COURSE SPECIFICATIONS

Faculty of Pharmacy

Bachelor of pharmacy

(Clinical Pharmacy)

Second level – Semester 4

2019-2020

CONTENTS:

COURSE SPECIFICATIONS

Biochemistry 1
Second level –Semester 4

2019-2020

Course specification of Biochemistry-1

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: Biochemistry department
Academic year / Level: Second level/Fourth semester
Date of specification approval:

B- Basic information:

Title: Biochemistry-1 Code: PB401
Credit Hours:

- Lectures : 2hrs/week
- Practical:1 hrs/week
- Tutorials: ---
- Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

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

- Illustrate chemistry and functions of carbohydrate, lipids, proteins, Enzymes and cellular organelles.
- Outline the principles of bioenergetics, oxidative phosphorylation, porphyrin and nucleotides metabolic pathways.
- Also students will be able to perform laboratory tests for biological samples and to interpret of laboratory results for diagnosis of diseases.

2-Intended Learning Outcomes (lLOs):

A- Knowledge and Understanding	
a1	Explain the principles of electron transport chain and oxidative phosphorylation.
a2	Outline classification of enzymes and their mode of action.
a3	Illustrate chemistry and functions of carbohydrates, lipids, proteins and nucleic acid including DNA.
a4	Summarize importance of carbohydrates, proteins and lipids and their role in maintaining body functions.
a5	Identify synthesis and degradation of hemoglobin and the associated disorders
a6	Describe the laboratory diagnosis of porphyrin disorders.
B- Professional and Practical skills	
b1	Handle basic laboratory equipments and chemicals effectively and safely.
b2	Perform Qualitative tests to identify different types of proteins and lipids.
b3	Perform laboratory tests for biological samples to detect the presence of different parameters associated with diseases.
C- Intellectual skills	
c1	Select the appropriate method for differentiation between different classes of carbohydrates and fatty acids.
c2	Assess different methods used for determination of heme disorders.
c3	Analyze and interpret quantitative data of laboratory results in a suitable form.
c4	Compare between different classes of enzymes.
D- General and Transferable skills	
d1	Work effectively as a member of a team.
d2	Manage time to achieve targets within deadlines.
d3	Write and present reports.
d4	Develop self learning skills.

D-contents:

Week No.	Lecture contents (2 hrs/lec.)	Practical session (1 hr/lab)
1	- Biological oxidation. - Substrate level phosphorylatin -Oxidative phosphrylation.	-Laboratory Safety -Measures
2	- Electron transport chain -Uncouplers - Energy gain from glucose oxidation in cells .	-Introduction about practical biochemistry.
3	-Enzymes structure -Properties of enzymes - Enzymes: mechanism of actions and coenzymes	- Separation of seum and plasma.
4	- Factors affecting reaction velocity - Inhibition of enzyme activity - Regulation of enzyme activity	- **Activity-1** (Vegeterian diet)
5	- Correlation of enzymes with diseases	-**Activity-2** (Importance of plasma protein, Creatine,Glutathione)
6	- Chemistry of heme -Regulation of heme metabolism and metabolic disorders.	Diabetes.
7	- **Periodical exam**	- **Periodical exam**
8	- Structure and classification of amino acids - Acidic and basic properties of amino acids - Structure of proteins - Functions of proteins - Plasma proteins	Qualitative tests for proteins
9	-Definition and function of lipids	Qualitative tests for lipids .

	- Classification of lipids Distribution of lipids in the body - Types of fatty acids and essential fatty acids.	
10	Definition and functions of carbohydrates.	-Quantitative determination of serum glucose
11	Classification of carbohydrates (monosaccharaides , disaccharides, oligosaccharides examples with structure) .	**Practical exam 1**
12	Polysaccharides: examples and classification - Physical and chemical properties of carbohydrates .	**Practical exam 2**
13	Chemistry of nucleic acid including nucleic acid.	
14	Revision and Open discussion	
15	Final exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (Students are asked prepare a report& presentation about Vegeterian diet & Importance of plasma protein, Creatine,Glutathione)

F- Student Assessment Methods:

1- Written and Periodical exam to assess a1, a2, a3, a4, a5, a6, c2, c4

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

3- Practical exam	to assess	b1, b2, b3, c1, c3, d2, d4
4- Oral exam	to assess	a1, a2, a3, a4, a5, a6, c2, c4, d4

Assessment schedule:

Assessment(1): Periodical exam	Week 7
Assessment (2): Written exam	Week 15
Assessment (3): Activity	Week 4,5
Assessment (4): Practical exams	Week 11,12
Assessment (5): Oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Periodical exam	10	10%
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) board, Data show, Laboratory equipment (spectrophotometer, centrifuge) and Chemicals.

H- List of References:

1- Course Notes: Student book of Biochemistry (1) approved by biochemistry department (2019).

- Practical notes of Biochemistry (1) approved by biochemistry department (2019).

2- Essential books:

Essential books:

- Marks' basic medical biochemistry: a clinical approach(third edition); Lieberman M., MarksA.D., Smith C.M. (2008).
- Lehninger principles of biochemistry (seventh edition); NelsonD.L., CoxM.M.,FreemanW.H. (2017).
- Lippincott'sIllustrated Reviews:Biochemistry (Seventh edition); FerrierD.R. (2017)
- Marks' basic medical biochemistry: a clinical approach (fifth edition); Lieberman M., Marks A.D., Peet MD, Alisa. (2017).

3- Recommended books:

i- Biochemistry (seventh edition); Garrett R.H. and Grisham C.M.; Thomson learning, Inc (2017).

ii- Harper's Illustrated Biochemistry (31th edition); Murray R.K., Bender D.A., Botham K.M., Kennelly P.J., Rodwell V.W., Weil P.A.; The Mc Graw Hill companies Inc. (2018).

4- Periodicals and websites:

Egyptian J. of biochem. and molecular biology.

Egyptian J. of Pharmaceutical sciences.

Arab J. of Laboratory Medicine,

J. of Cardiovascular diseases.

www.Pubmed.Com

www.sciencedirect.com.

Course coordinators: Prof. Dr. Sahar Elswefy

Head of department: Prof. Dr. Sahar Elswefy

Matrix I of Biochemistry 1 course 2019-2020

Course Contents		ILOs of Biochemistry 1 course																
		Knowledge and understanding						Professional and practical skills			Intellectual skills				General and transferable skills			
Lectures		a1	a2	a3	a4	a5	a6	b1	b2	b3	c1	C2	C3	C4	d 1	d 2	d3	d4
1	- Biological oxidation. - Substrate level phosphorylatin - Oxidative phosphorylation	x	x															
2	- Electron transport chain -Uncouplers - Energy gain from glucose oxidation in cells .	**x**																
3	Mechanism of action of enzymes- coenzymes- factors affecting reaction velocity		x															
4	Inhibtion of enzyme activity and regulation		x															
5	Correlation of enzymes with disease- Functions and classification of carbohydrates		x	x	x													
6	Classification of polysaccharides- physical and chemical properities of carbohydrates			x										x				
7	Structure and classification of amino acids - acidic and basic properties of amino acids			x														
8	Structure of proteins			x														
9	Functions of proteins- plasma proteins- functions and classification of lipids			x	x													
10	Distribution of lipids in the body- types of fatty acids			x	x													
11	Chemistry of porphyrins					x												
12	Metabolism of porphyrins and related diseases.					x	x					x						
13	Revision- open discussion																	x

Practical sessions																		
14	Laboratory safety measures							x										
15	Introduction about biochemistry																	
16	Separation of serum and plasma								x		x							
17	Qualitative tests for lipids									x	x							
18	Qualitative tests for proteins .									x	x							
19	Quantitative determination of serum glucose.									x	x		x					
20	Activity														x	x	x	x

Matrix II of Biochemistry 1 course 2019-2020

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
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A3	a1	- Electron transport chain -Uncouplers - Energy gain from glucose oxidation in cells .	Student book	x			x		x
				Oxidative phosphorylation	Student book Essential books	x			x		x
			a2	Enzyme structure-enzyme properties	Student book	x			x		x
				Mechanism of action of enzymes-coenzymes-factors affecting reaction velocity	Student book Essential books Internet	x		X	x		x
				Inhibtion of enzyme activity and regulation	Student book Essential books	x			x		x
				Correlation of enzymes with disease	Student book Essential books	x			x		x
			a3	Classification of carbohydrates	Student book	x			x		x

				Classification of polysaccharides- physical and chemical properties of carbohydrates	Student book	x			x		x
				Structure and classification of amino acids - acidic and basic properties of amino acids	Student book	x			x		x
				Structure of proteins	Student book	x			x		x
				Types of fatty acids	Student book	x			x		x
				Classification of lipids	Student book	x			x		x
			a4	Correlation of enzymes with disease	Student book Essential books	x			x		x
				Functions of proteins and plasma proteins	Student book	x			x		x
				Distribution of lipids in the body	Student book	x			x		x
2.11	Principles of body function in health and disease states as well as basis of genomic and different biochemical pathways regarding their correlation	A 16	a5	Chemistry of porphyrins	Student book	x			x		x
		A 17		Metabolism of porphyrins and related diseases.	Student book Essential books	x			x		x

	with different diseases.										
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	A 20	a6	Metabolism of porphyrins and related diseases.	Student book Essential books	x			x		x
3.2 **3.6**	Handle and dispose chemicals and pharmaceutical preparations safely. Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infections in biological specimens.	B2 B10	b1	Laboratory safety measures	Practical notes		x			x	
				Qualitative tests for proteins	Practical notes		x			x	
				Qualitative tests for lipids	Practical notes		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	b3	Quantitative determination of blood glucose	Practical notes		x			x	

				Qualitative tests for proteins	Practical notes		x			x	
4.13	Analyze and interpret experimental results as well as published literature.	C15	c1	Qualitative tests for lipids	Practical notes		x			x	
			c 3	Separation of plasma and serum Quantitative determination of blood glucose	Practical notes		x			x	
			c 4	Classification of polysaccharides- physical and chemical properties of carbohydrates	Student book	x			x		x
5.3	Work effectively in a team.	D4	d1	Activity	Internet Recommended books		x	x		x	
5.5	Practice independent learning needed for continuous professional development.	D7	d4	Activity	Internet Recommended books	x		x		x	
5.8	Demonstrate creativity and time	D10	d2	Activity	Internet Recommended			x		x	

	management abilities.				books						
5.9	Implement writing and presentation skills.	D11	d3	Revision- Open discussion	Student book Internet Recommended books	x		x			x
				Activity	Internet Recommended books		x	x		x	

COURSE SPECIFICATIONS

Phytochemistry-1

Second level –Semester 4

2019-2020

Course Specification of Phytochemistry I

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

Academic year/Level: Second level / semester 4

Date of specification approval: 30/09/2019

B- Basic information:

Title: Phytochemistry I Code: PG404

Credit Hours: ---

Lectures: 2 hrs

Practical: 1 hr

Tutorials: ---

Total: 3 hrs

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, the student will be able to:
Demonstrate comprehensive knowledge, clear understanding and the competent skills in dealing with carbohydrates, bitter principals, tannins and volatile oils.

2-Intended Learning Outcomes of Phytochemistry I

A- Knowledge and Understanding	
a1	Define, state and classify certain classes of natural products (carbohydrates, bitter principals, tannins and volatile oils) and their physical properties.
a2	Describe the chemistry of the above mentioned classes, their pharmacological properties (biological activities) and contra-indications.
a3	Identify different analytical techniques used in natural products determination for the above mentioned classes, their methods of isolation, purification and identification.
a4	Identify natural and pharmaceutical products containing carbohydrates, bitter principals, tannins and volatile oils.
a5	Recognize volatile oils as a type of alternative medicine (aromatherapy).
B- Professional and Practical skills	
b1	Handle chemicals, solvents and equipment safely.
b2	Examine different carbohydrates, tannins and volatile oils.
b3	Prepare lab research reports on carbohydrates, bitter principals, tannins and volatile oils.
C- Intellectual skills	
c1	Choose the proper pharmaceutical terms and abbreviations for certain classes of natural (carbohydrates, bitter principals, tannins and volatile oils).
c2	Estimate certain classes of naturally occurring products (carbohydrates, bitter principals, tannins and volatile oils).
c3	Predict the appropriate method for isolation and purification of different carbohydrates, bitter principals, tannins and volatile oils.
D- General and Transferable skills	
d1	Work effectively as a member of a team.
d2	Manage time to achieve targets within deadlines.
d3	Write and present reports.
d4	Develop critical thinking and problem-solving skills.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (1 hr/week)
1	**Carbohydrates** Definition, classification, properties, evaluation	General properties of carbohydrates Chemical tests for monosaccharides
2	**Carbohydrates** Monosaccharides	Chemical tests for disaccharides
3	**Carbohydrates** Disaccharides	Chemical tests for polysaccharides
4	**Carbohydrates** Heteropolysaccharides and holopolysaccharides	Chemical tests for tannins
5	**Bitter principals**	(Activity) Get a copy of pamphlets for pharmaceutical products containing carbohydrates and tannins
6	**Tannins** **Periodic exam**	Preparation of volatile oils Determination of purity of volatile oils
7	**Volatile oils** - Occurrence, physical properties. - Preparation and determination. - Chemistry and uses. - Classification of vol. oils components.	Chemical tests for identification of volatile oils
8	-Biosynthesis of volatile oils	Assay of benzaldehyde.
9	**Volatile oils** Hydrocarbons.	Assay of Eugenol in Clove oil.
10	**Volatile oils** Oxygenated components.	Assay of Cineol in Eucalyptus oil.
11	**Volatile oils**	(Activity)

	Oxygenated components.	Get a copy of pamphlets for pharmaceutical products containing volatile oils Lab research report on different studied classes in theoretical part
12	**Volatile oils** N and S containing components.	**Practical exam 1**
13	**Volatile oils** N and S containing components.	**Practical exam 2**
14	**Revision**.	
15	**Written exam**	

E- Teaching and Learning Methods:

- Lectures.
- Interactive lectures.
- Practical sessions.
- Self-learning (group discussion, net search).
- Visits to community pharmacy to get copy of pamphlets for pharmaceutical products containing studied natural products.

F- Student Assessment Methods:

1- Written exam (periodic, final) to assess a1, a2, a3, a4, a5, c1, c2, c3 and d4.

2- Practical exam and activity to assess b1, b2, b3, c1, c2, c3, d1, d2, d3 and d4.

3- Oral exam to assess a1, a2, a3, a4, a5, c1, c2, c3 and d4.

Assessment schedule:

Assessment (1): Periodic written exam	Week 6
Assessment (2): Practical exam and activity	Weeks 5, 11, 12, 13
Assessment (3): Final written exam	Week 15
Assessment (4): Oral exams	Week 15

Weighting of Assessment:

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

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, Laboratory equipment (water bath, polarimeter, melting point apparatus, digital balances and glassware) and Chemicals.

H- List of References:

1- Course Notes:

Clinical student book of Phytochemistry I approved by Pharmacognosy Department (2019).

2- Essential books:

Nakanishi, K., Goto, T., & Itô, S. (Eds.). (2013). *Natural products chemistry* (Vol. 1). Academic press.
Dewick, P. M. (2002). *Medicinal natural products: a biosynthetic approach*. John Wiley & Sons.
Colegate, S. M., & Molyneux, R. J. (Eds.). (2007). *Bioactive natural products: detection, isolation, and structural determination*. CRC press.

3- Recommended books:

Rahman, A. U. (2012). *Studies in natural products chemistry/edited by Atta-ur-Rahman*. Amsterdam; New York: Elsevier.

4- Periodicals and websites:

Fitoterapia**,** Die Pharmazie, Journal of Natural Products, Phytochemistry and Planta medica

http:// www.elsevier.com/phytochem

http:// www.elsevier.com/phytomed

http:// www.wiley.co.uk.

http:// www.sciencedirect.com

Course Coordinator: Prof Dr. Mahmoud AbdAlaal

Head of Department: Prof Dr. Amal Al-Gendy

Date: **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 2019/09/30**

Matrix I of Phytochemistry I course

Course Contents		ILOs of Phytochemistry I course														
		Knowledge and understanding					Professional and practical skills			Intellectual skills			General and transferable skills			
Lectures		a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	c3	d1	d2	d3	d4
1	**Carbohydrates** Definition, classification, properties, evaluation	x								x		x				
2	**Carbohydrates** Monosaccharides		x	x	x					x	x	x				
3	**Carbohydrates** Disaccharides		x	x	x					x	x	x				
4	**Carbohydrates** Heteropolysaccharides and holopolysaccharides		x	x	x					x	x	x				
5	**Bitter principals**	x	x	x	x					x	x	x				
6	**Tannins**	x	x	x	x					x	x	x				
7	**Volatile oils** - Occurrence, physical properties. - Preparation and determination. - Chemistry and uses. - Classification of vol. oils components.	x								x		x				
8	-Biosynthesis of volatile oils	x														

9	**Volatile oils** Hydrocarbons.		x	x	x	x				x	x	x					
10	**Volatile oils** Oxygenated components.		x	x	x	x				x	x	x					
11	**Volatile oils** Oxygenated components.		x	x	x	x				x	x	x					
12	**Volatile oils** N and S containing components.		x	x	x	x				x	x	x					
13	**Volatile oils** N and S containing components.		x	x	x	x				x	x	x					
Practical sessions																	
14	General properties of carbohydrates Chemical tests for monosaccharides						x	x	x			x			x		
15	Chemical tests for disaccharides						x	x	x						x		
16	Chemical tests for polysaccharides						x	x	x						x		
17	Chemical tests for tannins						x	x	x						x		
18	(Activity) pharmaceutical products									x	x	x	x	x	x	x	
19	Preparation of volatile oils Determination of purity of volatile oils						x	x	x			x			x		
20	Chemical tests for identification of volatile oils						x	x	x						x		
21	Assay of benzaldehyde.						x	x	x						x		
22	Assay of Eugenol in Clove oil.						x	x	x						x		
23	Assay of Cineol in Eucalyptus oil.						x	x	x								
24	(Activity) pharmaceutical products									x	x	x	x	x	x	x	

	Lab research report on different studied classes in theoretical part															

Matrix II of Phytochemistry I course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment		
						Lecture/interactive lecture/ videos	Practical session/ videos	Self learning	Written exam	Practical exam and activity	Oral exam
				Theoretical sessions							
2.4 **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8,** **C6**	a1, c1, c3	**Carbohydrates** Definition, classification, properties, evaluation	Student book Essential books Internet	x			x		x
2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8,** **A22,** **C6**	a2, a3, a4, c1, c2, c3	**Carbohydrates** Monosaccharides	Student book Essential books Internet	x			x		x

2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8,** **A22,** **C6**	a2, a3, a4, c1, c2, c3	**Carbohydrates** Disaccharides	Student book Essential books Internet	x			x		x
2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, A22, C6**	a2, a3, a4, c1, c2, c3	**Carbohydrates** Heteropolysaccharides and holopolysaccharides	Student book Essential books Internet	x			x		x
2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, A22, C6**	a1, a2, a3, a4, c1, c2, c3	**Bitter principals**	Student book Essential books Internet	x			x		x
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	**A8, A22,**	a1, a2, a3, a4,	**Tannins**	Student book Essential	x			x		x

2.13, **4.5**	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**C6**	c1, c2, c3		books Internet						
2.4 **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, C6**	a1, c1, c3	**Volatile oils** - Occurrence, physical properties. - Preparation and determination. - Chemistry and uses. - Classification of vol. oils components.	Student book Essential books Internet	x			x		x
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	**A8**	a1	-Biosynthesis of volatile oils	Student book Essential books Internet	x			x		x
2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, A22, C6**	a2, a3, a4, a5, c1, c2, c3	**Volatile oils** Hydrocarbons.	Student book Essential books Internet	x			x		x

2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, A22, C6**	a2, a3, a4, a5, c1, c2, c3	**Volatile oils** Oxygenated components.	Student book Essential books Internet	x			x		x
2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, A22, C6**	a2, a3, a4, a5, c1, c2, c3	**Volatile oils** Oxygenated components.	Student book Essential books Internet	x			x		x
2.4 **2.13,** **4.5**	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**A8, A22, C6**	a2, a3, a4, a5, c1, c2, c3	**Volatile oils** N and S containing components.	Student book Essential books Internet				x		x
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	**A8, A22,**	a2, a3, a4, a5,	**Volatile oils** N and S containing	Student book Essential				x		x

2.13, **4.5**	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	**C6**	c1, c2, c3	components.	books Internet						
				Practical sessions							
3.2 3.4, 3.11, 4.5 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins. Implement writing and presentation skills.	B2, B4, B17, C6, D11	b1, b2, b3, c3, d3	General properties of carbohydrates Chemical tests for monosaccharides	Practical notes		x			x	
3.2 3.4, 3.11, 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Implement writing and presentation skills.	B2, B4, B17, D11	b1, b2, b3, d3	Chemical tests for disaccharides	Practical notes		x			x	
3.2 3.4,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins.	B2, B4, B17, D11	b1, b2, b3, d3	Chemical tests for polysaccharides	Practical notes		x			x	

3.11, 5.9,	Conduct research studies and analyze the results Implement writing and presentation skills.										
3.2 3.4, 3.11, 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Implement writing and presentation skills.	B2, B4, B17, D11	b1, b2, b3, d3	Chemical tests for tannins	Practical notes		x			x	
4.2, 4.5, 5.2, 5.3, 5.4, 5.9, 5.10	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Implement writing and presentation skills. Implement writing and thinking, problem-solving and decision- making abilities.	C2, C6, D2, D3, D4, D5, D10, D11, D12	c1, c2, c3, d1, d2, d3, d4	(Activity) Pharmaceutical products	Practical notes Internet Visits for community pharmacies		x	x		x	
3.2 3.4, 3.11, 4.5	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from	B2, B4, B17, C6,	b1, b2, b3, c3, d3	Preparation of volatile oils Determination of purity of volatile oils	Practical notes		x			x	

5.9,	different origins. Implement writing and presentation skills.	D11									
3.2 3.4, 3.11, 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Implement writing and presentation skills.	B2, B4, B17, D11	b1, b2, b3, d3	Chemical tests for identification of volatile oils	Practical notes		x			x	
3.2 3.4, 3.11, 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Implement writing and presentation skills.	B2, B4, B17, D11	b1, b2, b3, d3	Assay of Benzaldehyde.	Practical notes		x			x	
3.2 3.4, 3.11, 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results Implement writing and presentation skills.	B2, B4, B17, D11	b1, b2, b3, d3	Assay of Eugenol in Clove oil.	Practical notes		x			x	
3.2 3.4, 3.11, 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. Extract, isolate, synthesize, purify, identify, and /or standardize active substances from different origins. Conduct research studies and analyze the results	B2, B4, B17, D11	b1, b2, b3, d3	Assay of Cineol in Eucalyptus oil.	Practical notes		x			x	

	Implement writing and presentation skills.										
4.2, 4.5, 5.2, 5.3, 5.4, 5.9, 5.10	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Implement writing and presentation skills. Implement writing and thinking, problem-solving and decision- making abilities.	C2, C6, D2, D3, D4, D5, D10, D11, D12	c1, c2, c3, d1, d2, d3, d4	(Activity) Pharmaceutical products Lab research report on different studied classes in theoretical part	Practical notes Internet Visits for community pharmacies		x	x		x	

Course Coordinator: Prof Dr. Mahmoud AbdAlaal
Head of Department: Prof Dr. Amal Al-Gendy
Date: 2019/09/30 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Instrumental Analysis

Second level –Semester 4

2019-2020

Course specification of Instrumental Analysis

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: Pharmaceutical Analytical chemistry

Academic year / Level: Second level/Fourth semester

Date of specification approval: 2019-9

B- Basic information:

Title: Instrumental analysis Code: PC407

Credit Hours:

- Lectures : 1 hr/week
- Practical: 1 hrs/week
- Tutorials: ---
- Total: 2 hrs/week

C- Professional information:

1-Overall Aims of the Course:

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

- Illustrate the theory and applications of spectrophotometry, spectrofluorimetry, and chromatography
- Describe composition and mechanism of each studied instrument
- Apply instrumental analysis for determination of different analytes of interest.

2-Intended Learning Outcomes (lLOs):

A- Knowledge and Understanding	
a1	Mention principles of instrumental analysis
a2	Describe composition and mechanism of each studied instrument
a3	Illustrate theories of spectrophotometry, spectroflourimetry and chromatography
a4	Outline applications of spectrophotometry, spectroflourimetry, and chromatography
B- Professional and Practical skills	
b1	Handle and dispose chemicals safely
b2	Apply spectrophotometric, and chromatographic techniques for determination of some compounds
C- Intellectual skills	
c1	Interpret analysis of different pharmaceutical compounds
c2	Choose the most appropriate instrumental method for analysis of different compounds.
D- General and Transferable skills	
d1	Work as member of team
d2	Adopt safety guidelines
d3	Manage time and perform a task within time limit
d4	Implement writing and presentation skills

D- Contents:

Week No.	Lecture (1hrs/week)	Practical session (2hrs/week)
1	Introduction to instrumental methods of analysis	Safety guidelines
2	Spectrophotometry Electromagnetic Radiation, Light as energy, types of electronic transitions, laws of light absorption and Beer-lambert's law	Spectroscopic principle and instrumentation
3	Spectrophotometry ▪ Absorption spectrum, Chromophore, Auxochrome, bathochromic shift, hypochromic shift, hypochromic effect and hyperchromic effect, Effect of pH on absorption spectra	Determination of λ_{max}

4	Spectrophotometry Colorimetry, General requirements of the colored product, General requirement of an ideal chromogen	Determination of $KMnO_4$ spectrophotometrically
5	Instrumentation Spectrophotometer, Light source, Monochromator, Sample compartment, Light detector, Types of Transducer, Signal processor (meter or recorder)	Beer's law, regression equation
6	Application of spectrophotometry	Calibration curve for $CuSO_4$ through reaction with pot. ferrocyanide spectrophotometrically
7	Continue Application of spectrophotometry	Determination of unknown concentration by Spectrophotometry **Periodical exam**
8	Spectrofluorimetry ▪ Theory of luminescence. ▪ Fluorescence, phosphorescence, internal conversion, intersystem crossing.	Determination of molar ratio between $CuSO_4$ and pot. ferrocyanide spectrophotometrically using continuous variation method
9	Spectrofluorimetry ▪Factors affecting fluoresce intensity ▪Instrumentation	Chromatography principle and instrumentation
10	Principals of chemical separation Separation efficiency Resolution	Chromatographic chromatograms
11	Theory of HPLC And Modes of separation	Chromatography Chemical separation parameters
12	HPLC - Instrumentation	Activity
13	UPLC and applications	Practical exam
14	Revision	
15	Final written Exam	

E- Teaching and Learning Methods:

- Lectures (data show, board)
- Practical sessions

- Discussion sessions
- Self-learning (Internet search followed by discussion)

F- Student Assessment Methods:

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

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

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

4- Periodical exam to assess a1, a2,a3

5- Activity to assess d1, d2,d3,d4

Assessment schedule:

Assessment (1): Written exam	Week 15
Assessment (2): Practical exams	Weeks 13
Assessment (3): Oral exam	Week 15
Assessment (4): Activity	Weeks 12
Assessment (5): Periodical exam	Weeks 7

Weighting of Assessment:

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

G- Facilities Required for Teaching and Learning:

Data show, Laboratory equipment and Chemical.

H- List of References:

1- Course Notes

Lecture notes and department notes

2- Essential Books (Text Books)

PRINCIPLES OF INSTRUMENTAL ANALYSIS, Skoog, Holler, and

Crouch, 2007.

3- Recommended Books

i- F. Rouessac, A. Rouessac "Chemical Analysis: Modern Instrumental Methods and Techniques" 4th edn, John Wiley & Sons, Ltd., New York (1998).

ii- Stuart A. Burman "Instrumentation in Analytical Chemistry" American Chemical Society, Washington (1992).

4- Periodicals, Web Sites, etc

Royal Society of Chemistry.

Course Coordinators: **Prof. Dr. Wafaa Hassan**

Head of department: **Prof. Dr. Hisham Ezzat**

Date: **2019/9** **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ**

Matrix 1 of Instrumental analysis course													
Course contents		ILOS of pharmaceutical analysis and quality control 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	d4
1	Introduction to instrumental methods of analysis	x											
2	Spectrophotometry		x	x					x				
3	Application of spectrophotometry				x				x				
4	Spectrofluorimetry		x	x	x			x	x				
6	Chromatography(HPLC theory and principles)		x	x				x	x				
7	Chromatography (Instrumentaion)		x	x				x	x				
8	Chromatography (UPLC and applications)				x								
Practical sessions													
1	Safety guidelines					x					x		
2	Spectrophotometry (determination of λ_{max}, Determination of $KMnO_4$ spectrophotometrically, Beer's law,regression equation, determination of unknown, calibration curve of $CuSO_4$ with pot. Ferrocyanide, and molar ratio determination using continuous variation method					x	x			x		x	
3	Chromatography (Instrument, chromatographic chromatograms and chemical separation parameters)						x			x		x	
4	Activities (reports)									x	x	x	x

Matrix II of Instrumental analysis course

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	Periodical exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice	A1	a1	Introduction to instrumental methods of analysis	Student book Essential books	x			x		x	x
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A7	a2	spectrophotometry, spectrofluorimetry and Chromatography instruments	Student book Essential books	x			x		x	x
			a3	spectrophotometry, spectrofluorimetry and Chromatography basic theories	Student book Essential books	x			x		x	x
			a4	spectrophotometry, spectrofluorimetry and Chromatography applications	Student book Essential books	x			x		x	
3.2	Handle and dispose chemicals and pharmaceutical preparations safely.	B2	b1	Safety guidelines			x			x		
3.8	Apply techniques used in			Spectrophotometry			x			x		

	operating pharmaceutical equipment and instruments.	B14	b2	(determination of λ_{max}, Determination of $KMnO_4$ spectrophotometrically, Beer's law,regression equation, determination of unknown, calibration curve of $CuSO_4$ with pot. Ferrocyanide, and molar ratio determination using continuous variation method, Chromatography (Instrument, chromatographic chromatograms and chemical separation parameters)	Practical notes							
4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C3	c1	spectrophotometry, spectrofluorimetry and Chromatography theories and applications	Student book Essential books	x			x		x	
4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C5	c2	spectrophotometry, spectrofluorimetry and Chromatography theories and applications	Student book Essential books	x			x		x	
5.3	Work effectively in a team.	D4	d1	Activity(report)	Internet					x		

				practical labs								
5.6	Adopt ethical, sales and safety guidelines.	D8	d2	Activity(report) practical labs	Internet					x		
5.8	Demonstrate creativity and time management abilities.	D10	d3	Activities (reports)	Internet			x		x		
5.9	Implement writing and presentation skills.	D11	d4	Activities (reports)	Internet			x		x		

Course Coordinators: **Prof. Dr. Wafaa Hassan**

Head of department: **Prof. Dr. Hisham Ezzat**

Date: **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 2019/9**

COURSE SPECIFICATIONS

General microbiology & Immunology

Second level –Semester 4

2019-2020

Course specification of General Microbiology and Immunology

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: Microbiology and Immunology

Academic year Level: second level (fourth semester).

Date of specification approval: September 2019

B- Basic information:

Title: General Microbiology and Immunology Code: **PM 401**

Lectures: 3 hrs/week

Practical: 1 hrs/week

Credit hours: 4 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will have good knowledge about, Classification and types of microorganisms, Brief description of viruses, fungi and protozoa, Bacteria (description, classification, growth and cultivation), Microbial metabolism, Microbial genetics. Immunology (innate immunity, immune system, cells of immune response, antigens, acquired immune response, cell mediated immunity, humoral immune response, cytokines, Antigen- Antibody reactions, immunologic mechanisms of tissue damage, hypersensitivity reactions, transplantation immunology, tolerance, autoimmune diseases, immune deficiency, tumour immunology, immunoprophylaxis). they will also be able to

analyze and interpret experimental results for differentiation between different microorganisms & Work effectively as a member of a team, write and present reports.

2- Intended Learning Outcomes of General Microbiology & Immunology (ILOs)

A- Knowledge and Understanding	
a1	Illustrate different types of microorganisms and their way of life
a2	Define the basic microbial growth conditions and metabolism
a3	Illustrate the principles of immunology including natural and acquired immunity and antigen–antibody reactions
a4	Identify the functions of immune system in health state and during disease state
a5	Outline the basis of bacterial genetics
B- Professional and Practical skills	
b1	Use the proper terms of microbiology and immunology
b2	Handle basic laboratory equipments, chemicals and biohazards effectively and safely.
b3	Perform Microscopical examinations, biochemical tests and serological reactions for identification of microorganisms
b4	Monitor the microbial growth and growth conditions on different types of common culture media
C- Intellectual skills	
c1	Analyze and interpret experimental results of serological reactions
c2	Analyze and interpret experimental results for differentiation between different microorganisms
D-General and Transferable skills	
d1	Communicate effectively both in oral and written manners
d2	Perform online computer search in writing reports
d3	Work effectively as a member of a team
d4	Write and present reports

D- Contents:

Week No.	Lecture contents (3 hrs/week)	Practical session (1 hr/week)
1	• General introduction to microbiology and historical review • Introduction to immunology	• Laboratory safety measures • Microscopy and general terms of microbiology
2	• Description of microorganisms Classification and types of Microorganisms • Introduction to immunology	• Microscopical examination of Bacteria: preparation and staining of smear, simple stain and negative stain
3	• Brief description of viruses, fungi and protozoa • Immunity – innate immunity Immune system	• Differential stains: Gram-stain
4	• Bacteria: description and classification • Cells of immune response Immunogens or antigens	• Differential stains: Gram-stain of mixtures of microorganisms • **Activity**
5	• Anatomy and structure of bacterial cells • Acquired immune response 1. Cell mediated immunity	• Differential stain: Acid-fast stain (Ziehl Neelsen stain) • Examination of living bacteria: hanging drop technique
6	• Growth and cultivation of bacteria, bacterial growth curve • Humoral immune response And Cytokines	• Spore stain • Microscopic examination of fungi: lactophenol mount
7	**Mid-term exam**	
8	• Microbial metabolism • Agglutination and complement fixation reactions	• Cultivation of bacteria: types of common culture media and growth conditions
9	• Microbial metabolism • Immunologic mechanisms of tissue damage	• Biochemical activities of and identification of bacteria
10	• Microbial metabolism • Hypersensitivity reactions	• Serological reactions (Precipitation reactions) • **Activity**

11	• Microbial genetics • Transplantation immunology	• Serological reactions (Agglutination reactions)
12	• Transcription and Protein synthesis • Autoimmune diseases	• Serological reactions (Complement fixation reaction
13	• Genetic variation • Tumour immunology	**Final practical exam**
14	• Genetic Transfer among bacteria • Immunoprophylaxis	
15	• **Written exam**	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Report/poster writing

F- Student Assessment methods:

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

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

3- Practical exams to assess: b1, b2, b3, b4

4- Oral exam to assess: a1, a2, a3, a4, a5, c1, c2, d1

Assessment schedule

Assesment (1): Periodical exam	Week 7
Assessment (2): Activity (Report)	Week 4, 10
Assessment (3): Practical exams	Week 13
Assessment (4): Final written exam	Week 15
Assessment (5): Oral exams	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Periodical	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:

1. **For lectures:** Black (white) boards, and data show.
2. **For Labs.:** Chemicals, Autoclaves, Incubators, Ovens, Water bathes, staining dyes, microscopes, refrigerators and microbiological culture media

H- List of References:

1- Course Notes: Student book of **General Microbiology and Immunology**
Approved by **Microbiology and Immunology** department

2- Essential Books:

- Jackson M, Lowey A. Handbook of extemporaneous preparation. A guide to pharmaceutical compounding. Published by Pharmaceutical Press, **2010**.

3- **Recommended Books**

- Martindale, "The extra pharmacopeia". 31st edn, by James, E.F Reynolds. And Kathleen Parfitt, Royal Pharmaceutical Society, London (**2007**).

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/ Fathy serry

Head of Department: Prof / Nehal Elsayed Yousef

Date 2019/9/ 30 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix1 of General Microbiology and Immunology

Course content		ILOs														
		Knowledge and Understanding					Professional & Practical skills				Intellectual skills		Transferable & general skills			
		a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	d1	d2	d3	d4
1	• General introduction to microbiology and historical review • Introduction to immunology **Practical** • Microscopy & general terms of microbiology	x		x			x	x								
2	• Description of microorganisms and types of Microorganisms • Introduction to immunology **Practical** • Microscopical examination of Bacteria by simple and negative stain	x		x				x	x			x				
3	• Brief description of viruses, fungi and protozoa • Immunity – innate immunity Immune system **Practical**	x		x				x	x			x				

	• Differential stains: Gram-stain															
4	• Bacteria: description and classification • Cells of immune response Immunogens or antigens **Practical** • : Gram-stain: mixture • **Activity**		**x**	**x**					**x**			**x**	**x**	**x**	**x**	**x**
5	• Anatomy & structure of bacterial cells • Acquired immune response: Cell mediated immunity **Practical** • Differential stain: (Acid-fast stain) • Examination of living bacteria:	**x**		**x**												
6	• Growth and cultivation of bacteria, bacterial growth curve • Humoral immune response and Cytokines **Practical** • Spore stain • Microscopic examination of fungi		**x**					**x**	**x**							
7	• **Periodical exam**															

8	Microbial metabolism Agglutination and CFT **Practical** Cultivation of bacteria: types of common culture media and growth conditions		**x**						**x**	**x**						
9	• Microbial metabolism Immunologic mechanisms of tissue damage **Practical** Biochemical activities of and identification of bacteria		**x**		**x**				**x**	**x**						
10	• Microbial metabolism • Hypersensitivity reactions **Practical** • serological reactions **Activity**		**x**		**x**				**x**				**x**	**x**	**x**	**x**
11	• Microbial genetics Transplantation immunology **Practical** • serological reactions		**x**		**x**				**x**							
12	• Transcription and Protein synthesis • Autoimmune diseases **Practical** • serological reactions				**x**	**x**	**x**		**x**							
13	• Genetic variation • Tumour immunology				**x**	**x**	**x**									
14	• Genetic Transfer among bacteria • Immunoprophylaxis				**x**	**x**	**x**									

Matrix2 of General Microbiology and Immunology

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	Periodical exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice	A3	a1 a2	•Growth and cultivation of bacteria, bacterial growth curve	Student book Essential books	x			x		x	x
			a5	•Microbial genetics •Genetic variation •Genetic Transfer among bacteria	Student book Essential books	x			x		x	x
			a3	•Introduction to immunology •Acquired immune response 1.Cell mediated immunity •Humoral immune response And Cytokines	Student book Essential books	x			x		x	x
			a4	Cells of immune response Immunogens or antigens •Agglutination and complement fixation reactions •Hypersensitivity reactions	Student book Essential books	x			x		x	x

3.1 **3.2**	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice Handle and dispose chemicals and pharmaceutical preparations safely	B1 B2	b1 b2	•General introduction to microbiology and historical review •Introduction to immunology •General introduction to microbiology and historical review	Practical notes		x	x		x		
3.6 **4.13**	Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infections in biological specimens. Analyze and interpret experimental results as well as published literature	B10 B11 C15	b3,b4 c1, c2	•Agglutination and complement fixation reactions •Growth and cultivation of bacteria, bacterial growth curve • Description of microorganisms and types of Microorganisms • Introduction to immunology Practical • Microscopical examination of Bacteria by simple	Practical notes		x	x		x		

				and negative stain • Brief description of viruses, fungi and protozoa • Immunity – innate immunity Immune system Practical • Differential stains: Gram-stain								
5.3	Work effectively in a team.	D4	d3		Internet search			x				
	Communicate clearly by verbal and means.				Practical lab Internet search			x				
5.1		D1	d1									

5.4	Use numeracy, calculation and statistical methods as well as information technology tools.	D6	d2		Practical notes Recommended books Internet			x				x
5.9	Implement writing and presentation skills.	D11	d4					x			x	x

COURSE SPECIFICATIONS

Parasitology

Second level –Semester 4

2019-2020

Course Specification of Parasitology

University: Zagazig Faculty: Pharmacy

A- Course specifications:

- Programme(s) on which the course is given: Bachelor of Pharmacy. (Clinical Pharmacy Programme)
- Major or Minor element of programmes: Major
- Department offering the program: -------
- Department offering the course: Microbiology and Immunology Department
- Academic year/level: Second Level/ Fourth semester
- Date of specification approval: 2019-2020

B- Basic information:

- Title: Parasitology
- Code: **MD 406**
- Lectures : 1 hrs/week
- Practical: 1 hr/week
- Total: 2 hrs/week

C- Professional information:

1-Overall Aims of the Course:

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

Underline the basic concepts of parasitology and entomology. Examine of different parasitic stages under microscope. Specify the appropriate methods for treatment, prevention and control of different diseases caused by parasites and insects. Communicate effectively with public, patients and other health care professionals in addition to working effectively as a member of a team, writing and presenting reports.

2-Intended Learning Outcomes of Parasitology Course (lLOs)

A- Knowledge and Understanding	
a1	Illustrate the basic concepts of parasitology.
a2	Summarize the principles of entomology and diseases caused by insects.
a3	Recognize etiology, epidemiology and clinical features of different diseases caused by parasites and insects.
a4	Outline the laboratory diagnosis of diseases caused by different parasites.
B- Professional and Practical skills	
b1	Use the proper terms of parasitology and entomology.
b2	Select drugs for treatment of different diseases caused by parasites or insects.
b3	Perform microscopical examination of different parasitic stages and insects from different specimens.
C- Intellectual skills	
c1	Suggest the appropriate methods for treatment, prevention and control of different parasites and insects.
c2	Analyze and interpret experimental results for identification of parasites in suitable form.
D- General and Transferable skills	
d1	Communicate efficiently in oral and written manner.
d 2	Demonstrate critical thinking, decision-making and problem-solving in dealing with case study.

3- Course Contents of Parasitology:

Week No.	Lectures (1 hrs/week)	Practical session (1 hr/week)
1	- General Introduction	- General Introduction - General terms of parasitology
2	- Helminthology 2a-Trematodes: - General characters - Fasciola species - Short essay questions	- Parasitological laboratory examination: - Sample collection - Evaluation of different techniques used in the diagnosis of parasitic infections:

		- Microscopical Serology - Modern molecular techniques (e.g. PCR)
3	- Heterophyes species - Schistosoma species - Case report	- Demonstration of microscopic slides of morphologic stages of: - Fasciola species - Heterophyes species - Demonstration of Snails hosts
4	Cestodes: General characters Taenia saginata Taenia solium Cysticercosis Case report	- Demonstration of microscopic slides of morphologic stages of: Schistosoma species
5	- Echinococcus sp. - Hymenolepis sp. - Diphyllobothrium sp.	- Demonstration of microscopic slides of morphologic stages of: *Taenia saginata* *Taenia solium* *Echinococcus spp.*
6	Nematodes:` - General characters - Ascaris lumbricoides - Hook worm sp. - Case report	Demonstration of microscopic slides of morphologic stages of : - Ascaris lumbricoides - Hook worm sp.
7	Nematodes: - Enterobius & Trichuris **Periodical exam**	Demonstration of microscopic slides of morphologic stages of: - Enterobius & Trichuris
8	- Trichinella spiralis - Wuchereria species	Demonstration of microscopic slides of morphologic stages of: - Trichinella spiralis - Wuchereria species
9	Protozoology - Amoebae species - Balantidium coli	Demonstration of microscopic slides of morphologic stages of: - Amoebae species - Balantidium coli
10	Protozoology - Giardia lamblia - Trichomonas vaginalis Case report	Demonstration of microscopic slides of morphologic stages of: - Giardia lamblia - Trichomonas vaginalis
11	Protozoology - Leishmania species	Demonstration of microscopic slides of morphologic stages of:

	- Trypanosoma species. Case report	- Leishmania species - Trypanosoma species.
12	Protozoology - Plasmodium species - Toxoplasma gondii Case study	Demonstration of microscopic slides of morphologic stages of: - Plasmodium species - Toxoplasma gondii - Mosquito species - Lice, Fleas, Bugs - Ticks, Mites & Cyclops Lab diagnosis of parasitic infections
13	Entomology - General characters - Mosquito species - Lice, Fleas, Bugs - Ticks, Mites & Cyclops	**Final Practical Exam**
14	Parasitic Infections: Clinical Manifestations, Diagnosis & Treatment	
15	**Written exam**	

Teaching and Learning Methods:

- Lectures
- Practical sessions
- Case study

Student Assessment Methods:

1- Written exam to assess a1, a2, a3, a4, c1. d 1

2- Practical exam to assess b1, b2, b3, c2, d2

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

4- Periodical exam to assess a1, a3, a4, c1

Assessment schedule:

Assessment (1): Written exam	Week 15
Assessment (2): Practical exam	Week 13
Assessment (3): Oral exam	Week 15
Assessment (4): Periodical exam	Week 7

Weighting of Assessment:

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

Facilities Required for Teaching and Learning:

3. **For lectures:** Black (white) boards and data show.
4. **For Labs.:** Chemicals, Autoclaves, Incubators, Ovens, Water bathes, staining dyes, microscopes, refrigerators and microbiological culture media

List of References:

A- Parasitology:

1- Student book of Parasitology approved by Microbiology and Immunology department & practical notes by staff of the department (2019).

2- Essential Books:

i- Medical Parasitology (eighth edition); Markell and Voge's, W.B. Saunders Company (2006).

ii- District Laboratory practice in Tropical countries.

iii- MONICA CHEESBROUGH, Printed in Great Britain at University press, Cambridge (2005.

iv- Clinical Parasitology (9th Edition); Beaver, P.C.; Jung, R.C. and Cupp, E.W. Lea & Febiger; Philadelphia (2019).

3- Recommended Books

Manson's Tropical Diseases (23rd edition), Cook GC (ed), London: WB Saunders (2013).

4- Periodicals, Web Sites

http://medicaleducationonline.org/

http://www.parasitesonline.net

http://pathmicro.med.sc.edu/book/parasit-sta.htm

http://www.dpd.cdc.gov/dpdx/HTML/Para_Health.htm

- **Course Coordinator:** **Prof. Dr. Ghada Hamed Shaker**
- **Head of Department:** **Prof. Dr. Nehal Elsayed yousef.**
- **Date:** **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 9 /2019م**

Matrix I of Parasitology

Course Contents		ILOs of Parasitology course										
		knowledge and undestanding				professional and practical skills			intellectual skills		Transferable and general skills	
		a1	a2	a3	a4	b1	b2	b3	c1	c2	d1	d2
1	• General Introduction	√	□				□	□	□			
2	Helminthology 2a-Trematodes: General characters - Fasciola species • Short essay questions	√		√	√	□	□	□	√	□	□	
3	• Heterophyes species • Schistosoma species • Case report	√	□	√	√				√			√
4	Cestodes: General characters - Taenia saginata - Taenia solium - Cysticercosis • Case report	√	□	√	√				√			√
5	Echinococcus sp. - Hymenolepis sp. - Diphyllobothrium sp.	√	□	√	√				√			
6	Nematodes:`General characters - Ascaris lumbricoides - Hook worm sp.	√	□	√	√				√			
7	Enterobius & Trichuris - Trichinella spiralis - Wuchereria species • Case report	√		√	√				√	□	□	√□
8	Protozoology: Amoebae species - Balantidium coli • Case report	√	□	√	√				√			
9	Protozoology: Giardia lamblia -Trichomonas vaginalis	√	□	√	√				√	□	□	□
10	Leishmania species - Trypanosoma species. • Case report	√	□	√	√				√			√
11	Plasmodium species - Toxoplasma gondii • Case study	√	□	√	√				√	□	□	√

12	Entomology: General characters - Mosquito species		√	√					□	□	□	
13	Entomology: Lice, Fleas, Bugs - Ticks, Mites & Cyclops		√	√	□				□			
14	Parasitic Infections: Clinical Manifestations, Diagnosis and Treatment	√	□	√	√				√			
	Practical sessions											
1	**General Introduction – General terms of parasitology**		□	□	□	√	□	□		□	□	□
2	**• Parasitological laboratory examination: - Sample collection - Evaluation of different techniques used in the diagnosis of parasitic infections: Microscopical - Serology - Modern molecular techniques (e.g. PCR)**				□	□		√		√	□	
3	**Demonstration of microscopic slides of morphologic stages of: Fasciola species - Heterophyes species - Schistosoma species Demonstration of Snails hosts**					√	√	√	□	√	√	
4	**Demonstration of microscopic slides of morphologic stages of: Taenia saginata - Taenia solium**					√	√	√	□	√	√	□
5	**Demonstration of microscopic slides of morphologic stages of : Echinococcus sp. - Ascaris lumbricoides - Hook worm sp.**					√	√	√	□	√	√	
6	**Demonstration of microscopic slides of morphologic stages of: Enterobius & Trichuris - Trichinella spiralis - Wuchereria species**					√	√	√	□	√	√	
7	**Demonstration of microscopic slides of morphologic stages of: Amoebae species - Balantidium coli -**					√	√	√	□	√	√	
8	**Demonstration of microscopic slides of morphologic stages of: Giardia lamblia - Trichomonas vaginalis**					√	√	√	□	√	√	
9	**• Leishmania species • Trypanosoma species.**					√	√	√	□	√	√	
10	**• Plasmodium species • Toxoplasma gondii - Lab. Diagnosis of parasitic infections**					√	√	√	□	√	√	□

11	**Demonstration of microscopic slides of: Mosquito species - Lice, Fleas, Bugs**					√	□	√		√	√	□
12	**Demonstration of microscopic slides of: Ticks, Mites & Cyclops**					√	□	√		√	√	□

Matrix II of Parasitology course

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	Periodical exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice	A3	a1	• General Introduction	notebook	√	□	□	√	□	√	√
				Helminthology 2a-Trematodes: General characters - Fasciola species • Short essay questions	notebook	√	□	□	√	□	√	√
				• Heterophyes species • Schistosoma species • Case report	notebook and internet	√	□	□	√	□	√	√
				Cestodes: General characters - Taenia saginata - Taenia solium - Cysticercosis • Case report	notebook	√	□	□	√	□	√	√
				Echinococcus sp. - Hymenolepis sp. - Diphyllobothrium sp.	notebook	√	□	□	√	□	√	√
				Nematodes:`General characters - Ascaris lumbricoides - Hook worm sp.	notebook	√	□	√	√	□	√	√
				Enterobius & Trichuris - Trichinella spiralis - Wuchereria species • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Amoebae species - Balantidium coli • Case report	notebook	√	□	□	√	□	√	□

				Protozoology: Giardia lamblia -Trichomonas vaginalis	notebook	√	□	□	√	□	√	□
				Leishmania species - Trypanosoma species. • Case report	notebook	√	□	□	√	□	√	□
				Plasmodium species - Toxoplasma gondii • Case study	notebook and internet	√	□	√	√	□	√	□
				Parasitic Infections: Clinical Manifestations, Diagnosis and Treatment	notebook	√	□	□	√	□	√	□
			a2	Entomology: General characters - Mosquito species	notebook	√	□	□	√	□	√	□
				Entomology: Lice, Fleas, Bugs - Ticks, Mites & Cyclops	notebook	√	□	□	√	□	√	□
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	**A19**	**a3**	Helminthology 2a-Trematodes: General characters - Fasciola species • Short essay questions	notebook	√	□	□	√	□	√	√
				• Heterophyes species • Schistosoma species • Case report	notebook and internet	√	□	√	√	□	√	√
				Cestodes: General characters - Taenia saginata - Taenia solium - Cysticercosis • Case report	notebook	√	□	□	√	□	√	√

				Echinococcus sp. - Hymenolepis sp. - Diphyllobothrium sp.	notebook	√	□	□	√	□	√	√
				Nematodes:`General characters - Ascaris lumbricoides - Hook worm sp.	notebook	√	□	□	√	□	√	√
				Enterobius & Trichuris - Trichinella spiralis - Wuchereria species • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Amoebae species - Balantidium coli • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Giardia lamblia -Trichomonas vaginalis	notebook	√	□	□	√	□	√	□
				Leishmania species - Trypanosoma species. • Case report	notebook	√	□	□	√	□	√	□
				Plasmodium species - Toxoplasma gondii • Case study	notebook and internet	√	□	√	√	□	√	□
				Entomology: General characters - Mosquito species	notebook	√	□	□	√	□	√	□
				Entomology: Lice, Fleas, Bugs - Ticks, Mites & Cyclops	notebook	√	□	□	√	□	√	□
				Parasitic Infections: Clinical Manifestations, Diagnosis and Treatment	notebook	√	□	□	√	□	√	□

2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches	**A20**	**a4**	Helminthology 2a-Trematodes: General characters - Fasciola species • Short essay questions	notebook	√	□	□	√	□	√	√
				• Heterophyes species • Schistosoma species • Case report	notebook and internet	√	□	√	√	□	√	√
				Cestodes: General characters - Taenia saginata - Taenia solium - Cysticercosis • Case report	notebook	√	□	□	√	□	√	√
				Echinococcus sp. - Hymenolepis sp. - Diphyllobothrium sp.	notebook	√	□	□	√	□	√	√
				Nematodes:`General characters - Ascaris lumbricoides - Hook worm sp.	notebook	√	□	□	√	□	√	√
				Enterobius & Trichuris - Trichinella spiralis - Wuchereria species • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Amoebae species - Balantidium coli • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Giardia lamblia -Trichomonas vaginalis	notebook	√	□	□	√	□	√	□
				Leishmania species - Trypanosoma species. • Case report	notebook	√	□	□	√	□	√	□

				Plasmodium species - Toxoplasma gondii • Case study	notebook and internet	√	□	√	√	□	√	□
				Parasitic Infections: Clinical Manifestations, Diagnosis and Treatment	notebook	√	□	□	√	□	√	□
3.1	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice	**B1**	**b1**	**All practical sessions**	practical notes		√	□	□	√	□	□
3.5	Select medicines based on understanding etiology and path physiology of diseases	**B7**	**b2**	**Practical sessions**	practical notes		√	□	□	√	□	□
3.6	Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infections in biological specimens.	**B11**	**b3**	**All practical sessions**	practical notes		√	□	□	√	□	□
4.8	Select and assess appropriate methods of infection control to prevent infections and promote public health	**C10**	**c1**	Trematodes: General characters - Fasciola species • Short essay questions	notebook	√	□	□	√	□	√	√
				• Heterophyes species • Schistosoma species • Case report	notebook and internet	√	□	√	√	□	√	√

				Cestodes: General characters - Taenia saginata - Taenia solium - Cysticercosis • Case report	notebook	√	□	□	√	□	√	√
				Echinococcus sp. - Hymenolepis sp. - Diphyllobothrium sp.	notebook	√	□	□	√	□	√	√
				Nematodes:`General characters - Ascaris lumbricoides - Hook worm sp.	notebook	√	□	□	√	□	√	√
				Enterobius & Trichuris - Trichinella spiralis - Wuchereria species • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Amoebae species - Balantidium coli • Case report	notebook	√	□	□	√	□	√	□
				Protozoology: Giardia lamblia -Trichomonas vaginalis	notebook	√	□	□	√	□	√	□
				Leishmania species - Trypanosoma species. • Case report	notebook	√	□	□	√	□	√	□
				Plasmodium species - Toxoplasma gondii • Case study	notebook and internet	√	□	√	√	□	√	□
				Parasitic Infections: Clinical Manifestations, Diagnosis and Treatment	notebook	√	□	□	√	□	√	□

4.13	Analyze and evaluate evidence-based information needed in pharmacy practice	**C15**	**c2**	**All practical sessions**	practical notes		√	□	□	√	□	□
5.1.	Communicate clearly by verbal and means	**D1**	**d1**	**All practical sessions**	practical notes		√	□	□	√	□	□
5.10.	Implement writing and thinking, problem- solving and decision- making abilities	**D12**	**d2**	Case reports	Notebooks & internet search	√	□	□	√	□	√	√

COURSE SPECIFICATIONS

Pharmaceutical dosage forms 1

Second level –Semester 4

2019-2020

Course specification of Pharmaceutical Dosage Forms-1

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: Second level/Fourth semester

Date of specification approval: 11/2019

B- Basic information:

Title: Pharmaceutical Dosage Forms-1 Code: PT403

Credit Hours: 3hrs

- Lectures : 2 hrs/week
- Practical: 1 hrs/week
- Tutorials: ---
- Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

Pharmaceutical calculation, pharmaceutical solutions, colloids and macromolecular system, coarse dispersions, suspensions and emulsions. Formulation, preparation and evaluation of solid dosage forms, powders and granules, tablets, coating, hard capsules, soft capsules and microencapsulation.

2-Intended Learning Outcomes (lLOs):

A- Knowledge and Understanding	
a1	Describe the ideal properties of different dosage forms including emulsion, suspension, colloids, powders, granules, tablets, capsules and microcapsules
a2	List different active and inactive ingredients used in the formulation of the aforementioned dosage forms.
a3	Outline preparation methods and quality control tests of different pharmaceutical dosage forms
a4	Outline different pharmaceutical calculations relevant to preparation and characterization of different pharmaceutical dosage forms
B- Professional and Practical skills	
b1	Handle pharmaceutical preparations safely
b2	Formulate different pharmaceutical preparations including emulsion, suspension and effervescent granules.
C- Intellectual skills	
c1	Select the appropriate ingredients for formulation of different pharmaceutical preparations.
c2	Evaluate different storage conditions affecting the stability of different pharmaceutical preparations.
D- General and Transferable skills	
d1	Develop calculation and problem solving skills
d2	demonstrate critical thinking and decision making skills

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (1 hr/week)
1	Emulsion -Definition -Types of emulsion -Theories of emulsification	Pharmaceutical calculations: **Measurement Systems**
2	- ideal characters of Emulsifying agents -examples of emulsifying agents	Pharmaceutical calculations: **Dilution and concentration of solutions**
3	-Stability of emulsions Different methods for Preparation of emulsion	Pharmaceutical calculations: **Reducing and Enlarging Formulas,** **percentage ratio problems**
4	Suspensions -definition -Reasons for preparing suspension -Characters of ideal suspension - ideal characters of suspending agents with examples -Formulation and evaluation of suspensions '-Stability of suspensions	Emulsion -Methods of preparation of emulsions a- wet method
5	Solutions - Water, aromatic water, syrups, elixirs, liniments, lotions - Factors affecting solubility - Solubility curves of solids in liquids	-Methods of preparation of emulsions b-dry method (Lab evaluation)
6	Tablets - Advantages, disadvantages - Main excipients (diluents, binders, disintegrant, lubricant) - Methods of preparations (dry, directly compressible vehicles, wet granulation)	-Methods of preparation of emulsions c- Bottle method (Lab evaluation)

	- Problems	
7	- Quality control ; chemical (potency, content uniformity, purity) and physical (weight variation, thickness, hardness, friability, disintegration, dissolution) - Tablet coating (sugar- film- compression)	Suspensions -determination of sedimentation rate (Lab evaluation)
8	Introduction to disperse system Colloids -definition -Pharmaceutical application of colloids	-Difference between flocculated and deflocculated suspensions (Lab evaluation)
9	-Types of colloidal systems -ideal characters of colloids -Stability of colloids	granules calculation of effervescent granules (Lab evaluation)
10	Powders and granules -definitions -powders as dosage forms -Advantaged and disadvantages	Blank effervescent granules (Lab evaluation)
11	Powders and granules -flow properties -effervescent granules	Heambiotic effervescent granules (Lab evaluation)
12	Capsules - Definition, advantages and disadvantages - Hard gelatin capsules: composition of the shell, Types of excipients, limitations. - Different sizes of capsules - Stability of hard gelatin capsule Quality Control Tests: Disintegration test, Weight variation test, Dissolution test.	Antispasmodic effervescent granules (Lab evaluation)
13	- Soft Gelatin Capsule,	Antigout effervescent granules

	advantages and disadvantages - Comparison between Hard and soft gelatin Capsules - Vegicaps Soft Capsules - Enteric coated capsules: - Sustained release capsules; Spansule and medules.	
14	- Microencapsulation - Definition, Applications and Advantages of Micro-encapsulation. - Methods of preparation: - Pan coating - Air-suspension coating, - Spray techniques: spray drying & spray congealing. - Coacervation – Phase Separation Process. - Solvent Evaporations method for preparation of microspheres.	Practical exam
15	- Written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Self-learning (reports and posters on marketed pharmaceutical dosage forms)

F- Student Assessment Methods:

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

Assessment schedule:

Assessment (1): Final Written exam	Week 15
Assessment (2): Practical exams and lab evaluation	Weeks 14
Assessment (3): Oral exam	Week 15
Assessment (4): Periodical exam	Weeks 7

Section 1.01 Weighting of Assessment:

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

G- Facilities Required for Teaching and Learning:

- For lectures : Black (white) boards, data show
- For labs: Chemicals, glass ware, instruments, digital balance, water bathes

H- List of References:

1- Course Notes:

2- Essential books:

- Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems , ninth edition "**Loyd V. Allen Jr. PhD , Nicholas G. Popovich PhD , Howard C. Ansel PhD ", 720, 2010.**
- Medical Terminology: A Short Course, sixth edition, **Davi-Ellen Chabner BA MAT, 440, 2011.**
- Remington's Pharmaceutical Sciences, **2393, 2005.**

3- Recommended books:

4- Periodicals and websites:

Course Coordinators: Prof. Dr. Azza Ali Hasan

Course Staff:

Prof. Dr. Fakhr Eldin Ghazy

Prof. Dr. Hanaa El Ghamry

Ass. Prof. Dr. Azza Ali Hasan

Head of department: Prof. Dr. Nagia Ahmed Al-Amin Almegrab

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

/11/2019

Matrix -1 of Pharmaceutical Dosage Forms-1											
Course Contents		ILOs									
		Knowledge and understanding				Professional and practical skills		Intellectual skills		Transferable and general skills	
		a1	a2	a3	a4	b1	b2	c1	c2	d1	d2
1	Emulsion -Definition -Types of emulsion -Theories of emulsification	x	x								
2	ideal characters of Emulsifying agents -examples of emulsifying agents		x	x							
3	Stability of emulsions Different methods for Preparation of emulsion										
4	Introduction to disperse system -Pharmaceutical calculations	x									
5	Tablets coating	x									
6	Suspensions -definition -Reasons for preparing suspension -Characters of ideal suspension - ideal characters of suspending agents with examples -Formulation and evaluation of suspensions ‘-Stability of suspensions	x	x	x							

7	Capsules Definition Hard gelatin and soft gelatin capsules	x	x								
8	Microencapsulation	x	x								
9	Colloids -definition -Pharmaceutical application of colloids	x	x	x							
10	Types of colloidal systems			x							
11	ideal characters of colloids -Stability of colloids		x								
12	Powders and granules -definitions -powders as dosage forms -Advantaged and disadvantages	x	x								
13	flow properties -effervescent granules	x									
14	Different methods for preparation of effervescent granules										
Practical Session											
15	Methods of preparation of emulsions a- wet method				x	x	x	x	x		
16	Methods of preparation of emulsions b-dry method				x	x	x	x			
17	Methods of preparation of emulsions c- Bottle method					x	x	x			
18	determination of sedimentation rate				x	x				X	x
19	Difference between flocculated and deflocculated					x	x				

	suspensions										
20	calculation of effervescent granules				x	x		x		X	x
21	Blank effervescent granules					x	x	x	x		
22	Heambiotic effervescent granules					x	x	x			
23	Antispasmodic effervescent granules					x	x	x			
24	Antigout effervescent granules					x	x	x			
25	Calculation of powders				x	x				X	x
26	Anti acid powder					x	x				
27	Anti flatulence powder					x	x				

Matrix II of Pharmaceutical Dosage Forms-1

National Academic Reference Standards NARS	Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Weighting of assessment			
					lecture	practical session	self learning	written exam	practical exam	oral exam	periodical exam

2.1	Principles of basic, pharmaceutical, medical, social, behavioural, management, health and environmental sciences as well as pharmacy practice.	A2	a1	Emulsion -Definition -Types of emulsion -Theories of emulsification Introduction to disperse system -Pharmaceutical calculations Tablets coating Suspensions -definition -Reasons for preparing suspension -Characters of ideal suspension - ideal characters of suspending agents with examples -Formulation and evaluation of suspensions ‘-Stability of suspensions Capsules Definition Hard gelatin and soft gelatin capsules Microencapsulation Colloids -definition -Pharmaceutical application of colloids Powders and granules -definitions -powders as dosage forms -Advantaged and disadvantages flow properties -effervescent granules	Notebook	x			x		x	x

2.6	Properties of different pharmaceutical dosage forms including novel drug delivery systems.	A10	a3	Emulsion-Definition-Types of emulsion-Theories of emulsification ideal characters of Emulsifying agents-examples of emulsifying agents Suspensions-definition-Reasons for preparing suspension-Characters of -ideal suspension- ideal characters of suspending agents with examples-Formulation and evaluation of suspensions'-Stability of suspensions CapsulesDefinition Hard gelatin and soft gelatin capsules Microencapsulation Colloids-definition-Pharmaceutical application of colloids ideal characters of colloids-Stability of colloids Powders and granules -definitions -powders as dosage forms -Advantaged and disadvantages	Notebook	x			x		x	x
2.2	**Physical-chemical properties of various substances used in preparation of**	A5	a2		Notebook	x			x		x	x

	medicines including inactive and active ingredients as well as biotechnology and radio- labeled products.											
2.17	Methods of biostatistical analysis and pharmaceutical calculations.	A27	a4	Methods of preparation of emulsions determination of sedimentation rate calculation of effervescent granules Calculation of powders	Practical Notebook		x			x		

3.2	Handle and dispose chemicals and pharmaceutical preparations safely.	B2	b1	Methods of preparation of emulsionsa- wet method b- Dry method c-Bottle method determination of sedimentation rate Difference between flocculated and deflocculated suspensions calculation of effervescent granules Blank effervescent granules Heambiotic effervescent granules Antispasmodic effervescent granules Antigout effervescent granules Calculation of powders Anti acid powder Anti flatulence powder	Practical note book		x					
3.3	Compound, dispense, label, store and distribute medicines effectively and safely..	B3	b2	Methods of preparation of emulsions a- wet method b- Dry method c-Bottle method determination of sedimentation rate Difference between flocculated and deflocculated suspensions calculation of effervescent granules	Practical note book		x					

				Blank effervescent granules Heambiotic effervescent granules Antispasmodic effervescent granules Antigout effervescent granules Anti acid powder Anti flatulence powder								
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	Methods of preparation of emulsions a- wet method b- Dry method c-Bottle method calculation of effervescent granules Blank effervescent granules Heambiotic effervescent granules Antispasmodic effervescent granules Antigout effervescent granules	practical notebook& notebook		x			x		
4.2	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	C2	c2	Methods of preparation of emulsions a- wet method b- Dry method c-Bottle method Blank effervescent granules	internet			x				

5.10	Implement writing and thinking, problem- solving and decision-making abilities.	D12	d1 d2	calculation of effervescent granules determination of sedimentation rate Calculation of powders	internet& practical note book			x				

COURSE SPECIFICATIONS

Pharmacy Legislation

Second level –Semester4

2019-2020

Course specification of Pharmacy Legislation

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 I Level: Second level/Fourth semester

Date of specification approval: 26/11/2019

B- Basic information:

Title: Pharmacy Legislation Code: PT 404

Credit Hours:

- Lectures : 1 hr/week
- Practical: ---
- Tutorials: ---
- Total: 1 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to describe the basics of pharmacy legislation including laws governing establishment of pharmacy profession, legislation principles for non controlled and controlled prescriptions, over the counter drug requirements, opening new pharmacies, opening medical stores, opening factories, opening scientific offices, medicine stores management. Pharmacist duties and responsibilities, pharmacist-patient relationship, patient's

rights and ethical principles and moral values.

2-Intended Learning Outcomes of Pharmacy Legislation (lLOs):

A- Knowledge and Understanding	
a1	Outline different principles of pharmacy legislation including laws governing establishment of private pharmacies and drug stores, factories and scientific offices
a2	State the principles of pharmacy profession including handling of different classes of narcotics and antipsychotic drugs
a3	State patients rights and ethical principles
a4	Describe legal principles for non controlled and controlled prescription
C- Intellectual skills	
c1	Evaluate different cases involving misconduct of pharmacy practice laws
D- Transferable and general skills	
d1	Communicate effectively in a written manner

D- Contents:

Week No.	Lecture (1hr/week)
1	قانون مزاولة مهنة الصيدلة
2	المؤسسات الصيدلية الصيدليات العامة
3	المؤسسات الصيدلية الصيدليات الخاصة مخازن الادوية
4	المؤسسات الصيدلية مجال الاتجار في النباتات الطبية نشاط
5	المؤسسات الصيدلية المستحضرات الصيدلية الخاصة و الدستورية

6	جداول المواد المخدرة و طريقة تخزينها
7	**Periodical exam**
8	المواد المؤثرة علي الحالة النفسية
9	جداول المواد المؤثرة علي الحالة النفسية
10	قواعد تكليف الصيادلة
11	قانون مكافحة المخدرات و تنظيم استعمالها و الاتجار فيها
12	جداول قانون مكافحة المخدرات
13	النباتات الممنوع زراعتها في مصر
14	**Revision and open discussion**
15	**Final exam**

E- Teaching and Learning Methods:

- Lectures

F- Student Assessment Methods:

- Periodical exam **to assess:** a1, a2,a3, a4, c1, d1
- Written exams **to assess:** a1, a2, a3, a4, c1, d1

Assessment schedule:

Assessment (1): Written exam	Week 15
Assessment (2): Periodical exam	Weeks 7

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	75	75%
Periodical exam	25	25%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

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

H- List of References:

1- Course Notes: Department notes

2- Essential books:

مجموع القوانين والقرارات التي تحكم مزاولة مهنة الصيدلة

3- Recommended books:

مجموع القوانين التي تحكم مزاولة المهن الطبية

4- Periodicals and websites:

مجلة الصيدلة والدواء

متابعة موقع النقابة العامة للصيادلة وكذلك مواقع وزارة الصحة علي الانترنت

Course Coordinators: **Prof. Dr.HanaaAtia El-Ghamry**

Head of department: **Prof. Dr. Nagia Ahmed Almegrab**

Date: **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 2019/11/26 م**

Matrix I of Pharmacy Legislation course							
Course Contents		ILOs of Legislation course					
		Knowledge and understanding				Intellectual skills	Transferable and general skills
Lectures		a1	a2	a3	a4	c1	d1
1	قانون مزاولة مهنة الصيدلة	x	x	x			X
2	المؤسسات الصيدلية الصيدليات العامة	x	x				X
3	المؤسسات الصيدلية الصيدليات الخاصة مخازن الادوية	x	x				X
4	المؤسسات الصيدلية مجال الاتجار في النباتات الطبية نشاط	x	x				X
5	المؤسسات الصيدلية المستحضرات الصيدلية الخاصة و الدستورية	x	x				X
6	جداول المواد المخدرة و طريقة تخزينها	x	x		x	x	X
7	**Periodical exam**	x	x				X
8	المواد المؤثرة علي الحالة النفسية	x	x		x	x	X
9	جداول المواد المؤثرة علي الحالة النفسية	x	x				X
10	قواعد تكليف الصيادلة	x	x		x	x	X
11	قانون مكافحة المخدرات و تنظيم استعمالها و الاتجار فيها	x	x		x	x	X
12	جداول قانون مكافحة المخدرات	x	x		x	x	X
13	جداول قانون مكافحة المخدرات	x	x		x	x	x

Matrix II of Pharmacy Legislation 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	Periodical exam
2.21	Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession	A31	a1	قانون مزاولة مهنة الصيدلة المؤسسات الصيدلية الصيدليات العامة المؤسسات الصيدلية الصيدليات الخاصة مخازن الادوية المؤسسات الصيدلية مجال الاتجار في النباتات الطبية نشاط المؤسسات الصيدلية المستحضرات الصيدلية الخاصة و الدستورية جداول المواد المخدرة و طريقة تخزينها **Periodical exam** المواد المؤثرة علي الحالة النفسية جداول المواد المؤثرة علي	Student book Essential books	x			x			x

				الحالة النفسية								
				قواعد تكليف الصيادلة								
				قانون مكافحة المخدرات و تنظيم استعمالها و الاتجار فيها								
				جداول قانون مكافحة المخدرات								
				جداول قانون مكافحة المخدرات								
				Revision								
			a2 a3	قانون مزاولة مهنة الصيدلة	Student book Essential books	x			x			x
				المؤسسات الصيدلية الصيدليات العامة								
				المؤسسات الصيدلية الصيدليات الخاصة مخازن الادوية								
				المؤسسات الصيدلية مجال الاتجار في النباتات الطبية نشاط								
				المؤسسات الصيدلية المستحضرات الصيدلية الخاصة و الدستورية								
			a4	جداول المواد المخدرة و طريقة تخزينها								
				Periodical exam								

				المواد المؤثرة علي الحالة النفسية نشاط								
				جداول المواد المؤثرة علي الحالة النفسية								
				قواعد تكليف الصيادلة								
				قانون مكافحة المخدرات و تنظيم استعمالها و الاتجار فيها								
				جداول قانون مكافحة المخدرات								
				جداول قانون مكافحة المخدرات								
				Revision								
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C16	c1	جداول المواد المخدرة و طريقة تخزينها المواد المؤثرة علي الحالة النفسية	Student book Essential books, internet	x			x			x
				جداول المواد المؤثرة علي الحالة النفسية								
				قواعد تكليف الصيادلة								
				قانون مكافحة المخدرات و تنظيم استعمالها و الاتجار فيها								
5.1	Commu	D1	d1		Student book	x			x			x

	nicate clearly by verbal and means.				Essential books, internet								