practical session (1 hr/lab)
1	Evaporation	Problems on evaporation
2	Evaporation	Evaporation apparatus drawings
3	Drying	Problems on drying
4	Drying	Drying apparatus drawings
5	Heat transfer	Humidity chart
6	Refrigeration	Problems on heat transfer
7	Crystallization Periodical exam	**Quiz on heat transfer**
8	Crystallization	Heat transfer apparatus drawings
9	Mixing	Refrigeration and crystallization apparatus drawings
10	Filtration	Mixing – filtration apparatus drawings
11	Air purification	Air purification apparatus drawings
12	Centrifugation	Centrifugation apparatus drawings
13	Extraction	Extraction apparatus drawings Problems on extraction
14	Extraction	Practical exam
15	Final written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Problem solving

F- Student Assessment methods:

1-Written exams to assess: a1, a2, a3, a4 , c1,c2, d1

2-Practical exams to assess: b1, b2, c1, c2, d1

3-Oral exam to assess: a1, a2, a3, a4, c1, c2

Assessment schedule

Assessment (1): periodical exam	Week 7
Assessment (2): final Written exam	Week 15
Assessment (3): Practical exam	Week 14
Assessment (4): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Periodical exam	10	10%
Final Written exam	50	50%
Practical exam and activities	25	25%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities required for teaching and learning:

Black (white) boards, data show

H- List of References:

1- Course Notes: Student book of industrial pharmacy-1 approved by pharmaceutics department (2018)

2- Essential Books:

i- Bentley's text book of Pharmaceutics by Rawlins, E. A., 8th ed (1984).

ii- Ansels Pharmaceutical Dosage forms and drug delivery systems 8/ed, Allen , L .V (2005).

3- Recommended Books

i- Pharmaceutics: the Science of Dosage Form Design by Aulton M.E., (1993).

ii- The theory and Practice of Industrial Pharmacy by Leon Lachman, Lieberman, H.A., Kanig, J. L., and Febiger, Philidelphia, USA. (1976).

iii- Good manufacturing practice for pharmaceuticals, Nally, Joseph.D, Informa Healthcare, (2007).

4- Periodicals and websites:

Journal of pharmaceutical sciences

www.Pubmed.com

www.Sciencedirect.com

Course Coordinators: Prof. Dr. Mahmoud Abd El-Ghany Mahdy

Head of Department: Prof. Dr. Nagia Ahmed El-megrab

Date: 28/ 10 / 2018 م تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I of Pharmaceutical Technology course

Course Contents		ILOs of industrial pharmacy 1 course								
		Knowledge and understanding				Professional and practical skills		Intellectual skills		Transferable and general skills
Lectures		a1	a2	a3	a4	b1	b2	c1	c2	d1
1	Evaporation Introduction & Equipments	x						x		x
2	Drying Introduction & Mechanisms	x						x		x
	Drying Equipments	x						x		x
3	Heat transfer Introduction & Equipments		x							
4	Refrigeration Introduction & Equipments			x					x	
5	Crystallization Introduction & and mechanisms			x					x	
6	Crystallization – Equipments			x					x	
7	Mixing Introduction & Equipments				x					x

8	Filteration Introduction & Equipments				x					x		
9	Air purification Introduction & Equipments				x					x		
10	Centrifugation Introduction & Mechanisms				x							
11	Centrifugation Equipments				x							
12	Extraction Introduction & Equipments									x		
Practical session												
1	Problems on evaporation	x				x		x		x		
2	Evaporation apparatus drawings	x				x		x		x		
3	Problems on drying	x				x		x		x		
4	Drying apparatus drawings	x				x		x		x		
5	Refrigeration and crystallization apparatus drawings			x			x		x			
6	Problems on heat transfer		x							x		
7	Heat transfer apparatus drawings		x									

										x
8	Mixing - filteration - air purification apparatus drawings				x					x
9	Centrifugation apparatus drawings									
10	Humidity chart and extraction problems									
11	Extraction apparatus drawings									
12	Activity									x

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	Mid term exam
2.7	Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling,	A11	a1 a2 a3 a4	Evaporation drying heat transfer refrigeration crystallization mixing	studentbook	x			x		x	x

	storing and distribution processes in pharmaceutical industry.			filteration Air purification extraction Particle size reduction Particle size enlargement & GMP								
3.3	Compound, dispense, label, store and distribute medicines effectively and safely.	B3	b1	problems on evaporation, problems on drying, problems on heat transfer and extraction evaporation apparatus drawings drying apparatus drawings refrigeration and crystallization apparatus drawings heat transfer apparatus drawings mixing - filteration - apparatus drawings air purification apparatus drawings centrifugation apparatus drawings extraction apparatus drawings	Practical note book		x			x		
3.8	Apply techniques used in operating pharmaceutical equipment and instruments.	B14	b2	Evaporation Drying Equipments Heat transfer Refrigeration Crystallization Mixing Filteration								

				Air purification Centrifugation Extraction								
4.2	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	C2	c1 c2	problems on evaporation, problems on drying, problems on heat transfer and extraction	practical notebook& student book		x		x	x		
5.1o	Implement writing and thinking, problem-solving and decision-making abilities.	D12	d1	activity	internet& practical note book			x		x		

Course Coordinators: Prof. Dr. Mahmoud Abd El-Ghany Mahdy

Head of Department: Prof. Dr. Nagia Ahmed El-megrab

Date: 28 / 10 / 2019 م تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Community pharmacy practice

Third level –Semester 6

2019-2020

Course specification of Community pharmacy practice

University: Zagazig Faculty: Pharmacy

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Pharmacy Practice Department

Academic year Level: Third level /Sixth semester

Date of specification approval: January 2020

B- Basic information:

Title: Community pharmacy practice Code: PT608

Credit Hours: 3

Lectures: 2

Practical: 1

Tutorials: ---

Total: 3 credit hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to identify good communication strategies between pharmacist and patient, educate different classes of patients and respond to patient's requests in different situations. Students will be able to identify higher risk of a serious condition and consider when referring the patient to the doctor. The student will be able to manage common disorders of women health, childhood conditions, respiratory, nervous, gastrointestinal and dermatological systems as well.

2- Intended Learning Outcomes of community pharmacy practice (ILOs)

A- Knowledge and Understanding	
a1	Describe appropriate keys for good communication with patients
a2	Illustrate the etiology, epidemiology of different diseases related to women health, childhood conditions, respiratory, nervous, gastrointestinal and dermatological systems
a3	State drugs which can treat the aforementioned diseases, adverse reactions, contraindications and drug-drug interactions
B- Professional and Practical skills	
b1	Evaluate the pharmacist behavior in different communication scenarios
b2	Select proper medicines according to the disease and the patient state
C- Intellectual skills	
c1	Identify different barriers that hinder effective patient – pharmacist communication
c2	Solve different cases related to OTC drugs used for treatment of women health, childhood conditions as well as respiratory, nervous, gastrointestinal and dermatological disorders
D- General and Transferable skills	
d1	Interact effectively with patients, the public and health care professional orally and written
d2	Work effectively as a member of a team
d3	Use information technology to collect and present data

D- Contents:

Week No.	Lecture contents (2 hrs/week)	Practical session (2hrs/week)
1	Course orientation Strategies for Communicating Effectively with Patients	Patient education
2	Women health	Women health cases
3	Childhood conditions	Childhood conditions, case study
4	Respiratory system disorders	visit to faculty educational pharmacy & report writing
5	Respiratory system disorders	Respiratory system disorders (Case study)
6	Central nervous system disorders	Central nervous system disorders (Case study)
7	Periodical exam	
8	Gastroenterology	GIT disorders (Case study)
9	Gastroenterology	
10	Common Dermatologic Diseases and Conditions	Dermatological disorders (case study)
11	Ear conditions	Ear disorders (case study)
12	Eye conditions	Eye disorders (case study)
13	Role play/presentation	
14	- Revision & Open Discussion	**Practical exam**
15	final written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical session (case study, role play)
- Field visit: faculty educational pharmacy in addition to any community pharmacy to fill the required survey (survey pharmacists in community pharmacies about challenges they faced that hinder good communication)

F- Student Assessment methods:

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

2- Activity (Students will be asked to survey pharmacists in community pharmacies about challenges they faced that hinder good communication, then present their results as a presentation/play) to assess: d1, d2, d3

3-Practical exam (solving cases) to assess: b2, c2

4-Oral exam to assess: a1, a2, a3, b1, c1

Assessment schedule

Assessment (1): Periodical exam	Week 7
Assessment (2): Final Written exam	Week 15
Assessment (3): Role play/presentation	Week 13
Assessment (4): Practical exam (Cases)	Week 14
Assessment (5): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Periodical exam	10	10%
Final Written exam	50	50%
Practical exam & Role play/presentation	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: labratories
- Faculty educational pharmacy & Community pharmacy

H- List of References:

1- Course Notes: Student book of Community pharmacy practice approved by pharmacy practice department (2020)

2- Essential Books:

1. Harvey M. Rappaport et al. The Guidebook for Patient Counselling. Lancaster, Pennsylvania: Technomic Publishing Company, 1994.

2. Tindall, William N, Robert S. Beardsley, Carole L. Kimberlin. Communication Skills in Pharmacy Practice (fourth edition). Baltimore, Maryland and Philadelphia, Pennsylvania : Lippincott Williams & Wilkins, 2003.

3. Managing Conflict and Preventing Violence in the Pharmacy. Canadian Pharmacist Letter. Volume 2014, Course No.

4. ASHP Guidelines on Pharmacist-Conducted Patient Education and Counseling. Medication Therapy and Patient Care: Organization and Delivery of Services–Guidelines, 310 – 312 (2011).

3- Recommended Books

i- Paul Rutter. Community pharmacy: Symptoms, diagnosis and treatment. 3rd edition, Churchill Livingstone, Elsevier, 2013

ii- Non-prescription drugs, Li Wan, P., 2nd ed., Oxford Blackwell Scientific publications (1990).

iii- Pharmacy practice and law 5/ed. Richard R. Abood, David B,Brushwood, (2010).

iv. Communication skills in pharmacy practice 6th ed, 2017.

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Dr. Gehan Fathy Attia

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ يناير 2020 / م :Date

Matrix I of Community pharmacy practice course

Course Contents		ILOs of Hospital pharmacy and clinical pharmacy -2									
		Knowledge and understanding			Professional and practical skills		Intellectual skills		Transferable and general skills		
Lectures		**a1**	**a2**	**a3**	**b1**	**b2**	**c1**	**c2**	**d1**	**d2**	**d3**
1	Strategies for Communicating Effectively with Patients	x					x				
2	Women health		x	x				x			
3	Childhood conditions		x	x				x			
5	Respiratory system disorders		x	x				x			
6	Central nervous system disorders		x	x				x			
7	Gastroenterology		x	x				x			
8	Common Dermatologic Diseases and Conditions		x	x				x			
9	Ear conditions		x	x				x			
10	Eye conditions		x	x				x			
Practical sessions											
1	Patient education				x				x	x	x
2	Women health				x	x			x	x	x
3	Childhood condition				x	x			x	x	x
4	Respiratory disorders (case study)				x	x			x	x	x

5	CNS disorders (case study)				x	x			x	x	x
6	GIT disorders (Case study)				x	x			x	x	x
7	Dermatological disorders (case study)				x	x			x	x	x
8	Ear disorders (case study)				x	x			x	x	x
9	Eye disorders (case study)				x	x			x	x	x
10	Role play/presentation						x		x	x	x

Matrix II of Community pharmacy practice course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment		
						Lecture	case study/ role play	Field visit	Written exam	Practical exam & activity	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A4	a1	Strategies for Communicating Effectively with Patients	Student book Essential books	x	x		x		x
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approches	A21	a2	Women health Childhood conditions Respiratory system disorders Central nervous system disorders Gastroenterology Common Dermatologic Diseases and Conditions Ear conditions Eye conditions	Student book Essential books	x	x		x		x
			a3		Student book Essential books	x	x		x		x
3.5	Select medicines based on understanding of etiology and pathophysiology of diseases	B7	b2	Women health Childhood conditions Respiratory system disorders Central nervous system disorders Gastroenterology Common Dermatologic Diseases and Conditions Ear conditions Eye conditions							

3.10	Advise patients and other health care professionals about safe and proper use of medicines.	B16	b1	Patient education	Practical notes		x			x	
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C16	c1 c2	Patient education Women health Childhood conditions Respiratory system disorders Central nervous system disorders Gastroenterology Common Dermatologic Diseases and Conditions Ear conditions Eye conditions	Practical notes and student books		x			x	
5.1	Communicate clearly by verbal and written means	D1	d1	Patient education Women health Childhood conditions Respiratory disorders (case study) CNS disorders (case study) GIT disorders (Case study) Dermatological disorders (case study) Ear disorders (case study) Eye disorders (case study)	Practical notes and internet			x		x	
5.3	Work effectively in a team.	D4	d2					x		x	

5.9	Implement writing and presentation skills	D11	d3		activity			x		x	

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Dr. Gehan Fathy Attia

Date: / 2020 يناير تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Biopharmaceutics & Pharmacokinetics

Third level –Semester 6

2018-2019

Course specification of Biopharmaceutics and Pharmacokinetics

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University: Zagazig **Faculty: Pharmacy**

A- Course specifications:

Program (s) on which the course is given: Bachelor ofPharmacy (Clinical pharmacy)

Major or Minor element of programs: Major

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

Department offering the course: Pharmaceutics Department

Academic year Level: Third level/ 6th semester

Date of specification approval:

B- Basic information:

Title: Biopharmaceutics and pharmacokinetics Code: PT609

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 1hrs/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 describe Pharmacokinetics models, Pharmacokinetics following IV administration, Pharmacokinetics following oral dosage forms, kinetics of drug absorption, clearance, bioavailability and bioequivalence, absolute and relative bioavailability, assessment of bioavailability and correlation between in-vitro dissolution and in-vivo absorption.

2- Intended Learning Outcomes of biopharmaceutics and pharmacokinetics (ILO's):

A- Knowledge and Understanding	
a1	Enumerate different factors affecting drug stability
a2	Describe the effects of different factors on the rate of absorption, distribution, biotransformation and elimination of drugs.
a3	Illustrate different pharmacokinetic parameters and bioavailability
a4	Summarize methods of determination of pharmacokinetic parameters and order of reactions
B- Professional and Practical skills	
b1	Calculate rate constants and half lives of chemical reactions
b2	Calculate absorption and elimination parameters following oral administration and IV infusion
b3	Calculate drug pharmacokinetic parameters including Cl, Vd, T1/2
C- Intellectual skills	
c1	Differentiate between one compartmental and multiple compartmental models of drug distribution
c2	Interpret different drug pharmacokinetic data following oral administration and IV infusion
D- General and Transferable skills	
d1	Use information technology to collect and present data
d2	Develop critical thinking, problem-solving and decision-making abilities.
d3	Deliver course activities in due time
d4	Work effectively as a member of a team

D- Contents:

Week No.	Lecture contents (2 hrs/week)	Practical session (1 hr/week)
1	Types of orders of chemical reactions: Zero order First order Second order	Types of orders of chemical reactions
2	• Determination of the order of chemical reaction • Factors affecting drug stability • Accelerated stability testing	Problem solving
3	One compartmental model of drug distribution	IV bolus one compartmental model
4	Two compartmental model of drug distribution	Problem solving
5	Drug pharmacokinetics following single oral drug administration	Problem solving
6	Steady state principle after constant iv infusion	problem solving
7	Midterm exam	
8	Drugs Absorption - Passage of drugs across membranes - Membrane Structure - Methods of passage of drugs across cell membranes - Passive Diffusion - Factors affecting Passive absorption - Acidity & Base ionization - Lipid & water solubility of drugs - Active Diffusion - Specialized transport of drugs	Drug pharmacokinetics following single oral dose
9	Factors affecting drug absorption	Problem solving
10	Distribution of drugs: - Importance of blood flow to tissues - Role of blood brain barrier - Placental transfer of drugs - Mammary transfer of drugs - Redistribution of drugs - Role of plasma protein binding & importance	Bioavailability and bioequivalence
11	Drugs Metabolism - Sites of drug metabolism - Relationships of phase I and phase II reactions in drug biotransformation - Phase I reactions - Phase II reactions	Steady state principle after constant IV infusion

	- Enzyme induction - Enzyme inhibition	
12	- Effects of genetic factors on biotransformation - Effects of environmental factors on biotransformation - Effects of age and sex on biotransformation - Drug-drug interactions during metabolism - Effects of diseases on drug biotransformation	Report
13	Drug excretion	Practical exam
14	Revision	
15	Final exam	

E- Teaching and Learning Methods:

- Interactive lectures
- Practical session
- Self learning (Activities, open discussion)

  Student will be asked to perform internet search about the most updated methods to enhance bioavailability of very poorly water soluble drugs and prepare a report.

F- Student Assessment methods:

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

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

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

4-Oral exam to assess: a1, a2, a3, a4, c1, c2

Assessment schedule

Assessment (1): Written exams • Periodical exam • Final exam	Week 7 Week 15
Assessment (2): Activity	Week 12
Assessment (3): Practical exam	Week 13
Assessment (4): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Written exams • Periodical exam • Final exam	10 50	10% 50%
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

For labs: well aerated and well seated labs

H- List of References:

1- Course Notes: Student book of Biopharmaceutics and pharmacokinetics approved by pharmaceutics department (2020)

2- Essential Books:

Basic & Clinical Pharmacokinetics by MichealE.Winter published by Lippincot and Williams.4th Edition.

Malcolm Rowland & Thomas N. Tozer, Clinical Pharmacokinetics Concepts and Applications 3rd ed. Lea &Febiger Philadelphia, 1995

Milo Gibaldi, Biopharmaceutics and Clinical Pharmacokinetics, 4th ed. Lea &Febiger, Philadelphia 1991

3- Recommended Books

www.speciation.net Applied Biopharmaceutics& Pharmacokinetics
Leon Shargel/Andrew Yu, 5th Edition, Applenton& Lange

4- Periodicals and websites:

Animations from www.icp.org.nz are used in this course to enhance students learning as class room discussion.

www.boomer.org

Course Coordinator: Prof. Dr. FakhrEldinGhazy

- Head of Department: Prof. Nagia Ahmed El-Megrab

Date: 2018 / 11 / 28 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I of Biopharmaceutics and Pharmacokinetics Course

Course Contents		ILOs of Biopharmaceutics and Pharmacokinetics course												
		Knowledge and understanding				Professional and practical skills			Intellectual skills		Transferable and general skills			
Lectures		a1	a2	a3	a4	b1	b2	b3	c1	c2	d1	d2	d3	d4
1	Types of orders of chemical reactions: Zero order First order Second order				x									
2	• Determination of the order of chemical reaction • Factors affecting drug stability • Accelerated stability testing	x												
3	One compartmental model of drug distribution			x	x				x					
4	Two compartmental model of drug distribution			x	x				x					
5	Drug pharmacokinetics following single oral drug administration			x	x					x				
6	Steady state principle after constant iv infusion			x	x					x				
7	Drugs Absorption - Passage of drugs across membranes - Membrane Structure - Methods of passage of drugs across cell membranes - Passive Diffusion - Factors affecting Passive		x											

	absorption - Acidity & Base ionization - Lipid & water solubility of drugs - Active Diffusion - Specialized transport of drugs													
8	Factors affecting drug absorption		x											
9	Distribution of drugs: - Importance of blood flow to tissues - Role of blood brain barrier - Placental transfer of drugs - Mammary transfer of drugs - Redistribution of drugs - Role of plasma protein binding & importance		x											
10	Drugs Metabolism - Sites of drug metabolism - Relationships of phase I and phase II reactions in drug biotransformation - Phase I reactions - Phase II reactions - Enzyme induction - Enzyme inhibition		x						x					
11	- Effects of genetic factors on biotransformation - Effects of environmental factors on biotransformation - Effects of age and sex on biotransformation - Drug-drug interactions during metabolism - Effects of diseases on drug biotransformation		x											
12	Drug excretion		x											

Practical Sessions														
13	Types of orders of chemical reactions					x						x	x	x
14	IV bolus one compartmental model						x					x	x	x
15	Drug pharmacokinetics following single oral dose							x				x	x	x
16	Calculation of absorption rate constant						x					x	x	x
17	Bioavailability and bioequivalence							x				x	x	x
18	Steady state principle after constant IV infusion						x					x	x	x
19	Steady state principle after multiple IV infusion						x					x	x	x
20	Drug elimination							x				x	x	x
21	Activity										x	x	x	x

Matrix II of Biopharmaceutics and Pharmacokinetics 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	a1	Determination of the order of chemical reaction •Factors affecting drug stability •Accelerated stability testing						
2.8	Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence studies.	A.12	a2	Drugs Absorption - Passage of drugs across membranes - Membrane Structure - Methods of passage of drugs across cell membranes - Passive Diffusion - Factors affecting Passive absorption - Acidity & Base	Student book Essential books	x		x		x

				ionization - Lipid & water solubility of drugs - Active Diffusion						
				Factors affecting drug absorption	Student book Essential books	x		x		x
				Distribution of drugs: - Importance of blood flow to tissues - Role of blood brain barrier - Placental transfer of drugs - Mammary transfer of drugs - Redistribution of drugs - Role of plasma protein binding & importance	Student book Essential books	x		x		x
				Drugs Metabolism - Sites of drug metabolism - Relationships of phase I and phase II reactions in drug biotransformation - Phase I reactions - Phase II reactions - Enzyme induction - Enzyme inhibition	Student book Essential books	x		x		x
				Effects of genetic factors on biotransformation - Effects of environmental factors on biotransformation - Effects of age and sex on	Student book Essential books	x		x		x

				biotransformation - Drug-drug interactions during metabolism - Effects of diseases on drug biotransformation						
				Drug excretion	Student book Essential books	x		x		x
			a3	One compartmental model of drug distribution Two compartmental model of drug distribution	Student book Essential books	x		x		x
				Drug pharmacokinetics following single oral drug administration Steady state principle after constant iv infusion	Student book Essential books	x		x		x
			a4	Types of orders of chemical reactions: Zero order First order Second order	Student book Essential books	x		x		x
3.12	Employ proper documentation and drug filing systems.	B18	b1	Types of orders of chemical reactions	Practical notes		x		x	
			b2	IV bolus one compartmental model	Practical notes		x		x	
			b3	Drug pharmacokinetics following single oral dose	Practical notes		x		x	
				Calculation of absorption rate constant	Practical notes		x		x	
				Bioavailability and bioequivalence	Practical notes		x		x	

				Steady state principle after constant IV infusion	Practical notes		x		x	
				Steady state principle after multiple IV infusion	Practical notes		x		x	
				Drug elimination	Practical notes		x		x	
4.13	Analyze and interpret experimental results as well as published literature.	C.15	c1	One compartmental model of drug distribution Two compartmental model of drug distribution	Student book Essential books	x		x		x
			c2	Drug pharmacokinetics following single oral drug administration	Student book Essential books	x		x		x
				Steady state principle after constant iv infusion	Student book Essential books	x		x		x
5.3	Work effectively in a team.	D4	d4	Types of orders of chemical reactions	Practical notes		x		x	
5.8	Demonstrate creativity and time management abilities.	D10	d3	IV bolus one compartmental model	Practical notes		x		x	
5.9	Implement writing and presentation skills.	D.11	d1	Drug pharmacokinetics following single oral dose	Practical notes		x		x	
5.1O	Implement writing and thinking, problem- solving and decision- making	D.12	d2	Calculation of absorption rate constant	Practical notes		x		x	

	abilities.			Bioavailability and bioequivalence	Practical notes and Internet		x		x	
				Steady state principle after constant IV infusion	Practical notes		x		x	
				Steady state principle after multiple IV infusion	Practical notes		x		x	
				Drug elimination	Practical notes		x		x	
				Activity	Internet			x	x	

Course Coordinator: Prof. Fakhr el-din Ghazy

Head of Department: Prof. Nagia Ahmed El-Megrab

Date: 2018م / 11 /28 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Quality Control of Herbal Drugs

Third level –Semester 6

2018-2019

Course specification of Quality Control of Herbal Drugs (2018/2019)

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

A- Course specifications:

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

- Major or minor element of programs: Major

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

- Department offering the course: Pharmacognosy

- A cademic year level : Third level / six semester

- Date of specification approval: Sept.2018

B- Basic information:

- Title: Quality control of herbal drugs **Code:** PG.606

- Credit Hours:

- Lectures: 2 hrs/ week

- Tutorials: ---------

- Practical: 1 hrs / week

- 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 the preparation, quality assurance and standardization of herbal drugs, the different methods of identification and detection of natural drug adulterants and pollutants, in addition to use different analytical methods for qualitative and quantitative estimation of drug constituents compared with genuine sample.

- Develop skills concerning handling and /or quality control of medicinal herbal drugs when present either in entire or powdered forms and provide pharmacy students with different herbal pharmacopoeial constants as well as the adulteration, detection of common pollutants of herbal drugs.
- Select the most appropriate methods of isolation, purification, identification, and standardization of natural herbal drugs as well as the spectroscopic evaluation of the natural products.
- Interact effectively and work as a member of a team.

2- Intended Learning Outcomes

1- Knowledge and Understanding	
a1	Describe different methods for preparation, identification, spectroscopic evaluation of herbal drugs and detection of natural drug adulterants and pollutants by macro-and micro morphology and/or chemically.
a2	Describe the World Health Organization profiles of some selected medicinal drugs.
a3	Illustrate the basics of spectroscopic evaluation of natural products including UV, IR, NMR and Mass spectroscopy.
a4	Outline different chromatographic techniques for analysis and evaluation especially GC and HPLC
2- Professional and Practical Skills	
b1	Handel and dispose chemicals in a safe way.
b2	Perform different quality control tests to evaluate herbal medicine.
3- Intellectual Skills	
c1	Adapt GLP and safety guidelines in the lab.
c2	Assess and select the most appropriate methods of isolation, purification, identification, and standardization of natural herbal drugs.
c3	Select the appropriate herbal supplements which used to prevent some disease and promote health conditions.
4- General and Transferable Skills	
d1	Work as a member of a team.
d2	Manage time and plan of work.
d3	Implement writing and presentation skills
d4	Develop critical thinking and make a decision.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (1hrs/week)
1	-Introduction about the quality control includes: Preparation of herbal drugs Quality assurance	-Laboratory safety measures -Dealing with microscope.
2	-Introduction about the quality control includes: --Identity --Purity --Quality and standardization	-Identification of some commercial herbal drugs using physical and microscopical examination
3	-Adulteration of herbal drugs -Quality control parameters -Sampling of drugs for evaluation	-Identification of some commercial herbal drugs using physical and microscopical examination.
4	-Evaluation of herbal drugs includes the following: --Microscopical evaluation --Moisture content Ash values Crude fibers --Extractive values --Determination of heavy metals Foreign organic matters	-Application of some pharmacopial constants in quality control
5	Evaluation of herbal drugs includes the following: -- Determination of radioactive contamination. --Determination of insects and pesticide residues. -Determination of microbial contamination and aflatoxins.	-Application of some pharmacopial constants in quality control
6	Analytical methods -Qualitative chemical evaluation Color reaction for different classes of secondary metabolites	- Qualitative and quantitative determination of some natural principles by chemical, physical or biological methods. **Activity:** Assignment for diagnostic active constituent of crude drugs.
7	-Spectroscopic evaluation of natural products. -Micro elemental analysis. -UV spectroscopy. **-Periodic Exam**	- Spectrophotometric estimation of pure natural compounds.

8	-IR spectroscopy.	- Spectroscopic problems.
9	-Mass spectroscopy.	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against references.
10	-^{1}HNMR spectroscopy. -^{13}CNMR spectroscopy.	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against references.
11	- Analytical methods -Chromatographic examination -Thin layer chromatography (TLC) -Gas chromatography (GC) -High pressure liquid chromatography (HPLC) Quantitative evaluation -Validation	- Application of chromatography (GC and HPLC), central lab. visit.
12	- Herbal supplements -Bioassay guided isolation process. -Toxicological studies -Toxicity of herbal drugs.	**- Practical exam**
13	- Labeling of herbal products -WHO profile of selected medicinal drugs.	----------
14	-Revision	----------
15	**Final written exam**	----------

E- Teaching and Learning Methods:

- Lectures and interactive lectures.
- Practical sessions
- Self learning (group discussion, group assignment)
- Field visit (Faculty central lab.)

F- Student Assessment Methods:

- Periodic exam to assess: a1, c2 and c3.
- Written exams to assess: a1, a2, a3, a4, c2, c3 and d4.
- Practical exams to assess: b1, b2, c1, d1, d2 and d3.
- Oral exam to assess: a1, a2, a3, a4, c2, c3 and d4.

Assessment schedule

Assessment (1): Periodic exam	Week 7
Assessment (2): Practical exam	Week 12
Assessment (3): Final written exam	Week 15
Assessment (4): Oral exams	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Periodic exam	10	10%
Practical exam & activity	25	25%
Final written exam	50	50%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- **For lectures:** Black (white) boards and data show.
- **For Labs:** Chemicals, glassware, microscopes, digital balances, water bathes, data show, instruments and central lab. visit.

H- List of References:

1- Course Notes: Student book of quality control of herbal drugs approved by Pharmacognosy department 2018-2019.

2- Essential Books:

1. Evans W. C. Trease and Evans "Pharmacognosy" 16th ed., Saunders Elsevier. Edinburg, London 2009.
2. Wallis, T. S. “Text Book of Pharmacognosy” London J & A. Chaurchill Ltd. 1962.

3. WHO monographs on selected medicinal plants volume I. and volume II. World health Organization Geneva 1999.

4. Khafagy S. "Applied Pharmacognosy" College of Pharmacy, University of Alexandria, Egypt, 1981.

5. Rotblatt M. R. and Ziment I. Evidence-Based Herbal Medicine.Hanley & Belfus, Inc./ Philadelphia. 2002.

6. Wagner H. and Bladt S. Plant Drug Analysis: A thin layer chromatography Atlas. Springer 2003.

3- Recommended Books:

Wikipedia, the free encyclopedia and other related botanical and natural medicinal plants web sites

4- Periodicals and websites:

Web sites: Wikipedia, the free encyclopedia and other related botanical and natural medicinal plants web sites.

Course Coordinators: Prof.Dr/ Assem El Shazly

Head of Department: Prof Dr/

Date: Sept. 2018**.**

Matrix-I of Quality control of herbal drugs

	Course Contents	ILOs of Quality control of herbal drugs												
		knowledge and understanding				professional and practical skills		intellectual skills			General and transferable skills			
		a1	a2	a3	a4	b1	b2	c1	c2	c3	d1	d2	d3	d4
	Lectures													
1	-Introduction about the quality control includes: Preparation of herbal drugs Quality assurance	x												
2	-Introduction about the quality control includes: --Identity --Purity --Quality and standardization	x												
3	-Adulteration of herbal drugs -Quality control parameters -Sampling of drugs for evaluation	x	x											
4	-Evaluation of herbal drugs includes the following: --Microscopical evaluation --Moisture content Ash values Crude fibers --Extractive values --Determination of heavy metals Foreign organic matters	x												
5	Evaluation of herbal drugs includes the following: -- Determination of radioactive contamination. --Determination of insects and pesticide residues. -Determination of microbial contamination and aflatoxins.	x								x				

6	Analytical methods -Qualitative chemical evaluation Color reaction for different classes of secondary metabolites	**x**							x					
7	-Spectroscopic evaluation of natural products. -Micro elemental analysis. -UV spectroscopy. **-Periodic Exam**	x		x										x
8	-IR spectroscopy.	x		x										x
9	-Mass spectroscopy.	x		x										**x**
10	-^{1}HNMR spectroscopy. -^{13}CNMR spectroscopy.	**x**		x										x
11	- Analytical methods -Chromatographic examination -Thin layer chromatography (TLC) -Gas chromatography (GC) -High pressure liquid chromatography (HPLC) Quantitative evaluation -Validation	x			x				**x**					
12	- Herbal supplements -Bioassay guided isolation process. -Toxicological studies -Toxicity of herbal drugs. Labeling of herbal products -WHO profile of selected medicinal drugs.		x							x				
Practical sessions														
13	-Laboratory safety measures -Dealing with microscope.					x		x						
14	-Identification of some commercial herbal drugs using physical and microscopical examination					x	x	x			x	x		

15	-Identification of some commercial herbal drugs using physical and microscopical examination.					x	x	x			x	x				
16	-Application of some pharmacopial constants in quality control					x	x	x			x	x				
17	-Application of some pharmacopial constants in quality control					x	x	x			x	x				
18	- Qualitative and quantitative determination of some natural principles by chemical, physical or biological methods.					x	x	x			x	x				
19	- Spectrophotometric estimation of pure natural compounds.					x	x	x			x	x				
20	- Spectroscopic problems.						x					x				
21	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against references.					x	x	x			x	x				
22	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against references.					x	x	x			x	x				
23	- Application of chromatography (GC and HPLC), central lab. visit.					x	x x	x			x	x				
24	**Activity:** Assignment for diagnostic active constituent of crude drugs.										x	x	x			

Matrix- II of Quality control of herbal drugs

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
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures	A7	a1, a3	Analytical methods -extraction of crude drugs	Student book	x			x		x
				- Methods of separation of crude drug constituents. -Color reaction for different classes of secondary metabolites	Student book, essential books	x			x		x
				- Preparation of herbal drugs	Student book	x			x		x
				Spectroscopic evaluation of natural products -Micro elemental analysis -UV Spectroscopy - IR Spectroscopy - Mass Spectroscopy -^{1}HNMR Spectroscopy - ^{13}CNMR Spectroscopy	Student book, essential books	x			x		x
2.40	Principles of	A 8	a1, a4								

	isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.			Chromatographic examination -Thin layer chromatography (TLC) -Gas chromatography (GC) -High pressure liquid chromatography (HPLC) -Quantitative evaluation	Student book	x			x		x
				-Importance of quality assurance -Identity -Purity -Quality and standardization -Adulteration of herbal drugs -	Student book, essential books	x			x		x
				-Evaluation of herbal drugs includes the following: - Moisture content -Ash values - Crude fibers -Foreign organic matters -Determination of heavy metals -Determination of microbial contamination and aflatoxins.	Student book, essential books	x			x		x
				Determination of insects and pesticide residues. -Determination of radioactive contamination	Student book, essential books	x			x		x
			a1, a2	- Quality control parameters -Sampling of drugs -Evaluation of herbal drugs : -Microscopical evaluation							

2.15	Basis of complementary and alternative medicine.	A24	a1	Biological screening -labelling of herbal drugs -Policies and regulations -WHO profile of selected medicinal drugs. Validation -Herbal supplements -Contamination of herbal drugs -Herbal drugs interaction -Toxicity of herbal drugs	Student book, essential books	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.	B4	b2	Identification of some commercial herbal drugs using physical and microscopical examination							
		B5		-Application of some pharmacopial constants in quality control	Practical notes		x			x	
				-Qualitative and quantitative determination of some natural principles by chemical, physical or biological methods	Practical notes		x			x	
				TLC fingerprint.	Practical notes		x			x	
				Equipments and techniques used in quality control of herbal drugs:	Practical notes		x			x	

4.2	Comprehend and apply GLP,GPMP, GSP and GCP guidelines in pharmacy practice	C2	c1	-Introduction about the quality control	Student book	x			x		x
4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C3	c2	- Methods of separation of crude drug constituents. -Color reaction for different classes of secondary metabolites	Student book	x			x		x
				Chromatographic examination -Thin layer chromatography (TLC) -Gas chromatography (GC) -High pressure liquid chromatography (HPLC) -Quantitative evaluation		x			x		x
				Validation -Herbal supplements -Contamination of herbal drugs -Herbal drugs interaction -Toxicity of herbal drugs		x			x		x
				Biological screening -labelling of herbal drugs -Policies and regulations -WHO profile of selected medicinal drugs.		x			x		x
4.5	Select the appropriate	C5	c2, c3	like above	Student book	x			x		x

	methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.										
5.3	Work effectively in a team	D4	d1	Activity	Internet, Recommended books			x		x	
5.8	Demonstrate creativity and time management abilities	D10	d2	Activity	Internet, Recommended books			x		x	
5.9	Implement writing and presentation skills.	D11	d3	Activity	Internet, Recommended books			x		x	
5.10	Demonstrate critical thinking, problem-solving and decision-making abilities	D12	d4	Activity- Revision- Open discussion	Internet, Recommended books			x		x	

COURSE SPECIFICATIONS

Pathology

Third level –Semester 6

2018-2019

Course specification of Pathology (2018-2019)

A- Course specifications:

- **Program (s) on which the course is given:** Bachelor of Pharmacy (clinical Pharmacy)
- **Major or minor element of programs :** Major
- **Department offering the program : ----------**
- **Department offering the course :** Pathology Faculty of Medicine
- **A cademic year level :** Third level / six semester
- **Date of specification approval:** Sept.2018

B- Basic information :

- **Title :** Pathology **Code : MD 608**
- **Credit Hours :**
- **Lectures :** 2 hrs/ week
- **Practical :** 1 hrs / week
- **Tutorials : ---------**
- **Total :** 3 hrs/week

C- Professional information:

Overall Aims of the Course

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

- Identify the basic fundamentals of pathology
- Perform microscopical examination and demonstration of computer slides of different diseases from different specimens
- Suggest the appropriate methods for identification and control of different diseases
- Develop the critical thinking skills and communicate efficiently with patients and health care professionals.

Intended Learning Outcomes :

Knowledge and Understanding	
a1	Identify the basic fundamentals of pathology
a2	Recognize the etiology of disease and the response of body cells to various injurious agents
a3	Outline the etiology of disease and the clinical response to disease process
a4	Specify the laboratory diagnosis of different diseases
Professional and Practical skills	
b1	Use the proper terms of pathology
b2	Perform microscopical examination and demonstration of computer slides of different diseases from different specimens
Intellectual skills	
c1	Suggest the appropriate methods for treatment and prevention of different diseases
c2	Analyze and interpret experimental results for identification of different pathological diseases in suitable form
c3	Evaluate and interpret experimental results for giving critical decision about patient's state
General and Transferable skills	
d1	Develop communication skills with public, patients and other health care professionals
d2	Acquire online search skills through writing reports and researches
d3	Write and present reports
d4	Demonstrate critical thinking, problem-solving and decision-making skills in dealing with case study

Course content of pathology		
Weeks	**Lecture contents (2hrs/lec.)**	**Practical session (1hr/lab)**
First week	-Introduction -Inflammation -Repair and regeneration	1-Acute suppurative appendicitis 2-Chronic Inflammation 3-Myocardial scaring 4-Cloudy swelling 5-Fatty change in liver
Second week	-Cell injury and cell death	1-C.V.C liver 2-Recent thrombus 3-Infarction lung 4-Early T.B lymphadenitis 5-Caseous T.B lymphadenitis
Third week	-Disorders of hematemesis and coagulation	1-Bilharziasis of urinary bladder 2- Bilharziasis of liver 3-Fibroma 4-Lipoma 5-Chondroma
Fourth week	-Immune response and inflammation	1-Squamous cell papilloma 2- Pericanalicular fibroadenoma breast 3-Benign melanoma 4-Squamous cell carcinoma 5-Basal cell carcinoma
Fifth week	-Acquired Immunodeficiency Syndrome (AIDS)	1-Athersclerosis of an artery 2-Nasal polyp 3-Lobar pneumonia (grey hepatization) 4-Emphysema 5-Bronchogenic carcinoma
Sixth week	-Fluid and electrolyte imbalance	1-Portal cirrhosis 2-Obstructive Jaundice ,liver 3-Hepatoma 4-Proliferative phase ndometrium. 5-Secretory phase endom.
Seventh week	-Diseases of cardiovascular system -Blood pressure **Periodical exam**	**Practical exam 1**

Eighth week	-Diseases of the heart: --Myocardial ischemia --Myocardial infarction	1-Mammary cystic hyperplasia 2-Lymphocytic lymphoma 3-Collod goiter 4-Toxic goiter 5-Meningioma.
Ninth week	-Heart failure -Shock -Abnormalities of cardiac conduction	**Cardiovascular system jars:** 1-C.R.Valvulitis 2-S.B.E and CRV 3-Hypertrophy of Lt V. 4-C.R.V of aortic and M.Vs 5-A.Coronary atheros. 6-High ventricular septal defect 7-Concenteric hypertrophy of heart 8-Athersclerosis of aorta 9-Advanced atherosclerosis.
Tenth week	-Disorders of the respiratory system	**Respiratory system jars** 1-T.B. pneumonia and T.B pleurisy 2-Ch.F.C.T.B.of lung 3-Miliary T.B. lung 4-Lung abscess with empyema 5-Bronchiectasis **Activity (Report)**
Eleventh week	-Abnormalities of kidney and urinary tract	Hydatid cyst lung 2-Bronchognic carcinoma with hilar L.N.metastses 3-Pancost`s tumor 4-Malignant mesothelioma 5-Metastatic nodules in lung
Twelfth week	-Gastrointestinal disorders	**C.N.S jars** 1-Meningioma 2-Primary malignant brain tumor 3-Intracranial haemorrhage 4-Retinoblastoma.
Thirteenth week	-Diseases of the liver and exocrine pancreas	**Liver and pancreas jars** 1-Cancer head pancreas 2-Hydatid cyst liver 3-Amebic abscess liver 4-Hepatoma 5-Biliary cirrhosis

		6-Portal cirrhosis.
Fourteenth week	-Endocrine disorders Diabetes mellitus	**Final Practical exam**
Fifteenth week	**Final written exam**	

Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (internet search…..)

Student Assessment methods:

- Periodical exam **to assess:** a1, a2, a3, a4, c1, d4
- Written exams **to assess:** a1, a2, a3, a4, c1, d4
- Practical exams **to assess:** b1, b2, c2, c3, d1,d2,d3
- Oral exam **to assess:** a1, a2, a3, a4, c1, d4

Assessment schedule:

Assessment (1): Written exams	Week 15
Assessment (2): Practical exams	Week 7, 14
Assessment (3): Oral exams	Week 15
Assessment (5): Periodical exams	Week 7
Assessment (6): Activity	Week 10

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	50	50%
Practical exam & activity	25	25%
Oral exam	15	15%
Periodical exam	10	10%
TOTAL	**100**	**100%**

Facilities required for teaching and learning:

For lectures: Black (white) boards, and data show.

For Labs.: Class room, White board and pens and Microscopes

List of references:-

1-Essential Books (Text Books)

a-Pathology Department Books,including :-

1-Pathological basis of the diseases (Generak and special pathology),3rd edition ,Mangoud A.and Eissa M.(eds) .New Art Print ,Egypt 2008

2-Practical book

b-Robbin,s pathological basis of diseases ,7th edition .Robbins and Cotran (eds).Lippincot Ravin,Philadilphia.2007.

c-Ackerman,s Surgical Pathology ,9th edition ,Rosai J.(ed) .Mosby, London .2004

Course Coordinator: Prof . Dr. Yahia Al-Alphi Ali Al-Alphi

Head of Department:

Date: Sept. 2018

Matrix I of Pathology														
Course Contents		**ILOs of pathology course**												
		Knowledge and understanding				**Professional and practical skills**		**Intellectual skills**			**Transferable and general skills**			
Lectures		**a1**	**a2**	**a3**	**a4**	**b1**	**b2**	**c1**	**c2**	**c3**	**d1**	**d2**	**d3**	**d4**
1	-Introduction -Inflammation -Repair and regeneration	**x**	**x**	**x**	**x**			**x**						**x**
2	-Cell injury and cell death	**x**	**x**	**x**	**x**			**x**						**x**
3	-Disorders of hematemesis and coagulation	**x**	**x**	**x**	**x**			**x**						**x**
4	-Immune response and inflammation	**x**	**x**	**x**	**x**			**x**						**x**
5	-Acquired Immunodeficiency Syndrome (AIDS)	**x**	**x**	**x**	**x**			**x**						**x**
6	-Fluid and electrolyte imbalance	**x**	**x**	**x**	**x**			**x**						**x**
7	-Diseases of cardiovascular system -Blood pressure	**x**	**x**	**x**	**x**			**x**						**x**

8	-Diseases of the heart: --Myocardial ischemia --Myocardial infarction	**x**	**x**	**x**	**x**			**x**						**x**
9	-Heart failure -Shock -Abnormalities of cardiac conduction	**x**	**x**	**x**	**x**			**x**						**x**
10	-Disorders of the respiratory system **Activity (Report)**	**x**	**x**	**x**	**x**			**x**				**x**	**x**	**x**
11	-Abnormalities of kidney and urinary tract	**x**	**x**	**x**	**x**			**x**						**x**
12	-Gastrointestinal disorders	**x**	**x**	**x**	**x**			**x**						**x**
13	-Diseases of the liver and exocrine pancreas	**x**	**x**	**x**	**x**			**x**						**x**
14	-Endocrine disorders Diabetes mellitus	**x**	**x**	**x**	**x**			**x**						**x**
	practical	**a1**	**a2**	**a3**	**a4**	**b1**	**b2**	**c1**	**c2**	**c3**	**d1**	**d2**	**d3**	**d4**
1	1-Acute suppurative appendicitis 2-Chronic Inflammation 3-Myocardial scaring 4-Cloudy swelling 5-Fatty change in liver					**x**	**x**		**x**	**x**	**x**	**x**	**x**	

2	**1**-C.V.C liver 2-Recent thrombus 3-Infarction lung 4-Early T.B lymphadenitis 5-Caseous T.B lymphadenitis					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
3	-Bilharziasis of urinary bladder -Bilharziasis of liver -Fibroma -Lipoma -Chondroma					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
4	-Squamous cell papilloma -Pericanalicular fibroadenoma breast -Benign melanoma -Squamous cell carcinoma -Basal cell carcinoma					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
5	-Athersclerosis of an artery -Nasal polyp -Lobar pneumonia (grey hepatization(					**x**	**x**		**x**	**x**	**x**	**x**	**x**	

	-Emphysema -Bronchogenic carcinoma													
6	-Portal cirrhosis **-**Obstructive Jaundice ,liver **-**Hepatoma **-**Proliferative phase ndometrium**.** -Secretory phase endom					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
7	**-**Mammary cystic hyperplasia **-**Lymphocytic **2**lymphoma **-**Collod goiter **-**Toxic goiter -Meningioma.					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
8	**-**Mammary cystic hyperplasia **-**Lymphocytic lymphoma **-**Collod goiter **-**Toxic goiter -Meningioma.					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
9	Cardiovascular system jars**:**					**x**	**x**		**x**	**x**	**x**	**x**	**x**	

	-C.R.Valvulitis -S.B.E and CRV -Hypertrophy of Lt V. -C.R.V of aortic and M.Vs -A.Coronary atheros. -High ventricular septal defect -Concenteric hypertrophy of heart -Athersclerosis of aorta -Advanced atherosclerosis													
10	Respiratory system jars 1-T.B. pneumonia and T.B pleurisy 2-Ch.F.C.T.B.of lung 3-Miliary T.B. lung 4-Lung abscess with empyema 5-Bronchiectasis					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
11	Hydatid cyst lung 2-Bronchognic carcinoma with hilar L.N.metastses 3-Pancost`s tumor 4-Malignant mesothelioma 5-Metastatic nodules in lung					**x**	**x**		**x**	**x**	**x**	**x**	**x**	
12	C.N.S jars					**x**	**x**		**x**	**x**	**x**	**x**	**x**	

	1-Meningioma 2-Primary malignant brain tumor 3-Intracranial haemorrhage 4-Retinoblastoma.													
13	Liver and pancreas jars 1-Cancer head pancreas 2-Hydatid cyst liver 3-Amebic abscess liver 4-Hepatoma 5-Biliary cirrhosis 6-Portal cirrhosis.					**x**	**x**		**x**	**x**	**x**	**x**	**x**	

Matrix II of Pathology

NARS		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment			
						lecture	practical session	Activity	written exam	practical exam	oral exam	Midterm exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A3	a1	-Introduction -Inflammation -Repair and regeneration -Cell injury and cell death	Student book Essential books	x			x		x	x
2.12	Etiology, epidemiology,	A19										

	laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.			-Disorders of hematemesis and coagulation -Acquired Immunodeficiency Syndrome (AIDS) -Fluid and electrolyte imbalance								
		A20	a2 a3 a4	-Diseases of cardiovascular system -Blood pressure -Diseases of the heart: --Myocardial ischemia --Myocardial infarction -Heart failure -Shock -Abnormalities of cardiac conduction -Abnormalities of kidney and urinary tract -Gastrointestinal disorders -Diseases of the liver and exocrine pancreas	Student book Essential books	x			x		x	x
		A21		-Endocrine disorders Diabetes mellitus	Student Notes Essential books		x	x		X		

					Practical notes							
3.1	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	B1	b1	General Pathology -Introduction	Practical notes	x	x		x	x	x	x
3.6	Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infections in biological specimens.	B11	b2	1-Acute suppurative appendicitis 2-Chronic Inflammation 3-Myocardial scaring 4-Cloudy swelling 5-Fatty change in liver 1-C.V.C liver 2-Recent thrombus 3-Infarction lung 4-Early T.B lymphadenitis 5-Caseous T.B lymphadenitis 1-Bilharziasis of urinary bladder 2- Bilharziasis of liver 3-Fibroma 4-Lipoma 5-Chondroma	Student notes and practical note		x	x	x	x	x	x
					Student notes and practical note							

				1-Squamous cell papilloma 2- Pericanalicular fibroadenoma breast 3-Benign melanoma 4-Squamous cell carcinoma 5-Basal cell carcinoma 1-Atherosclerosis of an artery 2-Nasal polyp 3-Lobar pneumonia (grey hepatization) 4-Emphysema 5-Bronchogenic carcinoma 1-Portal cirrhosis 2-Obstructive Jaundice ,liver 3-Hepatoma 4-Proliferative phase ndometrium. 5-Secretory phase endom. 1-Mammary cystic hyperplasia 2-Lymphocytic lymphoma 3-Collod goiter 4-Toxic goiter 5-Meningioma. Cardiovascular system jars: 1-C.R.Valvulitis 2-S.B.E and CRV 3-Hypertrophy of Lt V. 4-C.R.V of aortic and M.Vs 5-A.Coronary								

				atheros. 6-High ventricular septal defect 7-Concenteric hypertrophy of heart 8-Athersclerosis of aorta 9-Advanced atherosclerosis. Respiratory system jars 1-T.B. pneumonia and T.B pleurisy 2-Ch.F.C.T.B.of lung 3-Miliary T.B. lung 4-Lung abscess with empyema 5-Bronchiectasis Activity (Report) Hydatid cyst lung 2-Bronchognic carcinoma with hilar L.N.metastses 3-Pancost`s tumor 4-Malignant mesothelioma 5-Metastatic nodules in lung C.N.S jars 1-Meningioma 2-Primary malignant brain tumor 3-Intracranial haemorrhage 4-Retinoblastoma. Liver and pancreas jars 1-Cancer head								

				pancreas 2-Hydatid cyst liver 3-Amebic abscess liver 4-Hepatoma 5-Biliary cirrhosis 6-Portal cirrhosis.								
				-Thrombosis& Embolism -Ischemia& Infarction -Sclerosis&Heart failure -Blood disorders -Apoptosis -Necrosis	Student notes		x	x		X		
4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions	C11	c1	Respiratory system jars	Student book practical notes		x		x		x	x
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C16	C 2 C3	C.N.S jars Liver and pancreas jars	Practical note		x		x		x	x

5.1	Communicate clearly by verbal and means	D1	d 1									
5.2	Retrieve and evaluate information from different sources to improve professional competencies	D2 D3	d2	activity	Internet search			x			x	
5.9	Implement writing and presentation skills.	D11	d3	activity								
5.10	Demonstrate critical thinking, problem-solving and decision-making abilities	D12	d 4	Activity	Internet search		x	x	x	x	x	x

Course Coordinator: Prof . Dr. Yahia Al-Alphi Ali Al-Alphi

Head of Department:

Date: Sept. 2018

COURSE SPECIFICATIONS

Trauma & First aid

Third level –Semester 6

2018-2019

Course specification of Trauma and First aids (2018/2019)

A- Course specifications:

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

- Major or minor element of programs: Major

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

- Department offering the course: Surgery faculty of Medicine

- A cademic year level: Third level / six semester

- Date of specification approval: Sept.2018

B- Basic information :

- Title: Trauma and First aids **Code: MD** 609

- Credit Hours:

- Lectures : 2 hrs/ week

- Practical : 0 hrs / week

- Tutorials : ---------

- Total : 2 hrs/week

C- Professional information:

Overall Aims of the Course:

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

- Recognize how to provide the first aid measures for patients.
- Apply the first aid measures till the patient arrive to the hospital and receive the suitable care
- Acquire online search skills and write reports.

- **Intended Learning Outcomes:**

Knowledge and Understanding	
a1	Describe the basic first aid measures
a2	Mention precautions that should be followed in different emergency situations
Intellectual skills	
c1	Use the information needed in pharmacy practice to apply the most suitable first aid measures
General and Transferable skills	
d1	Acquire self learning skills through writing reports and researches
d2	Write and present reports

Course Content:

Weeks	Lecture contents (2hrs/lec.)
First week	-Aim of first aid measures
Second week-	Basic life support: --Air way care --Breathing --Circulation
Third week-	Basic life support: --Disability --Exposure, Environment
Fourth week	-Bleeding
Fifth week	-Shock: --Types and etiology --Clinical picture
Sixth week	-Shock: --First aid measures
Seventh week	-Medical emergencies: --Breathing difficulties --Allergic reactions --Seizures **(Activity) periodic exam**
Eighth	-Medical emergencies:

week	--Heart attack --Stroke --Cardiac arrest
Ninth week	-Poisoning: --First aid measures
Tenth week	-Poisoning: --Inhalants --Ingestants
Eleventh week	-Bones and Joints: --Fractures --Sprains, Strains, Bruises
Twelfth week	-Soft Tissue Injuries: --Definition --Types
Thirteenth week	-Types of wounds -Complications of wounds
Fourteenth week	-First aid measures for wounds -Rescue -Transportation
Fifteenth week	**Final written exam**

Teaching and Learning Methods:

- Lectures
- Self learning (internet search…..)

Student Assessment methods:

periodical exam **to assess :** a1, a2, c1
Written exams **to assess:** a1, a2, c1
Oral exam **to assess:** a1, a2, c1
Activity **to assess:** d1, d2

Assessment schedule:

Assessment (1): Written exams	Week 15
Assessment (2): Oral exams	Week 15
Assessment (3): periodical exam & activity	Week 7

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	75	75%
Oral exam	15	15%
periodical exam & activity	10	10%
TOTAL	100	100%

Facilities required for teaching and learning:

- **For lectures:** Black (white) boards, and data show.

List of references:

- Course notes
- Text Books:
  Advanced trauma life support, Tenth Edition, Copyright© 2018 American College of Surgeons

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Course Coordinator: Prof . Dr. / Tarek Ezzat

Date: **Sept. 2018**

Matrix I of Trauma and First aid course

Course Contents		ILOs of Physiology course				
		Knowledge and understanding		Intellectual skills	General and transferable and skills	
Lectures		a1	a2	c1	d1	d2
1	-Aim of first aid measures	×	×	×		
2	Basic life support: --Air way care --Breathing --Circulation	×	×	×		
3	Basic life support: --Disability --Exposure, Environment	×	×	×		
4	-Bleeding	×	×	×		
5	-Shock: --Types and etiology --Clinical picture	×	×	×		
6	-Shock: --First aid measures	×	×	×		
7	-Medical emergencies: --Breathing difficulties --Allergic reactions --Seizures	×	×	×		
8	Medical emergencies: --Heart attack --Stroke --Cardiac arrest	×	×	×		
9	-Poisoning: --First aid measures	×	×	×		
10	-Poisoning:	×	×	×		

	--Inhalants --Ingestants					
11	-Bones and Joints: --Fractures --Sprains, Strains, Bruises	×	×	×		
12	-Soft Tissue Injuries: --Definition --Types	×	×	×		
13	Types of wounds -Complications of wounds	×	×	×		
14	-First aid measures for wounds -Rescue -Transportation	×	×	×		
15	(Activity)				×	×

Matrix II of Trauma and First aids course

National Academic Reference Standards NARS		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods		Method of assessment			
						Lecture	Self learning	Written exam	activity	Oral exam	Midterm exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice	A3	a1	Aim of first aid measures Basic life support: --Air way care --Breathing --Circulation Basic life support: --Disability --Exposure, Environment	Student book Essential books	x		x		x	x
2.16	Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures	A26	a2	**All other topics**	Student book Essential books	x		x		x	x
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C16	c1	**All topics**	Student book Essential books	x		x		x	x
5.5	Practice independent	D7	d1				x		x		

	learning needed for continuous professional development.										
5.9	Implement writing and presentation skills.	D11	d2				x		x		