COURSE SPECIFICATIONS

Faculty of Pharmacy

Bachelor of Pharmacy

Fifth Year – First Term

2017-2018

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Course Specification

Applied Pharmacognosy 1

Fifth Year-First Term

2017-2018

Course Specification of Applied Pharmacognosy 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: Pharmacognosy

Academic year Level: Fifth year /First term

Date of specification approval: October 29, 2017

B- Basic information:

Title: Applied Pharmacognosy I code: 750

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 3.5hrs/week

Tutorials: ---

Total: 5.5 hrs/week

C- Professional information:

1-Overall aim of the course:

On completion of the course, the student will be able to illustrate the fundamental knowledge about production, evaluation, spectroscopic evaluation and chromatographic techniques application of natural products.

2-Intended Learning Outcomes:

A- Knowledge and Understanding	
a1	Outline the principles of production, evaluation of natural products (crude drugs and isolates)
a2	Illustrate the basics of spectroscopic evaluation of natural products including UV, IR, NMR and Mass spectroscopy.
a3	Demonstrate different analytical techniques for identification of pure isolates including UV, IR, NMR and Mass spectroscopy.
a4	Illustrate different chromatographic techniques for analysis and evaluation especially GC and HPLC
a5	Outline GLP guidelines and validation procedures in crude drugs and pure isolates evaluation
B- Professional and Practical skills	
b1	Examine purity of crude drugs and detection of adulterants
b2	Examine active constituents according to different parameters e.g. melting point, optical activity, spectrophotometery…etc
b3	Identify active substances using chemical screening and different spectroscopic and chromatographic methods
b4	Construct a research study and analyze the results.
C- Intellectual skills	
c1	Adopt GLP guidelines in quality control of natural products using different evaluation and spectroscopic methods.
c2	Analyze crude drugs qualitatively and quantitatively using chromatographic techniques and chemical screening.
c3	Apply appropriate methods for standardization of active substances using analytical, structural and physical standards.
D- General and Transferable skills	
d1	Reprocess information from different sources to improve the professional skills in evaluation of natural products
d2	Work effectively as a member of a team
d3	Write reports and present it
d4	Demonstrate decision making and problem solving in drug evaluation using different chromatographic and analytical techniques

D-Course Content:

Week No.	Lecture contents (2hrs/lec.)	Practical session (3.5 hrs/lab)
1	-Production of natural drugs	-Introduction of quality control of crude drugs (physical characters, analytical evaluation, biological screening, etc. … *Activity: Assignment for diagnostic active constituents of crude drugs
2	Production of natural drugs	Checking the purity of herbal drugs using microscopical examination
3	-Evaluation of natural products -Detection of adulteration -Sampling of drugs	Checking the purity of herbal drugs using microscopical examination
4	-Standardization of natural drugs	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference.
5	-Physical data of isolates -Preliminary chemical tests	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference
6	-Isolation of crude drug - Analytical standards	Analytical standards (moisture content, volatile oil content, ash, etc….
7	-Spectroscopic evaluation of natural products -Micro elemental analysis -UV Spectroscopy	Spectrophotometeric estimation of pure natural compounds.
8	-UV Spectroscopy (continue)	UV Spectroscopic problems
9	- IR Spectroscopy	-IR Spectroscopic problems -Mass Spectroscopy problems
10	- Mass Spectroscopy	^{1}HMNR Spectroscopic problems
11	-^{1}HNMR Spectroscopy	^{13}CMNR and two dimensional NMR Spectroscopic problems *Activity: general spectroscopy problems including identification of small molecules
12	-^{1}HNMR Spectroscopy(continue) -^{13}CNMR Spectroscopy	Application of chromatography (GC and HPLC), central lab.

		visit
13	-Chromatography -Applications of GC	**-Final Practical exam**
14	- Applications of HPLC and some other chromatographic techniques	
15	-Revision & Open discussion	

E-Teaching and Learning Methods:

- Lectures
- Practical session
- Self learning (Activities….)

F-Student Assessment methods:

- Written exams **to assess:** a1, a2, a3, a4, a5, b1, b3, c1, c2, c3.
- Practical exams **to assess:** a3, b1, b2, b3, c1, c2, c3.
- Oral exam **to assess:** a1, a2, a3, a4, a5, b1, b3, c1, c2, c3.
- Activities **to assess:** c4, d1, d2, d3, d4.

*Activity: The students are divided into groups (each 3-5 students) each group perform a search for one of the suggested subjects and presents it in the Lab according to the planned Table. In addition to solving general spectroscopic problems including identification of small molecules.

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 2, 11
Assessment (3): Practical exams	Week 3, 14
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.
- **For Labs:** Chemicals, glassware, instruments, Digital balances, water bathes.
- Field visit : Faculty central lab

H-List of references

1-Course Notes:

- Student book of applied pharmacognosy I approved by Pharmacognosy department (2017)

2-Essential Books (Text Books):

- Evans W.C. Trease and Evans Pharmacognosy. 16th ed., Published by Saunders Elsevier. Edinburg, London, 2009.

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

- Wagner H. and Bladt S. Plant Drug Analysis: A thin layer chromatography Atlas. Published by: Springer, 2003.

- Wallis, T.S. Text Book of Pharmacognosy. Published by: London J & A. Chaurchill Ltd., 1962.

- Khafagy S. Applied Pharmacognosy. Published by: College of Pharmacy, University of Alexandria, Egypt, 1981.

- WHO monographs on selected medicinal plants volume I. and volume II. World health Organization, Geneva, 1999.
- WHO. Quality control methods for herbal materials. Updated edition of quality control methods for medicinal plant materials, World health Organization, Geneva, 1998.
- Validation of Analytical Methods. Agilent Technologies. Ludwig Huber, https://www.chem.agilent.com/Library/primers/Public/5990-5140EN.pdf (2010).
- Basic Gas Chromatography. 2nd ed. Mcnair H. M. and J. M. Miller J. M. A John Wiley & Sons, INC., Publication 2009.
- Silverstein, R., Webster, F. and Kiemle, D. Spectroscopic Identification of Organic Compounds. Published by: Wiley and Sons, 2005.
- Braithwaite, A. and Smith, F.J. Chromatographic Methods. Published by: Springer, 1995.
- Mabry T.J, Markhamm K.R. and Thomas M.B. The Systemic Identification of Flavonoids. Published by: Springer –Verlag, New York, Heidelberg, Berlin ,1970.

3-Recommended Books:

-Pharmacognosy and Pharmacobiotechnology; Robbers, J.E., Speedie, M.K. and Tyler, V.E,(1996)

-Structural Elucidation of Natural Products; MS; Djerassi, C. and Budzikiewicz,H. and Williams, D.H.; Holden-Day USA(1964).

-Application of Absorption Spectroscopy of Organic Compounds; Dyer ,J.R.;Prentice-Hall(1965).

-One-dimential and Two-dimentional NMR Spectra by Modern Pulse Techniques; Koji Nakanishi, University science books,California,USA(1990).

-Organic Structure determination Using 2D NMR Spectroscopy (a problem based approach), Jeff Rey H. Simpson (2008).

- Structure Determination of Organic Compounds (Tables of Spectral Data), Martin Badertscher, Fourth, Revised and Enlarged Edition, Springer-Verlag Berlin Heidelberg (2009).

4-Periodicals and websites:

- Wikipedia, the free encyclopedia and other related botanical and natural medicinal plants web sites.
- Ethnopharmacology, 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 Coordinators: **Prof. Dr. Assem Elshazly**

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

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

Matrix I of Applied Pharmacognosy-1 Course

Course Contents		ILOs of Applied Pharmacognosy-1 Course																
		Knowledge and understanding					Professional and practical skills				Intellectual skills				Transferable and general skills			
		a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	c3	c4	d1	d2	d3	d4
Lectures																		
1	- Production of natural drugs	x				x												
2	- Detection of adulteration	x				x					x							
3	- Sampling of drugs	x				x					x							
4	- Standerization of natural drugs	x				x	x				x	x	x					
5	- Physical data of isolates	x				x	x		x		x		x					
6	- Periliminary chemical tests	x				x			x		x	x	x					
7	- Phytochemical screening	x				x			x		x	x	x					
8	- Analytical standards	x				x					x	x	x					
9	- Microelemental analysis		x	x		x	x		x		x							
10	- UV Spectroscopy		x	x		x	x		x		x							
11	- IR Spectroscopy		x	x		x	x		x		x							

12	- Mass Spectroscopy		x	x		x	x		x		x							
13	- HNMR Spectroscopy		x	x		x	x		x		x							
14	- HNMR Spectroscopy(continue)		x	x		x	x		x		x							
15	- C^{13}NMR Spectroscopy		x	x		x	x		x		x		x					
16	- Applications of GC				x		x		x			x	x					
17	- Applications of HPLC and some other chromatographic techniques				x		x		x			x						
Practical																		
18	-Introduction of quality control of crude drugs (physical characters, analytical evaluation, biological screening, etc… .							x			x							
19	Checking the purity of herbal drugs using microscopical examination.							x			x							
20	Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference.							x			x							
21	Analytical standards (moisture content, volatile oil content, ash							x			x							
22	Spectrophotometeric estimation of pure natural compounds							x			x							
23	- UV Spectroscopy problems			x			x		x									
24	- IR Spectroscopy problems			x			x		x									
25	- Mass Spectroscopy problems			x			x		x									
26	- HMNR Spectroscopy problems			x			x											
27	13CMNR and two dimensional NMR Spectroscopic problems			x			x											
28	Application of chromatography (GC and HPLC)						x											

29	- Activity (Standardization of natural drugs)									x				x	x	x	x	x

Matrix II of Applied Pharmacognosy-1

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
Lectures											
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1	• Production of natural drugs • Detection of adulteration • Sampling of drugs • Standardization of natural drugs • Physical data of isolates • Preliminary chemical tests • Phytochemical screening • Analytical standards	Student book	x			x		x
			a2	• Micro elemental analysis • UV Spectroscopy • UV Spectroscopy (continue) • IR Spectroscopy • Mass Spectroscopy • HNMR Spectroscopy • HNMR Spectroscopy(continue) • C13NMR Spectroscopy	Student book	x			x		x

2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a3	• Micro elemental analysis • UV Spectroscopy • IR Spectroscopy • Mass Spectroscopy • HNMR Spectroscopy • HNMR Spectroscopy (continue) • C13NMR Spectroscopy	Student book	x			x		x
			a4	• Applications of GC • Applications of HPLC and some other chromatographic techniques	Student book	x			x		x
			a5	• Production of natural drugs • Detection of adulteration • Sampling of drugs • Standardization of natural drugs • Physical data of isolates • Preliminary chemical tests • Phytochemical screening • Analytical standards • Micro elemental analysis • UV Spectroscopy • IR Spectroscopy • Mass Spectroscopy • HNMR Spectroscopy • C13NMR Spectroscopy	Student book	x			x		x

3.1	Use the proper pharmaceutical and medical terms and abbrevations and symbols in pharmacy practice.	B1	b1	• Standardization of natural drugs • Physical data of isolates • Analytical standards • Micro elemental analysis • UV Spectroscopy • UV Spectroscopy (continue) • IR Spectroscopy • Mass Spectroscopy • HNMR Spectroscopy • HNMR Spectroscopy(continue) • C13NMR Spectroscopy • Applications of GC • Applications of HPLC and some other chromatographic techniques	Student book	x			x		
3.4	Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins.	B5	b3	• Physical data of isolates • Preliminary chemical tests • Phytochemical screening • Micro elemental analysis • UV Spectroscopy • IR Spectroscopy • Mass Spectroscopy • HNMR Spectroscopy • C13NMR Spectroscopy • Applications of GC • Applications of HPLC and some other chromatographic techniques	Student book	x			x		x

3.11	Conduct research studies and analyze the results	B17	b4	•Standardization of natural drugs	Internet, essential and recommended books.			x			
4.2	Comprehend and apply GLP,GPMP, GSP and GCP guidelines in pharmacy practice	C3	c1	• Detection of adulteration • Sampling of drugs • Standardization of natural drugs • Physical data of isolates • Preliminary chemical tests • Phytochemical screening • Analytical standards • Spectroscopic evaluation of natural products • Micro elemental analysis • UV Spectroscopy • IR Spectroscopy • Mass Spectroscopy • HNMR Spectroscopy • C13NMR Spectroscopy	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	C4	c2	• Standardization of natural drugs • Preliminary chemical tests • Phytochemical screening • Analytical standards • Standardization of natural drugs • Physical data of isolates • Preliminary chemical tests • Phytochemical screening • Analytical standards • Applications of GC • Applications of HPLC and some other chromatographic techniques	Student book	x			x		x
4.4	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C7	c3	• Standardization of natural drugs • Physical data of isolates • Preliminary chemical tests • Phytochemical screening • Analytical standards • Applications of GC • Applications of HPLC and some other chromatographic techniques	Student book	x			x		x
4.5	Analyze and evaluate evidence-based information needed in pharmacy practice.	C17	c4	• Standardization of natural drugs	Internet, essential and recommended books.			x			
4.6	Retrieve and evaluate information from different sources to improve professional competencies	D3	d1	• Standardization of natural drugs	Internet, essential and recommended books.			x			

4.7	Work effectively in a team	D4	d2	• Standardization of natural drugs	Internet, essential and recommended books.			x			
4.8	Use numeracy, calculation and statistical methods as well as information technology tools	D6	d3	• Standardization of natural drugs	Internet, essential and recommended books.			x			
4.9	Demonstrate critical thinking, problem-solving and decision-making abilities	D12	d4	• Standardization of natural drugs	Internet, essential and recommended books.			x			
Practical											
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a3	• UV Spectroscopy problems • IR Spectroscopy problems • Mass Spectroscopy problems • HMNR Spectroscopy problems	Practical notes		x			x	

3.1	Use the proper pharmaceutical and medical terms and abbrevations and symbols in pharmacy practice.	B1	b1	• Ash determination • Microscopic linear measurements • Activity • UV Spectroscopy problems • IR Spectroscopy problems • Mass Spectroscopy problems • HMNR Spectroscopy problems • HPLC demonstration	Practical notes		x			x	
3.2		B2	b2	• Identification of leaves • Identification of flowers and roots • Identification of seeds and barks • Identification of fruits • Identification of drugs mixtures • Identification of drugs mixtures • Phytochemical screening of crude drug • Ash determination • Microscopic linear measurements • Activity	Practical notes		x			x	

3.4	Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins.	B5	b3	• Phytochemical screening of crude drug • Practical exam • Ash determination • Microscopic linear measurements • Activity • UV Spectroscopy problems • IR Spectroscopy problems • Mass Spectroscopy problems • HMNR Spectroscopy problems	Practical notes		x			x	
4.2	Comprehend and apply GLP,GPMP, GSP and GCP guidelines in pharmacy practice	C3	c1	• Identification of leaves • Identification of flowers and roots • Identification of seeds and barks • Identification of fruits • Identification of drugs mixtures • Identification of drugs mixtures • Phytochemical screening of crude drug • Ash determination • Microscopic linear measurements	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	• Phytochemical screening of crude drug • Ash determination • Microscopic linear measurements • Activity	Practical notes		x			x	
4.4	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C7	c3	• Ash determination	Practical notes		x			x	
5.10	Demonstrate critical thinking, problem-solving and decision-making abilities	D12	d4	Activity : Open discussion	Internet, recommended books			x		x	

Course Coordinators: Prof. Dr. Assem Elshazly

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

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

COURSE SPECIFICATIONS

Clinical Pharmacology

Fifth Year-First Term
2017-2018

Course Specification of Clinical Pharmacology

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: Fifth year /First term

Date of specification approval: October 2017

B- Basic information:

Title: Clinical pharmacology Code: 850

Credit Hours: ---

Lectures : 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 4 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to demonstrate etiology, epidemiology and clinical features of many organ disorders. In addition, students will be able to select the proper drug in various disease conditions based on knowledge of drug-drug interaction and adverse drug reactions as well as use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.

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

A- Knowledge and Understanding	
a1	Explain the bases of clinical pharmacology and evidence based medicine.
a2	Illustrate etiology, epidemiology and clinical features of many organ disorders.
a3	Outline the laboratory Diagnosis of different disease.
a4	Specify therapeutic regimens of different disease.
a5	Summarize the principles of pharmacology and phases of clinical development.
B- Professional and Practical skills	
b1	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.
b2	Choose medicines according to understanding disease etiology and pathophysiology.
b3	Advise patients about safe and proper use of medicines.
C- Intellectual skills	
c1	Integrate knowledge of pharmacology and therapeutics to use drugs in various disease states.
c2	Select the suitable drug in various disease conditions based on knowledge of drug-drug interaction and adverse drug reactions.
D- General and Transferable skills	
d1	communicate with patients effectively
d2	Develop critical thinking, problem solving and decision making skills.

D- Contents:

Week No.	Lecture contents (2 hrs/lec.)	Practical session (2hrs/lab)
1	- Liver disorders	- Case Studies of liver disease
2	- Liver disorders	- Case Studies of liver disease
3	- Liver disorders	- Case studies of acute renal failure
4	- Acute kidney injury	- Case studies of acute renal failure
5	- Chronic kidney disease	- Case study of chronic kidney disease
6	- Renal replacement therapy	- Case study of chronic kidney disease
7	- Complications of CKD	- Case study of critical care
8	- Drug induced nephropathy	- Case study of critical care
9	- Drug induced nephropathy	- Case study of critical care **Activity**
10	- Critical care	- Case study of critical care
11	- Critical care	**- Practical exam**
12	- Critical care	
13	- Revision	
14	- Open discussion	
15	- Open discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions (Case study)
- Self learning (Activity, group discussion)

F- Student Assessment Methods:

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

2- Activity to assess b3, d1, d2

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

4- Oral exam to assess a1, a2, a3, a4, a5, c1, c2

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 9
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.

H- List of References:

1- Course Notes: Student book of Clinical pharmacology approved by the Pharmacology & Toxicology department (2017).

- Practical notes of Clinical pharmacology approved by the Pharmacology & Toxicology department (2017).

2- Essential books (Text Books)

i. Oxford Textbook of Clinical Pharmacology and Drug Therapy (third edition); Grahame-Smith D.G, Aronson, J.K; Oxford University Press (2002).

3- Recommended Books:

i- Principle of Clinical Pharmacology; A. Atkinson et al., Academic press (2001).

ii- Pharmacotherapy, pathophysiological approach (sixth edition); DePero J., (2006).

4- Periodicals and Websites

British Journal of Clinical Pharmacology

The American Society Clinical Pharmacology Therapeutics (ASCPT)

http://www.ascpt.org/

Course Coordinator: Prof. Mona Fouad

Head of Department: Prof. Mohamed Baraka

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

Matrix I of Clinical pharmacology course

Course content		ILOs of Clinical Pharmacology											
		Knowledge and understanding					Professional and practical skills			Intellectual skills		General and transferable skills	
		a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	d1	d2
Lectures													
1	Liver disorders	x	x	x	x	x				x	x		
2	Acute kidney injury	x	x	x	x	x				x	x		
3	Chronic kidney disease	x	x	x	x	x				x	x		
4	Renal replacement therapy	x	x	x	x	x				x	x		
5	Complications of CKD	x	x	x	x	x				x	x		
6	Drug induced nephropathy	x	x	x	x	x				x	x		
7	Critical care	x	x	x	x	x				x	x		
Practical sessions													
1	Case studies of liver disease						x	x				x	x
2	Case studies of acute renal failure						x	x				x	x
3	Case study of chronic kidney disease						x	x				x	x
4	Case study of critical care						x	x				x	x
5	Activity								x			x	x

Matrix II of Clinical pharmacology course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course content	Sources	Teaching and learning methods		Method of assessment		
						Lecture	Practical session	Written exam	Practical exam	Oral exam
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	A27	a1 a2	Liver disorders Acute kidney injury Chronic kidney disease Renal replacement therapy Complications of CKD Drug induced nephropathy Critical care	Student book Essential books	x		x		x
		A28	a3	Liver disorders Acute kidney injury Chronic kidney disease Renal replacement therapy Complications of CKD Drug induced nephropathy Critical care	Student book Essential books	x		x		x

		A29	a4	Liver disorders Acute kidney injury Chronic kidney disease Renal replacement therapy Complications of CKD Drug induced nephropathy Critical care	Student book Essential books	x		x		x
2.14	Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	A31	a5	Liver disorders Acute kidney injury Chronic kidney disease Renal replacement therapy Complications of CKD Drug induced nephropathy Critical care	Student book Essential books	x		x		x
3.1	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	B1	b1	Case studies of liver disease Case studies of acute renal failure Case study of chronic kidney disease Case study of critical care	Practical notes		x		x	
3.5	Select medicines based on understanding etiology and path physiology of diseases.	B7	b2	Case studies of liver disease Case studies of acute renal failure Case study of chronic kidney disease Case study of critical care	Practical notes		x		x	
3.10	Advise patients and other health care professionals about safe and proper use of medicines.	B15	b3	- Activity	Recommended books		x		x	

4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions	C12	c1	Liver disorders Acute kidney injury Chronic kidney disease Renal replacement therapy Complications of CKD Drug induced nephropathy Critical care	Student book Essential books Recommended books	x		x		x
4.11	Assess drug interactions, ADRs and pharmacovigilance.	C14	c2	Liver disorders Acute kidney injury Chronic kidney disease Renal replacement therapy Complications of CKD Drug induced nephropathy Critical care	Student book Essential books Recommended books	x		x		x
5.1	Communicate clearly by verbal and means	D1	d1	Case studies of liver disease Case studies of acute renal failure Case study of chronic kidney disease Case study of critical care - Activity	Practical notes		x		x	
5.10	Implement writing and thinking, problem- solving and decision- making abilities.	D12	d2	Case studies of liver disease Case studies of acute renal failure Case study of chronic kidney disease Case study of critical care - Activity	Practical notes		x		x	

Course Coordinator: Prof. Mona Fouad

Head of Department: Prof. Mohamed Baraka

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

Course Specification

Industrial pharmacy-1

Fifth Year-First Term

2017-2018

Course specification of Industrial 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: Pharmaceutics Department

Academic year Level: Fifth year/First term

Date of specification approval: September 2017

B- Basic information:

Title: Industrial pharmacy-1 Code: 650

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 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 Industrial pharmacy-1 (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	Calculate the required heat to remove certain % of moisture
d2	Calculate the heat transferred through different surfaces
d3	Demonstrate critical thinking and decision making

D- Contents:

Week No.	Lecture contents (2 hrs/lec.)	Practical session (2hrs/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	**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	Problems on extraction
14	Extraction	Extraction apparatus drawings
15	Revision	**Practical exam**

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 , c1,c2, d1 ,d2

2- Activity to assess: d3

2-Practical exams to assess: b1, b2, c1, c2, d1, d2, d3

3-Oral exam to assess: a1, a2, a3, a4, c1, c2, d1, d2

Assessment schedule

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 7
Assessment (3): Practical exams	Week 15
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) boards, data show

H- List of References:

1- Course Notes: Student book of industrial pharmacy-1 approved by pharmaceutics department (2017)

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

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Matrix I of industrial pharmacy 1 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	d2	d3
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

Matrix II of industrial Pharmacy course

NARS		program ILOS	Course ILOS	Course content	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.	A2	a1.	Introduction of evaporation, drying, extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Student book Essential books	x		x	x		x
			a2.	Mechanisms of evaporation, drying, extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Student book Essential books	x			x		x
2.7	Principles of various	A18	a3 .	Apparatus for evaporation, drying,	Student book	x			x	x	x

	instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry			extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Essential books						
			a4.	Mechanisms & principles of apparatus for evaporation, drying, extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Student book Essential books	x			x		x
3.8	Apply techniques used in operating pharmaceutical equipment and instruments	B13.	b1	Apparatus drawings for evaporation, drying, extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Practical notes And student book		x			x	
			b2	Problems on different processes as evaporation, drying, extraction, heat transfer,	Practical notes And student book		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.	Mechanisms & principles of apparatus for evaporation, drying, extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Practical notes And student book	x		x		x	x
			c2.	Apparatus for evaporation, drying, extraction, refrigeration, heat transfer, crystallization, mixing, air purification and filteration	Practical notes And student book			x			
5.4	Use numeracy, calculation and statistical methods as well as information technology tools	D5	d1	Problems on heat transfer	Practical notes And student book	x	x	x	x	x	x
			d2	Problems on heat transfer	Practical notes And student book	x	x	x	x	x	x
5.1o	Implement writing and thinking, problem- solving and decision-	D12	d3.	Problems on different processes as evaporation, drying, extraction, heat transfer,	Practical notes And student book	x			x	x	

	making abilities.			Activity							

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

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COURSE SPECIFICATIONS

Medicinal Chemistry (3)

Fifth Year-First Term
2017-2018

Course Specification of Medicinal Chemistry (3)

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: Fifth year /First term

Date of specification approval: 22/8/2017

B- Basic information:

Title: Medicinal Chemistry (3) Code: 350

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 3 hrs/week

Tutorials: ---

Total: 5 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to acquire the necessary knowledge concerning synthesis, assay, mode of action, SAR, and uses of ANS-acting drugs, CNS-acting drugs, NSAIDS& opioid analgesics.

2-Intended Learning Outcomes of Medicinal Chemistry (3) (lLOs):

A- Knowledge and Understanding	
a1	Illustrate appropriate methods of drug synthesis ANS-acting drugs, CNS-acting drugs, NSAIDS& opioid analgesics.).
a2	Demonstrate pharmacological properties, SAR, adverse reactions, contraindications of different drug categories and drug-drug interactions(ANS-acting drugs, CNS-acting drugs, NSAIDS& opioid analgesics.).
B- Professional and Practical skills	
b1	Handle chemicals safely & effectively.
b2	Analyze the results obtained from titrimetric & spectrophotometric assay of drugs.
C- Intellectual skills	
c1	Adopt GLP guidelines in handling chemicals & laboratory equipments.
c2	Apply quantitative and qualitative methodology and assay of authentic samples.
c3	Apply quantitative methods for assay of pharmaceutical preparations contained the mentioned drugs.
D- General and Transferable skills	
d1	Improve professional abilities by evaluation information from different sources.
d2	Work effectively as a member of a team.
d3	Write reports and present it.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	-Drugs acting on the autonomic nervous system: sympathomimetic agents	-Titrimetric analysis
2	-Sympathomimetic agents -Parasympathomimetic agents	-Assay of acetylsalicylic acid (Aspirin)in powder form
3	-Parasympathomimetic agents: cholinergic antagonists Adrenergic blocking agents	-Assay of acetylsalicylic acid (Aspirin)in Tablets or suppositories form
4	-Local anesthetics: (P-Aminobenzoic acid derivatives, dialkylaminoalkyl ester, amide derivatives)	-Assay of sodium salicylate
5	-Drugs acting on central nervous system: (central nervous system depressants, sedative and hypnotics)	-Assay of Novalgin in tablets or suppositories **-Activity (case study)**
6	-General anesthetics Antiepileptic	-Assay of Novalgin in ampoule form
7	-Major tranquilizer	-Assay of paracetamol **-Activity**
8	-Minor tranquilizer	-Assay of antipyrine
9	-Central nervous system stimulants: (analeptics, antidepressants)	-Assay of chloral hydrate **-Activity (case study)**
10	-Central sympathomimetic agents and psychodelics	-Assay of prescription -Functional group analysis and their applications
11	-Non-steroidal antiinflammatory agents: (salicylates, p-Aminophenols, pyrazoles & derivatives)	**-Practical exam (2)**
12	-N-Arylanthranilic acid, Aryl acetic acid, Oxicams and Uricosuric agents	

13	-Narcotic analgesics: (natural & semisynthetic narcotic analgesics) -Narcotic antagonists: synthetic narcotic analgesics	
14	-Revision	
15	-Open discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activity, internet search)

F- Student Assessment Methods:

1- Written exam to assess a1,a2,c2,c3

2- Activity to assess d1, d2, d3

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

4- Oral exam to assess a1,a2,c2,c3

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 5, 7, 9
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 equipments and chemicals.

H- List of References:

1- Course Notes: Student book of Medicinal chemistry (3) approved by medicinal chemistry department 2017

- Practical notes of Medicinal chemistry (3) approved by medicinal chemistry department 2017

2- Essential Books (Text 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 (2011).

ii- Foye's Principles of Medicinal Chemistry; Williams, David A., William O. Foye, and Thomas L. Lemke; Lippincott Williams and Wilkins (2012).

iii- B.p. &U.S Pharmacopia (1988-2013)

3- Recommended books

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./ Mohammed El-Husseiny

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

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

Matrix I of Medicinal Chemistry 3 course

Course Contents		ILOs of Medicinal Chemistry 3 course									
		Knowledge and understanding		Professional and practical skills		Intellectual skills			General and transferable skills		
Lectures		a1	a2	b1	b2	c1	c2	c3	d1	d2	d3
1	Drugs acting on the autonomic nervous system: Sympathomimetic agents	x	x				x	x			
2	Sympathomimetic agents Parasympathomimetic agents	x	x				x	x			
3	Parasympathomimetic agents Cholinergic antagonists Adrenergic blocking agents	x	x				x	x			
4	Local anesthetics P-Aminobenzoic acid derivatives Dialkylaminoalkyl ester Amide derivatives	x	x				x	x			
5	Drugs acting on central nervous system Central nervous system depressants Sedative and hypnotics	x	x				x	x			

6	General anesthetics Antiepileptic	x	x				x	x			
7	Major tranquilizer	x	x				x	x			
8	Minor tranquilizer Central nervous system stimulants Analeptics,Antidepressants	x	x				x	x			
9	Central nervous system stimulants: (analeptics, antidepressants)	x	x				x	x			
10	Central sympathomimetic agents and Psychodelics		x				x	x			
11	Nonestroidal antiinflammatory agents Salicylates, p-Aminophenols, Pyrazoles & derivatives	x	x				x	x			
12	N-Arylanthranilic acid, Aryl acetic acid, Oxicams and Uricosuric agents	x	x				x	x			
13	Narcotic analgesics, Natural & Semisynthetic narcotic analgesics Narcotic antagonists Synthetic narcotic analgesics	x	x				x	x			

Practical sessions												
14	Titrimetric analysis			x	x	x		x				
15	Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form,sodium salicylate, Novalgin in tablets or suppositories form& in ampoule form, paracetamol,antipyrine,chloral hydrate&prescription			x	x	x		x		x		
16	Functional group analysis and their applications			x	x	x		x				
17	Activities								x	x	x	

Matrix II of Medicinal Chemistry 3 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
2.5	Principles of drug design, development and synthesis.	A15	a1	Drugs acting on the autonomic nervous system	student book ,essential books	x			x		x
				Local anesthetics	Student book	x			x		x
				Drugs acting on central nervous system	Student book	x			x		x
				Nonestroidal antiinflammatory agents	student book, essential books	x			x		x
				Narcotic analgesics	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	a2	Drugs acting on the autonomic nervous system	student book, essential books	x			x		x
				Local anesthetics	Student book	x			x		x
				Drugs acting on central nervous system	Student book	x			x		x

				Nonestroidal antiinflammatory agents	student book essential books	x			x		x
				Narcotic analgesics	Student book	x			x		x
3.4	Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins.	B6	b1	Titrimetric analysis	Practical notes		x			x	
				Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form,sodium salicylate, Novalgin in tablets or suppositories form& in ampoule form, paracetamol,antipyrine,chloral hydrate&prescription	Practical notes		x			x	
				Functional group analysis and their applications	Practical notes		x			x	
3.11	Conduct research studies	B17	b2	Titrimetric analysis	Practical notes		x			x	

	and analyze the results			Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form,sodium salicylate, Novalgin in tablets or suppositories form& in ampoule form, paracetamol,antipyrine,chloral hydrate&prescription	Practical notes		x			x	
				Functional group analysis and their applications	Practical notes		x			x	
4.2	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	C3	c1	Titrimetric analysis	Practical notes		x			x	
				Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form,sodium salicylate, Novalgin in tablets or suppositories form& in ampoule form, paracetamol,antipyrine,chloral hydrate&prescription	Practical notes		x			x	
				Functional group analysis and their applications	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	Drugs acting on the autonomic nervous system	student book	x			x		x
				Local anesthetics	student book	x			x		x
				Drugs acting on central nervous system	student book	x			x		x
				Nonestroidal antiinflammatory agents	student book	x			x		x
				Narcotic analgesics	student book	x			x		x
		C5	c3	Drugs acting on the autonomic nervous system	student book	x			x		x
				Local anesthetics	student book	x			x		x
				Drugs acting on central nervous system	student book	x			x		x
				Nonestroidal antiinflammatory agents	student book ,essential books	x			x		x
				Narcotic analgesics,	student book	x			x		x
				Titrimetric analysis	Practical notes		x			x	

				Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form,sodium salicylate, Novalgin in tablets or suppositories form& in ampoule form, paracetamol,antipyrine,chloral hydrate&prescription	Practical notes		x			x	
				Functional group analysis and their applications	Practical notes		x			x	
5.2	Retrieve and evaluate information from different sources to improve professional competencies	D3	d1	Activities	Practical notes/ Internet			x			
5.3	Work effectively in a team	D4	d2	Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form,sodium salicylate, Novalgin in tablets or suppositories form& in ampoule form, paracetamol,antipyrine,chloral hydrate&prescription	Practical notes		x			x	

				Activities	Practical notes/ Internet			x			
5.9	Implement writing and presentation skills	D11	d3	Activities	Practical notes/ Internet			x			

Course Coordinator: Prof. Dr./ Mohammed El-Husseiny

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

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