COURSE SPECIFICATIONS

Faculty of Pharmacy

Second Level– Semester 3

2020-2021

CONTENTS:

COURSE SPECIFICATIONS

Pharmaceutical Organic ChemistryIII

Second Level– Semester 3
2020-2021

Course specification of Pharmaceutical Organic Chemistry-3

University: Zagazig Faculty: Pharmacy

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Pharmaceutical Organic Chemistry

Academic year Level: level two / semester 3

Date of specification approval: Oct 2020

B- Basic information:

Title: Code: PR 303

Credit Hours: ---

Lectures: 2hr/week

Practical: 1hr/week

Tutorials: ---

Total: 3hrs/week

C- Professional information:

1-Overall aim of the course:-

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

- Outline the chemistry of carbohydrates, their identification, and their application in pharmaceutical compounds.
- Identify the chemistry of heterocyclic compounds.
- Explain the principles of spectroscopy ((UV, IR, ^{1}HNMR, ^{13}CNMR & mass spectroscopy) and how to interpret the spectroscopic data of different compounds.

2- Key elements of pharmaceutical organic chemistry 3.

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
1-1- COMPETENCY: Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1.	• Outline the chemistry of carbohydrates and their important chemical reactions.
1.C1.2.	• Illustrate the principles of spectroscopic techniques (UV, IR, NMR and Mass spectroscopy) in identification of aromatic compounds.
1.C1.3.	• Identify chemical name and different synthetic pathways for pharmaceutical heterocyclic compounds including commercially available drugs.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE	
2-2- COMPETENCY: Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.	
2.C2.1.	• Synthesize different pharmaceutically active nuclei including pyrazole, benzotriazole, benzothiophene and quinoxalinone
2.C2.2.	• Perform identification tests for carbohydrates.
2.C2.3	• Perform Purification of different target compounds using the separation techniques.
2.C2.4.	• select the proper spectroscopic technique for pharmaceutical compounds identification.
2-3- COMPETENCY: Handle and dispose biologicals and synthetic/natural pharmaceutical materials /products effectively and safely with respect to relevant laws and legislations.	
2.C3.1	• Handle basic laboratory equipment and chemicals effectively and safely.
2.C3.2	• Adopt GLP guidelines for safe handling of chemicals
DOMAIN 4: PERSONAL PRACTICE	
4-1- COMPETENCY: Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.	
4.C1.1.	• Work effectively as a member of a team.
4.C1.2.	• Demonstrate problem solving skills.

4-2- COMPETENCY: Effectively communicate verbally, non-verbally and in writing with individuals and communities.	
4.C2.1.	• Communicate effectively with others.

D- Contents:

Week No.	Lecture contents (2hr/week)	Practical session (1hr/week)
1	I- Carbohydrates Introduction and Classification. Monosaccharides i. Synthesis ii.Cyclic structure of monosaccharides iii.Chemical reactions of monosaccharides activity	Lab. Safety
2	*Disaccharides Nomenclatureand determination of the type of glycosidic linkage. *.Polysaccharides Nomenclature and determination of the type of glycosidic linkage. *Drugs containing carbohydrates	Identification of carbohydrates Identification of glucose and fructose
3	II- Heterocyclic chemistry Nomenclature of heterocyclic compounds	Identification of carbohydrates Identification of sucrose, lactose and starch
4	Five-membered heterocyclic with one heteroatom, synthesis and reactions	Synthesis of fructosasone
5	- Indole (benzo[b]pyrrole) - Five-membered rings containing two heteroatoms. synthesis and reactions	Synthesis of β-penta-acetyl glucose
6	Six-membered heterocyclic with one heteroatom: synthesis, reactionsand applications.	Synthesis of 3,5-dimethyl pyrazole
7	Mid. term exam	Mid. term exam
8	Quinoline and isoquinoline, synthesis and reactions	Synthesis of 5-nitrosalicylic acid
9	Six-membered rings containing two heteroatoms + purine nucleus and application.	Synthesis of 3-methyl-1H-quinoxalin-2-one
10	III- Spectroscopy UV and visible spectroscopy	Synthesis of 1,2,3-benzotriazole
11	Infrared spectroscopy Applications on infrared spectroscopy	Synthesis of ethyl 2-amino-4,5,6,7-tetrahydrobenzo(b)thiophene-3-carboxylate
12	Mass spectrometry	Activity (Synthesis of certain drugs containing heterocycles)
13	^{1}H-NMR spectroscopy	Practical exam

14	^{13}C-NMR spectroscopy	Practical exam
15	Final written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Group discussion
- Blended learning

F- Student Assessment methods:

- Written exams **to assess:**1.C1.1. ,1.C1.2, 1.C1.3., 4.C2.1
- Practical exams **to assess:** 2.C2.1, 2.C2.2, 2.C2.3, 2.C2.4, 2.C3.1, 2.C3.2
- Oral exam **to assess:** 1.C1.1. ,1.C1.2,1.C1.3, 4.C2.1
- Activities within labs **to assess:** 4.C1.1, 4.C1.2, 4.C2.1

Assessment schedule

Assessment (1): Written exams	Week 15
Assessment (2): Practical exams	Week 13, 14
Assessment (3): Oral exams	Week 15
Assessment (4): Activity	participation each lab
Assessment (5): Periodical exams	Week 7

Weighting of Assessment

Assessment method	Marks	Percentage
Periodicexam	10	10%
Final written exam	50	50%
Activity	5	5%
Practical practice & exam	25	25%
Oral exam	10	10%
TOTAL	100	100%

G- Facilities required for teaching and learning:

- **For lectures:** White boards, data show.

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

H- List of References:

1- Course Notes:

- Presentation Printout.

- Student book of Pharmaceutical Organic Chemistry approved by the department

2- Essential Books:

- ✓ ChaudenJaidey, 2018, Organic Spectroscopy; Delhy.
- ✓ Francis A. Carey, 2009, Organic Chemistry; 9th Edition, McGraw-Hill
- ✓ T. W. Graham Solomons and Craig B. Fryhle, 2010, Organic Chemistry; 11th Edition, John Willy & Sons Inc, USA.

Course Coordinator: Prof. Dr. Eatedal Abdel-aal

Head of Department: Prof. Dr. Hanan Abdelrazik Adelfattah

/ تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I of Pharmaceutical organic Chemistry-3

Course Contents / Lectures		Key elements of Pharmaceutical organic Chemistry-3												
		1-1- COMPETENCY			2-2- COMPETENCY				2-3- COMPETENCY		4-1- COMPETENCY		4-2- COMPETENCY	
		1.C1.1	1.C1.2	1.C1.3	2.C2.1	2.C2.2	2.C2.3	2.C2.4	2.C3.1	2.C3.2	4.C1.1	4.C1.2	4.C2.1	
1	I- Carbohydrates Introduction and Classification. Monosaccharides i. Synthesis ii.Cyclic structure of monosaccharides iii.Chemical reactions of monosaccharides activity	X												
2	Disaccharides Nomenclatureand determination of the type of glycosidic linkage. *.Polysaccharides Nomenclature and determination of the type of glycosidic linkage. *Drugs containing carbohydrates	x												
3	II- Heterocyclic chemistry Nomenclature of heterocyclic compounds			x										
4	Five-membered heterocyclic with one heteroatom, synthesis and reactions			X										
5	- Indole (benzo[b]pyrrole) - Five-membered rings containing two heteroatoms. synthesis and reactions			X										
7	Six-membered heterocyclic with one heteroatom: synthesis, reactionsand applications.x			X										

8	Quinoline and isoquinoline, synthesis and reactions			X									
9	Six-membered rings containing two heteroatoms + purine nucleus and application.			X									
10	III- Spectroscopy UV and visible spectroscopy		X										
11	Infrared spectroscopy Applications on infrared spectroscopy		X										
12	Mass spectrometry		X										
13	^{1}H-NMR spectroscopy		X										
14	^{13}C-NMR spectroscopy		x										
1	Lab. Safety								X	X		X	
2	Identification of Carbohydrates Identification of glucose and fructose					X	X	X	X	X		X	
3	Identification of Carbohydrates Identification of sucrose, lactose and starch					X	X	x	X	X		X	
4	Synthesis of fructosazone				X		X	X	X	X		X	
5	Synthesis of β-penta-acetyl glucose				X		X	x	X	X		X	
7	**Synthesis of 3,5-dimethyl pyrazole**				X		X	X	X	X		X	
8	Synthesis of 5-nitrosalicylic acid				X		X	X	X	X		X	
9	**Synthesis of 3-methyl-1H-quinoxalin-2-one**				X		X	X	X	X		X	
10	**Synthesis of 1,2,3-benzotriazole**				X		X	X	X	X		X	
11	Synthesis of ethyl 2-amino-4,5,6,7-				X		X	x	X	X		x	

	tetrahydrobenzo(b)thiophene-3-carboxylate												
12	Activity (Synthesis of certain drugs containing heterocycles)									x	x	x	x

Matrix II of Pharmaceutical organic chemistry-3

National Academic Reference Standards NARS		Program key elements	Course key elements	Course contents	Sources	Teaching and learning methods			Weighting of assessment			
						lecture	practical session	self learning	written exam	practical exam	oral exam	Midterm exam
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.C1.1	1.C1.1 1.C1.2 1.C1.3	1- Stereochemistry *Definition, aim of study and classification *Structural isomerism *Rotational isomerism *Geometrical isomerism Optical isomerism Activity (QUIZ) * D, L and Erythro, Threo Nomenclature *R and S, Enantiomers , Diastereomers * Activity (QUIZ) 2- Heterocyclic chemistry Nomenclature of heterocyclic & fused heterocyclic compounds Five member ring Furan, Pyrrole&Thiophenes ynthsis. Five membered ring Furan,	Student book Essential books Recommended books	x			x		x	x

				Pyrrole&Thiophene Reactions *Activity (Quiz) Five membered ring with two nitrogens Pyrazole& Imidazole Synthesis & Properties Indole synthesis, reaction and serotonin (5HT) Six-membered ring Pyridine and its derivatives, quinoline and isoquinoline. Synthesis & Reactions. Six-membered ring with two nitrogens. Pyrimidine, Pyrazine&Pyridazine Synthesis & Properties, purine nucleus 3- Carbohydrates Introduction and Classification. Monosaccharides i. Synthesis ii.Cyclic structure of Monosaccharides iii.Chemical reactions of Monosaccharides Activity (case study on nomenclature of heterocycles) Disaccharides i.Nomenclature ii. Chemical reactions of								

				Disaccharides *.Polysaccharides i.Nomenclature ii.Chemical reactions and determination of the type of glycosidic linkage. *Activity (quiz)								
2.2.1	Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/ natural pharmaceutical materials.	2.C2.1.	2.C2.1 2.C2.2 2.C2.3 2.C2.4	Lab. Safety Identification of Carbohydrates Identification of glucose and fructose Identification of Carbohydrates Identification of sucrose, lactose and starch Synthesis of fructosazone Synthesis of β-penta-acetyl glucose Synthesis of 3,5-dimethyl pyrazole Midterm exam Synthesis of 5-nitrosalicylic acid Synthesis of 3-methyl-1H-quinoxalin-2-one Synthesis of 1,2,3-benzotriazole Synthesis of ethyl 2-amino-4,5,6,7-tetrahydrobenzo(b)thiophene-3-carboxylate Activity (Synthesis of certain drugs containing heterocycles)	Student book Essential books Recommended books Practical note		X			x		
2.2.3	Recognize the principles of various tools and instruments, and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.	2.C2.4	2.C2.1 2.C2.4				x			x		
2.3.1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used	2.C3.1.	2.C3.1		Practical notes		X			x		

	in pharmaceutical field.										
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	2.C3.2	2.C3.2	Practical notes		**x**			**x**		
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills..	4.C1.1	4.C1.1	Practical notebook		**X**			**x**		
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and	4.C1.5	4.C1.2								

	effectively in a team.												
4.2.1	Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities	4.C2.1	4.C2.1										

COURSE SPECIFICATIONS

Pharmaceutical Analytical Chemistry III

Second Level– Semester 3

2020-2021

Course Specification of Pharmaceutical Analytical Chemistry III

University: Zagazig Faculty: Pharmacy

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Analytical Chemistry

Academic year / Level: Second level / third semester

Date of specification approval 2020

B- Basic information:

Title: Pharmaceutical Analytical Chemistry III PA 303

Credit Hours: ---

Lectures : 1 hrs/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:

- Explain the features of environmental analytical chemistry and various methods of sampling, samples preparation and analysis of different environmental samples, the physical and chemical composition of water, fat and oil.
- Apply quantitative methods for determination of different impurities in environment.

2- Key elements of Pharmaceutical Analytical Chemistry III :

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
1-1- COMPETENCY: Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1	Explain the importance of environmental analysis
1.C1.2.	- Describe various methods of sampling, samples preparation and standardization of water, oil and fat..
1.C1.3.	- Demonstrate the application of different techniques in quantitative analysis of different pollutants, fat and oil.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE	
2-2- COMPETENCY: **Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.**	
2.C2.1.	Perform chemical reactions for determination of some pollutants in air and soil.
2.C2.2.	Perform laboratory tests for examination of water, fat and oil.
2.C2.3.	Select the most suitable method for preparation and analysis of different environmental pollutants in their matrices.
2-3- COMPETENCY: Handle and dispose biologicals and synthetic/natural pharmaceutical materials /products effectively and safely with respect to relevant laws and legislations.	
2.C3.1.	Handle and dispose chemicals safely.
DOMAIN 4: PERSONAL PRACTICE	
4-1- COMPETENCY **Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills**.	
4.C1.1.	Work as member of team.
4.C1.2.	Manage time and perform a task within time limit.
4.C1.3.	Develop problem solving skills.

D- Contents:

Week No.	Lecture (1 hrs/week)	Practical session (2 hr/week)
1	- The importance of environmental analytical chemistry.	- Determination of O_3 and NO_2 (Demonstration)
2	- Different methods of sampling and sample preparation of environmental pollutants samples.	- Determination of Chloride in water (Mohr method)
3	- Different types of chemical pollutants of air and soil and techniques for their determination.	- Limit test
4	- Physical examination of water	- Limit test
5	- Chemical examination of water	- Determination of water alkalinity
6	- Metals in water and interpretation of analytical results	-Determination of water hardness (complexometric method)
7	**Periodical Exam**	
8	- Water pollution	-Determination of water hardness (soap method)
9	- Purification of water	- Colour test of oil
10	- Physical properties, composition and classification of oil and fat	- Colour test of oil
11	- Chemical properties of oil and fat	**Activity**
12	- Rancidity	- Revision
13	- Hydrogenation and analysis of butter fat	**Practical exam**
14	- General discussion and revision	
15	**Final Exam**	

E- Teaching and Learning Methods:

- Lectures (data show, board)
- Practical sessions
- Problem solving
- Blended learning

F- Student Assessment Methods:

1- Written exam	to assess	1.C1.1,1.C1.2,1.C1.3,2.C2.3,4.C1.3
2- Practical exam	to assess	2.C2.1,2.C2.2, 2.C3.1
3- Oral exam	to assess	1.C1.1, 1.C1.2,1.C1.3,2.C2.3
4- Periodical exam	to assess	1.C1.1, 1.C1.2,1.C1.3,2.C2.3
5-Activities	to assess	4.C1.1, 4.C1.2

Assessment schedule:

Assessment (1): Final written exam	Week 15
Assessment (2): Practical exam	Week 13
Assessment (3): Oral exam	Week 15
Assessment (4):periodical exam	Week 7
Assessment (5): Activities	Week 11

Weighting of Assessment:

Assessment method	Marks	Percentage
Final written exam	50	50%
periodical exam	10	10%
Practical exam	25	25%
Oral exam	10	10%
Activity	5	5%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- Lectures (Computer, board)
- Practical sessions (Chemicals and Glassware)
- Activity
- Open discussion

H- List of References:

1- Course Notes: Student book “Pharmaceutical analytical chemistry III” approved by the analytical chemistry department book ,2020

2- Essential (textbooks):

i- J. Mendham, et al., Vogel's Textbook of Quantitative Chemical Analysis (6th edition);, Addison Wesley Publishing Co., 2000

ii- Daniel C. Harris, Quantitative Chemical Analysis (6th Edition);. (2002).

iii. Roger N. Reeve. Introduction to Environmental Analysis(1st Edition); Wiley publishing., (2002).

3- Recommended books:

i. D. C. Harris, Quantitative Analytical Chemistry (9th edition), W. H. Freeman and Co. (2015)

ii. D. Chowrasia, N. Sharma, Analytical Chemistry. A Qualitative & Quantitative Approach (General Techniques) Knoc education (2015).

iii. O. Hutzinger, et al. The Handbook of Environmental Chemistry. Volume 19.

4- Periodicals, Web Sites, etc

https://www.ekb.eg/

http://chemwiki.ucdavis.edu/

http://en.wikipedia.org/

www.Pubmed.Com and

www.sciencedirect.com

Course Coordinator: Prof. Dr.

Head of Department: Prof. Dr. Hisham Ezzat

Date: 2020 **تم مناقشة واعتماد توصيف المقرر من مجلس القسم بتاريخ**

Matrix I of Analytical Chemistry 3 course

Course Contents / Lectures		1-1-COMPETENCY			2-2-COMPETENCY			2-3-COMPETENCY	4-1-COMPETENCY			
		1.C1.1	1.C1.2	1.C1.3	2.C2.1	2.C2.2	2.C2.3	2.C3.1	4.C1.1	4.C1.2	4.C1.3	
1	- The importance of environmental analytical chemistry	x										
2	- Different methods of sampling and sample preparation of environmental pollutants samples.		x									
3	- Different types of chemical pollutants of air and soil and techniques for their determination.			x			x					
4	- Physical examination of water		x									
5	- Chemical examination of water		x									
6	- Metals in water and interpretation of analytical results		x	x								
7	Midterm exam											
8	- Water pollution		x	x								
9	- Purification of water		x									

10	- Physical properties, composition and classification of oil and fat		x									
11	- Chemical properties of oil and fat		x									
12	- Rancidity		x	x								
13	- Hydrogenation and analysis of butter fat		x	x								
14	- General discussion and revision	x	x	x								
Practical sessions		**1.1.1**	**1.1.2**	**1.1.3**	**2.2.1**	**2.2.2**	**2.2.3**	**2.3.1**	**4.1.1**	**4.1.2**	**4.1.3**	
1	- Determination of O_3 and NO_2 (Demonstration)				x			x	x		x	
2	-Determination of chloride in water (Mohr method)					x		x	x		x	
3	-Limit test					x		x	x		x	
4	- Limit test					x		x	x		x	
5	- Determination of water alkalinity					x		x	x		x	
6	-Determination of water hardness (complexometric method)					x		x	x		x	
7	midterm Exam											
8	-Determination of water hardness (soap method)					x		x	x		x	
9	- Colour test of oil					x		x	x		x	
10	- Colour test of oil					x		x	x		x	
11	activity								x	x	x	

Matrix II of Analytical Chemistry 3 course

National Academic Reference Standards (NARS)		Program key elements	Course key elements	Course contents	Sources	Teaching and learning methods			Method of assessment		
						Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.C1.1	1.C1.1	- The importance of environmental analytical chemistry	Student book Essential books Recommended books Internet	x		x	x		x
			1.C1.2.	- Different types of chemical pollutants of air and soil. - Physical and chemical examination of water - Water pollution -Physical properties and classification of oil and fat - Chemical properties of oil , fat - Rancidity, hydrogenation and analysis of butter fat						

1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/ natural pharmaceutical materials/products.	1.C1.9	1.C1.3	- Different methods of sampling and sample preparation of environmental pollutants samples. - Physical and chemical examination of water - Water pollution -Physical properties and classification of oil and fat - Chemical properties of oil, fat - Rancidity, hydrogenation and analysis of butter fat	Student book Essential books Recommended books Internet	x		x	x		x
2.2.1	Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/ natural pharmaceutical materials.	2.C2.1.	2.C2.1	- Determination of O_3 and NO_2	Practical sessions		x			x	
			2.C2.2	-Determination of chloride in water (Mohr method) -Limit test - Determination of water alkalinity and hardness - Determination of saponification value Colour test of oil							
2-2-3	Recognize the principles of various tools and instruments, and	2.C2.5.	2.C2.3	- Different techniques for determination of chemical pollutants of air and soil and	Student book Essential books Recommended books Internet	x		x	x	x	x

	select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.										
2-3-1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.	2.C3.1.	2.C3.1	- Practical sessions	Practical notes		x			x	
4-1-1	Demonstrate responsibility for team performance and peer evaluation of other team	4.C1.1.	4.C1.1	- Practical sessions - Activity	Practical notes		x			x	

	members, and express time management skills	4.C1.3	4.C1.2								
4-1-2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	4.C1.5.	4.C1.3	- Practical sessions Activity	Practical notes		x			x	

Course Coordinator: Prof. Dr. Gamal Ragab

Head of Department: Prof. Dr. Hisham Ezzat

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

COURSE SPECIFICATIONS

Pharmacognosy II

Second Level– Semester 3

2020-2021

Course Specification of Pharmacognosy II

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

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Pharmacognosy

Academic year/ Level: second level /third semester

Date of specification approval: 25 September 2020

B- Basic information:

Title: Pharmacognosy II Code: **PG303**

Credit Hours: Single, credit hour system

Lectures: 2 hrs/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 microscopical and macroscopical characters and uses of medicinal flowers, barks, woods and seeds as well as identification of their different active constituents and adulteration.

2- Key elements of Pharmacognosy II

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
1-1- COMPETENCY: Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1.	Describe morphological and histological characters of medicinal herbs, fruits, subterranean organs.
1.C1.2.	Identify different active constituents of medicinal uses of, medicinal herbs, fruits, subterranean organs.
1.C1.3.	Outline adulteration of different medicinal medicinal herbs, fruits, subterranean organs and unorganized plant and animal drugs.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE	
2-2- COMPETENCY: Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.	
2.C2.1.	Handle microscope efficiently and design protocols to examine medicinal plants.
2.C2.2.	Use equipments effectively.
2.C2.3.	Examine plant organs in entire and powdered form.
2.C2.4	Determine the active constituents of the studied drugs qualitatively.
DOMAIN 4: PERSONAL PRACTICE	
4-1- COMPETENCY Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.	
4.C1.1.	Work effectively as part of a team.
4.C1.2.	Manage time and plan for work.
4-2- COMPETENCY: Effectively communicate verbally, non-verbally and in writing with individuals and communities.	
4.C2.1	Write and present reports

D- Contents:

Week No	Lecture (2 hrs/week)	Practical session (1hr/week)
1	General introduction for what will be taught all over the term Introduction for the fruits and giving the students the possible references, web sites, text books. Description of the common characters of umbelliferous.	Laboratory Safety Measures Dealing With Microscope. Morphology of some important fruits
2	Description of morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Fennel, Ammi visnaga and Ammi majus.	Identification of Fennel in entire and powdered form.
3	Description of morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Coriander, Anise, , Capsicum, Colocynth, Lemon, bitter orange peel and Senna pods.	Identification of Anise and Ammi visnaga, Ammi majus and coriander in entire and powdered form. Identification of Capsicum and colocynth in entire and powdered form.
4	Evening primrose, Colchicum and mustard macro- and, micro-morphology of the entire and powdered drugs, chemical identification. Unofficial fruits.	Mustard and nux vomica: macro-, and Micro-morphology, powders and chemical identification Activity (report on different pharmaceutical fruits)
5	Introduction to herbs. Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Lobelia.	Morphology of some important herbs. Identification of Mentha and Thyme.
6	Study Morphological And Histological Characters, Constituents, Uses, Chemical Tests And Detection Of Adulteration In Entire And Powdered Form Of Piperment, Thyme, Alfalfa and Echinaceae. Unofficial herbs	Identification of Vinica Activity (report on medical uses of common herbs)
7	Midterm	
8	Introduction to subterranean organs. Activity. Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of, Liquorice	Morphological demonstration for some important roots and rhizomes. Identification of Liquorice
9	Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of senega	Macro-morphology; micro-morphology powder and chemical identification of Ginger and Rhubarb.

	and Ipeca	
10	Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Rhubarb, Ginger.	Identification of un-organized drugs(morphology and chemical tests
11	Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Hydrastis, Valeriana., Unofficial rhizomes	Revision
12	Introduction to Unorganized drugs Study the preparation, collection, active constituents, uses and chemical tests of resins, oleo-resins	Practical exam
13	Study preparation, collection, active constituents, uses and chemical tests of balsams, latex, juice, extracts and gum.	Practical exam
14	Revision	
15	Written and oral exam	

E- Teaching and Learning Methods:

- Lectures (interactive lecture, data show and board)
- Practical sessions
- Self-learning (Group discussion, Group assignment)
- Blended learning

F- Student Assessment Methods

1- Written exam to assess 1.C1.1, 1.C1.2, 1.C1.3

2- Practical exam to assess 2.C1.1, 2.C1.2, 2.C1.3 and 2.C1.4

3- Oral exam to assess 1.C1.1, 1.C1.2, 1.C1.3

4- Activities (group discussion, presentation, net search and pamphlets' of natural drugs) to assess 4.C2.1, 4.C1.1 and 4.C1.2

Assessment schedule:

Assessment (1): midterm	Week 7
Assessment (2): Final Written exam	Week 15
Assessment (3): Activity(group discussion, presentation, net search	Week 6

and pamphlets' of natural drugs)	
Assessment (4): Activity(group discussion, presentation, net search and pamphlets' of natural drugs)	Week 11
Assessment (4): Practical exam	Week 13
Assessment (5): Oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exams	50	50%
Mid term	10	10%
Activity	5	5%
Practical exam	25	25%
Oral exam	10	10%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

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

• For practical: Well-equipped labs

- Chemicals e.g. Hcl, KoH, glycerin and phloroglucinol, glassware, slides, covers, digital balances, flame and water baths

H- List of References:

1- Student´s book approved by Pharmacognosy Department on 2019.

2- Essential Books:

- pharmacognosy , fundmentals,applications and strategies by simone Badal and Rupika Delgoda (2017)

-Trease and Evans, Pharmacognosy, 15thed., Saunders company, Nottingham,U.K. Willium Charles Evans (2003).

3- Recommended Books

Leung A.Y. and Faster" Encyclopedia of Common Natural Ingredients Used in Food, Drugs and Cosmetics".

- Janice, Glimn-Lacy and Peter B. Kaufman, Botany Illustrated, Introduction to plants, major groups, flowering plants families, 2nd ed. Springer **2006**.
- Martindale, "The extrapharmacopeia". 31st Edn., by James, E.F Reynolds. And Kathleen Parfitt, Royal Pharmaceutical Society, London (2007).

4- Periodicals, web sites, etc

Amer. J. Nat. Prod., Phytochemistry, Planta Medica , Fitoterapia.

- A. Fahan, Plant Anatomy, Pergamon Press. **2002.**
- http://www.scribd.com/doc/75980088/Atlas-of-Medicinal-Plants-II
- http://pharmacystudent-prep.blogspot.com
- http://www.pharma-board.com/board/fopgal/index.php

https://www.google.com/search?safe=active&sxsrf=ACYBGNT1wfCQl6DGxZ5ouZYl1QZZfJSrYg:1568843605556&q=Pharmacognosy4all&tbm=isch&source=univ&sa=X&ved=2ahUKEwiel8TurdvkAhVIrxoKHcTHDMAQ7Al6BAgBECQ&biw=1008&bih=584#imgrc=7NmuWomEPl70WM:

Course Coordinators: Prof. Dr. Afaf abd El-Ghany

Head of department: Prof. Dr. Amal Al-Gendy

Date: **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 2020/9/**

Matrix I of Pharmacognosy-II course												
Course Contents		Key elements of Pharmacognosy-II course										
		1-1- COMPETENCY			2-2- COMPETENCY			4-1- COMPETENCY			4-2- COMPETENCY	
Lectures		1.C1.1	1.C1.2	1.C1.3	2.C2.1	2.C2.2	2.C2.3	2.C2.4	4.C1.1	4.C1.2	4.C2.1	
1	General introduction for what will be taught all over the term Introduction for the fruits and giving the students the possible references, web sites, text books. Description of the common characters of umbelliferous.	*										
2	Description of the common characters of umbelliferous. Description of morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Ammi visnaga and Ammi majus.	*	*	*								
3	Description of morphological and	*	*	*								

	histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Coriander, Anise, Fennel, Capsicum, Colocynth, Lemon, bitter orange peel and Senna pods.											
4	Evening primrose, Colchicum and mustard macro-and, micro-morphology of the entire and powdered drugs, chemical identification. Unofficial fruits.	*	*	*								
5	Introduction to herbs. Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and	*										

	powdered form of Lobelia.											
6	Study Morphological And Histological Characters, Constituents, Uses, Chemical Tests And Detection Of Adulteration In Entire And Powdered Form Of Piperment, Thyme, Alfalfa and Echinaceae. Unofficial herbs	*	*	*								
7	Introduction to subterranean organs. Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of, Liquorice	*	*	*								
8	Study morphological and histological	*	*	*								

	characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of senega and Ipeca											
9	Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Rhubarb, Ginger.	*	*	*								
10	Study morphological and histological characters, constituents, uses, chemical tests and detection of adulteration in entire and powdered form of Hydrastis, Valeriana. Unofficial rhizomes	*	*	*								
11	Introduction to Unorganized	*	*	*								

	drugs Study the preparation, collection, active constituents, uses and chemical tests of resins, oleo-resins											
12	Study preparation, collection, active constituents, uses and chemical tests of balsams, latex, juice, extracts and gum.	*	*	*								
	Practical session											
1	Laboratory Safety Measures Dealing With Microscope. Morphology of some important fruits					*						
2	Identification of Fennel in entire and powdered form.						*					
3	Identification of Anise and Ammi visnaga, Ammi majus and coriander in entire and powdered form.						*					

	Identification of Capsicum and colocynth in entire and powdered form.												
4	Mustard and nux vomica: macro-, and Micro-morphology, powders and chemical identification Activity (report on different pharmaceutical fruits)						*			*			
5	Morphology of some important herbs. Identification of Mentha and Thyme.						*						
6	Identification of Vinica Activity (report on medical uses of common herbs)						*			*			
7	Morphological demonstration for some important roots and rhizomes. Identification of Liquorice										*	*	*
8	Macro-morphology; micro-morphology							*	*	*			

Matrix II of Pharmacognosy-II course

demic ce	Program key	Course key	Course contents	Sources	Teaching and learning methods			Weighting of a		
					lecture	practical	Activities (	written	practical	
	powder and chemical identification of Ginger and Rhubarb.												
9	Identification of un-organized drugs(morphology and chemical tests							*	*				
10	Revision.							*	*		*	*	*

JARS	elements	elements				session	reports and presentations) and Field visit	exam	exam & activity	
nstrate anding of edge of ceutical, cal, social, vioral, ative, and sciences.	1.C1.2	1.C1.1	- Overview on the course in pharmacognosy II	Student book Essential books	*			*		
		1.C1.2	-Morphological and histological studies for plant fruits.herbs,subterenean organs in entire and powdered forms, active constituents, uses and chemical test.	Student book Essential books	*			*		
		1.C1.3	adulteration of different medicinal fruits,herbs,subterranean organs	Student book Essential books	*			*		
grate dge from mental to handle, extract, prepare, nd assure ity of c/ natural aceutical /products.	1.C1.9	1.C1.2	- Morphological and histological studies for plant fruits,herbs,subterranean organs in entire and powdered forms, active constituents, uses and chemical test.	Student book Essential books	*	*	*	*	*	
		1.C1.3	adulteration of different medicinal fruits,herbs and subterranean organs	Self learning						
design, ntify, ze, purify, ze, and ardize c/ natural aceutical erials.	2.C2.1	2C.2.1	Uses of microscopes	Practical notes		*			*	
		2.C2.2	Microscopical examination of different flowers	Practical notes		*			*	
		2.C2.3	Morphological and histological studies for plant fruits and herbs in entire and powdered forms	Practical notes		*			*	
		2.C2.4	Morphological and histological studies for subterranean organs in entire and powdered forms	Practical notes		*			*	
nstrate ibility for formance peer n of other embers, ress time nent skills.	4.C1.1 4.C1.3	4.C1.1	**Activity 1** (researches and reports on fruits and herbs with pharmaceutical preparations **Activity 2 (**researches and presentation on pharmaceutical preparations containing subterranean organs**)**	Self learning			*		*	
		4.C1..2					*		*	
emporary ogies and dia to nstrate ctive tion skills.	4.C2.2	4.C2.1					*		*	
							*		*	

Course Coordinators: Prof. Dr. Afaf abd El-Ghany

Head of department: Prof. Dr. Amal Al-Gendy

Date: **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 2020/9/**

COURSE SPECIFICATIONS

Biophysics

Second Level– Semester 3
2020-2021

Course Specification of Biophysics for (2020/2021)

University: Zagazig **Faculty: Pharmacy**

A- Course specifications:

Program(s) on which the course is given: Bachelor of pharmacy program(Pharm D)

Major or Minor element of programs: Major

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

Department offering the course: Biochemistry, Faculty of Pharmacy

Academic year Level: Second level /Semester 3

Date of specification approval:

B- Basic information:

Title: Biophysics Code: MD 303

Credit hours:

- Lectures: 1 hr/week
- Practical: 1 hr/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:

Explain biological phenomena using the principles and techniques of physics and modify these techniques to help diagnosis and treat various disorders

2- Key elements of Biophysics:

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
1-1- COMPETENCY: Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1.	Explain the principles of biophysics
1.C1.2	Outline the structure of cell membrane and mechanisms of transport across the cell membrane.
1.C1.3	Identify mechanisms of signal transduction and mechanism of action of different types of receptors.
1.C1.4	Illustrate the bases of biophysical techniques as ECG , Laser and Radiation and their different applications
1.C1.5	Use the proper abbreviations and symbols related to biophysics
DOMAIN 3: PHARMACEUTICAL CARE	
3-1- COMPETENCY: Apply the principles of body functions to participate in improving health care services using evidence-based data.	
3.C1.1.	Link between membrane defect and related disorders.
3.C1.2	Interpret biophysical measurements including blood pressure ECG
DOMAIN 4: PERSONAL PRACTICE	
4-1- COMPETENCY Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.	
4.C1.1.	Recognise the value and structure of the pharmacy team and of a multiprofessional team

Week No.	Lecture (1hr/week)	Practical session (1hrs/week)
1	-Structure of the plasma membrane	-Lab safety procedures guidelines
2	-Transport across the plasma membrane 1	-Atomic Physics
3	-Transport across the plasma membrane 2	-Biochemical Bonds
4	-Channels and carriers	-The Plasma membrane
5	-Signal Transduction and receptors	-Transport across the plasma membrane
6	- Self learning activity (diagnostic uses of x-ray)	- Practical exam 1
7	-periodical exam	Activity(application of radioactive isotopes in medical field presented as report and ppt)
8	-Biophysical basis of ECG and blood pressure measurement (electrochemical gradient and membrane action potential – action potential in the heart)	-Ion channel
9	- Action potential in the heart (cont.) (ECG technique and interpretation – blood pressure measurement)	-Receptors
10	-Atom and radiation (the quantum model of the atom – electromagnetic spectrum – radioactive decay – types of radiation)	-Water homeostasis
11	-Quantification of radiation (sources of radiation – radiation risks – application of radiology)	-Blood pressure and viscosity
12	Laser technology (laser beam properties and generation)	-Action potential
13	- Laser types , hazards and applications	-Heart electricity and ECG
14	- Revision and open discussion	**-Practical exam 2**
15	-Written exam	

-

- Interactive lectures
- Practical session
- Research assignment
- Self learning
- Blended learning

F- Student Assessment Methods:

1-Written exams to assess: 1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5

2- Practical exams to assess: 3.C1.1, 3.C1.2

3- Activities to assess: 4.C1.1

4- Oral exam to assess: : 1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5

Assessment schedule:

Assessment (1): Written exam	Week 15
Assessment (2): Practical exams	Week 6,14
Assessment (3): Periodical exam	Week 7
Assessment (4): Oral exam	Week 15
Assessment (5): Activity	Week 6, 7

Weighting of Assessment

Assessment method	Marks	Percentage
Written exam	50	50%
Practical exam	25	25%
Periodical exam	10	10%
activity	5	5%
Oral exam	10	10%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- Data show , software , videos and screens.

H- List of references:

1- Course Notes

- Student book of Biophysics part1 approved by biochemistry department2020
- Student book of Biophysics part2 approved by biochemistry department2020

- Practical note of Biophysics approved by biochemistry department2020

2- Essential books

- The biophysics of cell membranes-Epand , Richard M**,** Ruysschaert , Jean Marie (2017)
- Introduction to experimental Biophysics,2nd edition-Jayl Nadeau (2018)
- Membrane biophysics : New insights and methods -HongdaWang , Guohuili (2018)

3- Recommended books

- Fundamentals of Biophysics -Andrey B. Rubin,Wiley-Scrivener (2014)
- Biophysics and neurophysiology of the six sense – NimaRezaei , AmeneSaghazadeh.(2019)

- **Course Coordinators: Dr. Nahla Younis**
- **Head of Department: Dr. Nahla Younis**
- **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ Date:**

Matrix I of Biophysics

Course Contents / Lectures		Key elements of biophysics							
		1-1- COMPETENCY					3- 1COMPETENCY		4-1- COMPETENCY
		1.C1.1	1.C1.2	1.C1.3	1.C1.4	1.C1.5	3.C1.1	3.C1.2	4.C1.1
1	-Structure of the plasma membrane	x	x			X			
2	-Transport across the plasma membrane 1	x	x			X			
3	-Transport across the plasma membrane 2	x	x			X			
4	Channels and carriers	x	x			X			
5	-Signal Transduction and receptors	X		x		X			
6	-Biophysical basis of ECG and blood pressure measurement (electrochemical gradient and membrane action potential – action potential in the heart)	X			X	X			
7	- Action potential in the heart (cont.) (ECG technique and interpretation – blood pressure measurement)	X			X	X			
8	-Atom and radiation (the quantum model of the atom – electromagnetic spectrum – radioactive decay – types of radiation)	X			X	X			
9	-Quantification of radiation (sources of radiation – radiation risks – application of radiology)	X			X	X			
10	Laser technology (laser beam properties and generation)	X			X	X			
11	- Laser types , hazards and applications	x			x	x			
Practical sessions									
1	-Lab safety procedures guidelines						x		
2	-Atomic Physics						X		

3	-Biochemical Bonds						X		
4	-The Plasma membrane						X		
5	-Transport across the plasma membrane						X		
6	-Ion channel						**x**		
7	--Receptors							**X**	
8	-Water homeostasis							X	
9	-Blood pressure and viscosity							X	
10	-Action potential							X	
11	- Self learning activity (diagnostic uses of x-ray)								**x**
12	Heart electricity and ECG							x	**x**
13	Activity(application of radioactive isotopes in medical field presented as report and ppt)								**x**

Matrix II of Biophysics

National Academic Reference Standards NARS		Program key elements	Course key elements	Course contents	Sources	Teaching and learning methods			Weighting of assessment			
						lecture	practical session	self learning	written exam	practical exam	oral exam	Midterm exam
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.C1.1	1.C1.1 1.C1.2 1.C1.3 1.C1.4	-Structure of the plasma membrane -Transport across the plasma membrane 1 -Transport across the plasma membrane 2 Channels and carriers -Signal Transduction and receptors -Biophysical basis of ECG and blood pressure measurement (electrochemical gradient and membrane action potential – action potential in the heart) - Action potential in the heart (cont.) (ECG technique and interpretation – blood pressure measurement) -Atom and radiation (the quantum model of the atom – electromagnetic spectrum – radioactive decay –	Student book Essential books Recommended books	x			x		x	x
1.1.2	Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice	1.C1.8	1.C1.5		Student book Essential books Recommended books	x			x		x	

				types of radiation) -Quantification of radiation (sources of radiation – radiation risks – application of radiology) Laser technology (laser beam properties and generation) - Laser types , hazards and applications								
3.1.3	Monitor and control microbial growth and carry out laboratory tests for identification of infections/ diseases.	3.C1.1	3.C1.1 3.C1.2	-Atomic Physics -Biochemical Bonds -The Plasma membrane -Transport across the plasma membrane -Ion channel --Receptors -Water homeostasis -Blood pressure and viscosity -Action potential - Self learning activity (diagnostic uses of x-ray) Heart electricity and ECG Activity(application of radioactive isotopes in medical field presented as report and ppt)	Student book Essential books Recommended books Practical note		**X**			**X**		
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team	4.C1.1	4.C1.1	- Self learning activity (diagnostic uses of x-ray) Activity(application of radioactive isotopes in medical	internet			**X**				

	members, and express time management skills..			field presented as report and ppt)								

COURSE SPECIFICATIONS

Physiology and Pathophysiology

Second Level– Semester 3
2020-2021

Course specification of Physiology & Pathophysiology

University: Zagazig **Faculty: Pharmacy**

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Pharmacology and toxicology Department

Academic year Level: Second level/ semester 3

Date of specification approval: July 2020

B- Basic information:

Title: Physiology & Pathophysiology Code: MD 304

Credit Hours: 3

Lectures: 2hrs/week

Practical: 1hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to explain the basic principles of physiology of major organ systems and the pathophysiology of common diseases.

2- Key elements of Physiology & Pathophysiology

1-1- COMPETENCY Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1	Outline the basic physiology of major organ systems.
1.C1.2	Illustrate the pathophysiology of common diseases.
1.C1.3	Outline drug classes for the treatment of certain diseases
3-1- COMPETENCY Apply the principles of body functions to participate in improving health care services using evidence-based data.	
3.C1.1	Handle data effectively to recognize physiology/pathophysiology of organ systems
3.C1.2	Assess health profiles of patient cases
3.C1.3	Suggest suitable drug classes for the treatment of certain diseases
3.C1.4	Integrate information from different sources to solve clinical cases.
4-1- COMPETENCY Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.	
4.C1.1	Work effectively as a member of teamwork

D- Contents:

Week No.	Lecture contents (2 hrs/week)	Practical session (1hr/week)
1	Cell physiology Neuromuscular and synaptic transmission	Lab safety rules
2	PNS Physiology Nervous system physiology	Basic principles of case studies
3	Central nervous system physiology	Pathophysiology of Psychosis Pathophysiology of Parkinsonism
4	Central nervous system physiology	Pathophysiology of Alzheimer disease Pathophysiology of Epilepsy
5	Endocrine physiology	Pathophysiology of Diabetes , other hormonal disorders

6	Renal physiology	Pathophysiology of renal failure
7	Midterm exam	
8	Respiratory physiology	Pathophysiology of Asthma Pathophysiology of Cough
9	GIT physiology	Pathophysiology of Hepatitis, Ulcer, Diarrhea, Constipation
10	Cardiovascular system physiology	Pathophysiology of Hypertension
11	Cardiovascular system physiology	Pathophysiology of Heart failure Pathophysiology of Angina
12	The lymphatic system and immunity	Pathophysiology of Inflammation
13	The lymphatic system and immunity	Pathophysiology Infectious disease
14	Revision and open discussion	**Practical exam**
15	Final written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Think/pair/share
- Case study
- Blended learning

F- Student Assessment methods:

1- Written exams to assess: 1.C1.1, 1.C1.2, 1.C1.3

2- Case study in team work to assess : 4.C1.1, 3.C1.4

3- Practical exams to assess: 3.C1.1, 3.C1.2, 3.C1.3, 3.C1.4

4- Oral exam to assess: 1.C1.1, 1.C1.2, 1.C1.3

Assessment schedule

Assessment (1): Midterm exam	Week 7
Assessment (2): Activity (case studies in team work)	Week 9,10
Assessment (3): Practical exam	Week 14

Assessment (4): Final written exam	Week 15
Assessment (5): Oral exams	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Midterm exam	10	10%
Activity (case studies in team work)	5	5%
Practical practice & exam	25	25%
Final written exam	50	50%
Oral exam	10	10%
TOTAL	100	100%

G- Facilities required for teaching and learning:

- For lectures : Black (white) boards, data show, air conditioned classroom
- For practical: Well-equipped labs and chemicals.

H- List of References:

1- Course Notes: Student book approved by Toxicology and Pharmacology department (2020)

- Practical notes approved by Toxicology and Pharmacology department (2020)

2- Essential Books:

i- Essentials of Pathophysiology: Concepts of Altered Health States, 4th ed., CM Porth, (2015), Wolters Kluwer, Philadelphia, USA.

3- Recommended Books:

i- Essentials of anatomy and physiology, 5th ed., VC Scanlo and T Sanders (2007), F. A. Davis Company, Philadelphia, UAS..

4- Periodicals and websites:

i- Advanced Physiology and Pathophysiology: Essentials for Clinical Practice

https://www.springerpub.com/advanced-physiology-and-pathophysiology-9780826177070.html

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Course Coordinator: Assist. Prof. Dr. Waleed Barakat

Head of Department: Prof. Dr. Mona Fouad

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

Matrix I of Physiology & Pathophysiology

Course Contents		Key elements of Physiology & Pathophysiology course								
		1-1- COMPETENCY			3-1- COMPETENCY				4-1- COMPETENCY	
Lectures		**1.C1.1**	**1.C1.2**	**1.C1.3**	**3.C1.1**	**3.C1.2**	**3.C1.3**	**3.C1.4**	**4.C1.1**	
1	Cell physiology Neuromuscular and synaptic transmission	X	X	X						
2	PNS Physiology Nervous system physiology	X	X	X						
3	Central nervous system physiology	X	X	X						
4	Central nervous system physiology	X	X	X						
5	Endocrine physiology	X	X	X						
6	Renal physiology	X	X	X						
7	Respiratory physiology	X	X	x						
8	GIT physiology	X	X	X						
9	Cardiovascular system physiology	X	X	X						
10	Cardiovascular system physiology	X	X	X						
11	The lymphatic system and immunity	X	X	X						
12	The lymphatic system and immunity	X	X	X						
13	Revision and open discussion	X	X	x						
	Practical session									
1	Lab safety rules				X	X	X	X	X	
2	Basic principles of case studies				X	X	X	X		
3	Pathophysiology of Psychosis Pathophysiology of Parkinsonism				X	X	X	X	X	
4	Pathophysiology of Alzheimer disease Pathophysiology of Epilepsy				x	X	X	X		
5	Pathophysiology of Diabetes , other hormonal disorders				X	x	x	X	X	

6	Pathophysiology of renal failure				X	X	X	x		
7	Pathophysiology of Asthma Pathophysiology of Cough				X	X	X	X	X	
8	Pathophysiology of Hepatitis, Ulcer, Diarrhea, Constipation				X	X	X	X		
9	Pathophysiology of Hypertension				X	X	X	X	X	
10	Pathophysiology of Heart failure Pathophysiology of Angina				X	X	X	X		
11	Pathophysiology of Inflammation				X	X	X	X	X	
12	Pathophysiology Infectious disease				x	x	x	X		

x

Matrix II of **Physiology & Pathophysiology** course

National Academic Reference Standards NARS		Program key elements	Course key elements	Course contents	Sources	Teaching and learning methods			Weighting of assessment			
						lecture	practical session	case study/ think-pair-share	written exam	practical exam	oral exam	Midterm exam
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.C1.3	1.C1.1 1.C1.2 1.C1.3	Cell physiology Neuromuscular and synaptic transmission PNS Physiology Nervous system physiology Central nervous system physiology Central nervous system physiology Endocrine physiology Renal physiology Respiratory physiology GIT physiology Cardiovascular system physiology Cardiovascular system physiology The lymphatic system and immunity The lymphatic system and immunity	Student book Essential books	x			x		x	x
1.1.2	Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice	1.C1.8			Student book Essential books	x			x		x	x

3.1.1	Apply the principles of body function and basis of genomics in health and disease states to manage different diseases.	3.C1.1	3.C1.1 3.C1.2 3.C1.3 3.C1.4	Lab safety rules Basic principles of case studies Pathophysiology of Psychosis Pathophysiology of Parkinsonism Pathophysiology of Alzheimer disease Pathophysiology of Epilepsy Pathophysiology of Diabetes , other hormonal disorders Pathophysiology of renal failure Pathophysiology of Asthma Pathophysiology of Cough Pathophysiology of Hepatitis, Ulcer, Diarrhea, Constipation Pathophysiology of Hypertension Pathophysiology of Heart failure Pathophysiology of Angina Pathophysiology of Inflammation Pathophysiology Infectious disease	Practical notes		x			x		
					Practical notes		x			x		
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and	4.C1.1	4.C1.1	Activity				x				

	express time management skills.											

Course Coordinator: Assist. Prof. Dr. Waleed Barakat

Head of Department: Prof. Dr. Mona Fouad

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

COURSE SPECIFICATIONS

General Microbiology and Immunology

Second Level– Semester 3
2020-2021

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 (Pharm D)

Major or Minor element of programs: major

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

Department offering the course: Microbiology and Immunology

Academic year Level: Second Level/Semester3

Date of specification approval: September 2020

B- Basic information:

Title: General Microbiology and Immunology Code: **PM 301**

Credit Hours: 3 hrs

Lectures: 2 hrs/week

Practical: 1 hrs/week

Tutorials: ---

Total hours: 3 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will have good knowledge about, microorganisms, their morphology, diversity, cell structure and function, cultural characteristics, growth, metabolism, role of microorganisms in infectious diseases and microbial pathogenesis. It also clarifies different mechanisms of transport across bacterial cell membrane, metabolic pathways and physiology of bacteria. The course also covers the principles of genetic characters including DNA and RNA structures, replication, different forms of mutation and mutagenic agents. It also explores the basic concepts microbial growth, cultivation and reproduction. Moreover it introduces the modern concepts of medical immunology, with an emphasis on Host parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity. Molecular and cellular immunology,

including antigen and antibody structure, function and reaction between them, effector mechanisms, complement, and cell mediated immunity. Active and passive immunization. Hypersensitivity and in vitro antigen antibody reactions, Immuno-deficiency disorders, Autoimmunity and auto-immune disease, organ transplantation.

2- 2- Key elements of General Microbiology and Immunology

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
1-1- COMPETENCY Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1	Illustrate different types of microorganisms and their way of life. Perform microscopical examinations, biochemical tests and serological reactions for identification of microorganisms
1.C1.2	Define the basic microbial growth conditions and metabolism. Monitor the microbial growth and growth conditions on different types of common culture media.
1.C1.3	Use the proper terms of microbiology and immunology.
1.C1.4	Illustrate the principles of immunology including natural and acquired immunity and antigen–antibody reactions. Identify the functions of immune system in health state and during disease state
1.C1.5	Outline the basis of bacterial genetics
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE	
2-3- COMPETENCY Handle and dispose biologicals and synthetic/natural pharmaceutical materials /products effectively and safely with respect to relevant laws and legislations.	
2.C3.1	Handle basic laboratory equipments, chemicals and biohazards effectively and safely.
2.C3.2	Apply GLP guidelines for safe handling of chemicals and biohazards
DOMAIN 3: PHARMACEUTICAL CARE	
3-1- COMPETENCY Apply the principles of body functions to participate in improving health care services using evidence-based data.	
3.C1.1	Analyze and interpret experimental results of serological reactions
3.C1.2	Analyze and interpret experimental results for differentiation between different microorganisms
DOMAIN 4: PERSONAL PRACTICE	
4-1- COMPETENCY Express leadership, time management, critical thinking, problem solving, independent and	

team working, creativity and entrepreneurial skills.	
4.C1.1	Work effectively as a member of a team
4.C1.2	Develop internet search and computer skills

D- Contents:

Week	Lecture contents (2 hrs/week)	Practical session (1hrs/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	• Serological reactions

	• Autoimmune diseases	(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
- Internet search and poster preparation
- Others : videos
- Blended learning

F- Student Assessment methods:

1- Written exams to assess: 1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5, 3.C1.1, 3.C1.2

2- Activity to assess: 4.C1.1, 4.C1.2

3- Practical exams to assess: 2.C3.1, 2.C3.2, 3.C1.1, 3.C1.2

4- Oral exam to assess1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5, 3.C1.1, 3.C1.2

Assessment schedule

Assesment (1): Midterm exam	Week 7
Assessment (2): Activity (Poster)	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
Activity & Periodical exam	15	15%
Practical exam	25	25%
Final written exam	50	50%

Oral exam	10	10%
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...

Course Coordinator: Prof Dr/ Nehal Elsayed

Head of Department: Prof / Nehal Elsayed Yousef

Date تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix1 of General Microbiology and Immunology

Course content		Key elements of principles of General Microbiology and Immunology									
		DOMAIN 1- FUNDAMENTAL KNOWLEDGE					DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE		DOMAIN 3: PHARMACEUTICAL CARE		DOMAIN 4: PERSONAL PRACTICE	
		1.C1.1	1.C1.2	1.C1.3	1.C1.4	1.C1.5	2.C3.1	2.C3.2	3.C1.1	3.C1.2	4.C1.1	4.C1.2
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		
3	• Brief description of viruses, fungi and protozoa • Immunity – innate immunity Immune system **Practical** • Differential	x			x		x		x	x		

	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**
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		**x**				**x**	**x**			

	• Microscopic examination of fungi										
7	• **Midterm exam**						**x**				
8	Microbial metabolism Agglutination and CFT **Practical** Cultivation of bacteria: types of common culture media and growth conditions		**x**					**x**			
9	Microbial metabolism Immunologic mechanisms of tissue damage **Practical** Biochemical activities of and identification of bacteria		**x**		**x**						
10	Microbial metabolism • Hypersensitivity reactions **Practical** • serological reactions **Activity**		**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**				
13	• Genetic variation				**x**	**x**	**x**				

	• Tumour immunology										
14	• Genetic Transfer among bacteria • Immunoprophylaxis				**x**	**x**	**x**				

Matrix2 of General Microbiology and Immunology

National Academic Reference Standards (NARS)		Program key elements	Course key elements	Course contents	Sources	Teaching and learning methods			Method of assessment			
						lecture	practical session	Activity	written exam	practical exam	oral exam	Midterm exam
1-1-1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice	1.C1.2	1.C1.2	•Growth and cultivation of bacteria, bacterial growth curve	Student book Essential books	x			x		x	x
			1.C1.5	•Microbial genetics •Genetic variation •Genetic Transfer among bacteria	Student book Essential books	x			x		x	x
		1.C1.3	1.C1.3	•Introduction to immunology •Acquired immune response 1.Cell mediated immunity •Humoral immune response And Cytokines	Student book Essential books	x			x		x	x
			1.C1.4	Cells of immune response Immunogens or antigens •Agglutination and complement fixation reactions •Hypersensitivity reactions	Student book Essential books	x			x		x	x

1.1.2	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	1.C1.8	1.C1.3	•General introduction to microbiology and historical review •Introduction to immunology	Student book Essential books	x			x		x	x
2.3.1	Handle and dispose chemicals and pharmaceutical preparations safely.	2.C3.1.	2.C3.1	•General introduction to microbiology and historical review •Introduction to immunology			x	x		x		
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	2.C3.2	2.C3.2	•Agglutination and complement fixation reactions •Growth and cultivation of bacteria, bacterial growth curve	Practical notes		x	x		x		
3-1-3	Monitor and control microbial growth and carry out laboratory tests for identification of infections/ diseases.	3.C1.3	3.C1.1 3.C1.2		practical notes							

4-1-1	Manage time as evidenced by the ability to plan and implement efficient mode of working.	4.C1.3	4.C1.1		Student book practical notes			x			x	x
4.1.2	Retrieve and evaluate information from different sources to improve Professional competencies.	4.C1.4	4.C1.2		Practical notes Recommended books Internet			x				x

COURSE SPECIFICATIONS

Pharmaceutics I

Second Level– Semester 3
2020-2021

Course specification of Pharmaceutics I

University: Zagazig Faculty: Pharmacy

A- Course specifications:

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

Major or Minor element of programs: Major

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

Department offering the course: Pharmaceutics Department

Academic year Level: Second level/ semester3

Date of specification approval: September 2020

B- Basic information:

Title: Pharmaceutics I Code: **PT 303**

Credit Hours: ---

Lectures: 2hr/week

Practical: 1hr/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall aim of the course

This course provides students with knowledge of the system of weights, measures, mathematical expertise and pharmaceutical calculations requisite to the compounding, dispensing, and utilization of drugs in pharmacy practice. It is also concerned with all manufacturing formulations aspects, packaging, storage and stability of liquid dosage forms including solutions (aqueous and non-aqueous), suspensions, emulsions and colloids with emphasis on the technology and pharmaceutical rationale fundamental to their design and development. The incompatibilities occurring during dispensing are also considered.

2- Key elements of Pharmaceutics I

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
1-1- COMPETENCY: Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
1.C1.1.	Define different liquid dosage forms, different measuring systems and different types of incompatibility.
1.C1.2.	Enumerate the ideal characters of different liquid pharmaceutical dosage forms; solutions, emulsions, suspensions, colloids.
1.C1.3.	Describe the different methods for preparation of solutions, emulsions, suspensions and colloids.
1.C1.4.	Illustrate the ideal characters for packaging, labeling, storing and distribution process in industry
1.C1.5	Select the appropriate ingredients used in formulation of different liquid dosage forms
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE	
2-2- COMPETENCY: Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.	
2.C2.1	Apply good handling and disposal skills of different chemicals and pharmaceutical preparations.
2.C2.2.	Perform different pharmaceutical calculations
2.C2 3.	Compound, dispense and label different pharmaceutical dosage forms safely and effectively
2.C2.4	Identify incompatibility problems with proper overcoming strategies
2-3- COMPETENCYL: Handle and dispose biologicals and synthetic/natural pharmaceutical materials /products effectively and safely with respect to relevant laws and legislations.	
2.C3.1.	Handle pharmaceutical preparations safely
DOMAIN 4: PERSONAL PRACTICE	
4-1- COMPETENCY	

Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.	
4.C1.1.	Develop team working skills

D- Contents:

Week No.	Lecture contents (2 hr/week)	Practical session (1hr/week)
1	**Fundamentals of measurements and calculations** - Arabic and Roman Numerals **Systems of Measurement** -The Metric System	**Pharmaceutical calculations:** Measurement Systems
2	**Systems of Measurement (Cont.)** - Apothecary and Avoirdupois systems (The Common Systems) - Household system	**Pharmaceutical calculations:** Dilution and concentration of Solutions
3	- Dilution and concentration of Solutions - Reducing and Enlarging Formulas, - percentage and ratio strength problems - Calculation of Doses for Children	**Pharmaceutical calculations:** Reducing and Enlarging Formulas, percentage and ratio strength problems
4	- Introduction to liquid dosage forms **Solutions:** Advantages and disadvantages Of Solutions, Aqueous liquid dosage forms pharmaceutical Solutions	-Preparation of aromatic water -Preparation of Simple mixture of liquorice
5	**Solutions:** Non aqueous liquid dosage forms Sweet and/or viscid liquid dosage forms, Manufacture of solutions	-Preparation Ammonium Chloride Cough Mixture -Preparation of Ear drops
6	**Emulsion:** General description, Advantages and disadvantages of pharmaceutical emulsions, emulsion instability and theories of emulsification	-Methods of preparation of emulsions a- wet method b- dry method
7	**Mid-term exam**	
8	**Emulsion:** Formulation of pharmaceutical emulsions, Excipients used in pharmaceutical emulsions, Manufacture of emulsions	Castor oil emulsion (wet method) Castor oil emulsion (Dry Method)
9	**Suspension:** Introduction, advantages and disadvantages of Suspension, Reasons for preparing suspension, Characters of ideal suspension	Mineral oil emulsion (wet method) Mineral oil emulsion (Dry Method)
10	**Suspension:** Formulation and	preparation of Suspension

	evaluation of suspensions, Stability of suspensions	
11	**Colloids:** introduction, Pharmaceutical application of colloids, Types of colloidal systems	determination of sedimentation rate
12	**Colloids:** Preparation of colloids, purification, Properties of colloids (kinetic, optical, electrical)	Incompatibility
13	**-Stability of colloids** - Electrical Double Layer, Nernst And Zeta Potentials, Importance Of Zeta Potential	**Practical exam**
14	- **Incompatibility:** definition, types, examples, importance, intentional incompatibilities.	
15	**Final written exam**	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Think/pair/share
- Blended learning

F- Student Assessment methods:

1- Written exams to assess: 1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5

2- Practical exams to assess: 2.C2.1, 2.C2.2, 2.C2.3, 2.C2.4, 2.C3.1

3- Activity within labs: 4.C1.1

4- Oral exam to assess: 1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5

Assessment schedule

Assessment (1): Periodical exams	Week 7
Assessment (2): Final written exams	Week 15
Assessment (3): Practical exams & practical work	Weekly
Assessment (4): Oral exams	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Periodical exam	10	10%

Final Written exam	50	50%
Activities within labs	5	5%
Practical exams	25	25%
Oral 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, digital balance, water bathes

H- List of References:

1- Course Notes: Student book of physical pharmacy approved by pharmaceutics department 2020-2021

2- Essential Books:

- The science of dosage form design, Aulton, M. E., 2nd edition, Churchill Livingstone, London. (2002).
- Pharmaceutical Dosage Forms: Rational design and formulation with excipients, Larry L. Augsburger, Stephen W. Hoag, Informa Healthcare USA, (2008)
- Pharmaceutical Calculations, 12th edition, Howard C. Ansel and Mitchell J. Stoklosa.(2005)
- Aulton, Michael E. Pharmaceutics: The Science of Dosage Form Design. 2 nded.Churchill, 2002

3- Recommended Books:

- Remington's Pharmaceutical Science. Alfonso, Gennaro, R., 17 th edn, Mack Publishing Company, USA. (1985).
- Handbook of Pharmaceutical Manufacturing Formulations: Liquid products, Sarfaraz Niazi, Sarfaraz K. Niazi, CRC Press, (2004).
- Pharmacy Calculations for Technicians, 3rd edition, EMCParadigm puplishing. Don A. Ballington and Tova Wiegand Green. (2007)

4- Periodicals and websites:

www.emedicine.com

www.sciencedirect.com

www.pubmed.com

Course Coordinator: Dr. Azza Ali Hasan Soliman

Head of Department: Dr. Nagia Ahmed El-megrab

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

Matrix I of Pharmaceutics I course

Course Contents		Key elements of Pharmaceutics I course										
		1-1- COMPETENCY					2-2- COMPETENCY				2-3- COMPETENCY	4-1- COMPETENCY
Lectures		1.C1.1	1.C1.2	1.C1.3	1.C1.4	1.C1.5	2.C2.1	2.C2.2	2.C2.3	2.C2.4	2.C3.1	4.C1.1
1	Systems of Measurement	x										
2	Systems of Measurement (Cont.)	X										
3	Different Calculations problems	X										
4	Liquid dosage forms Solutions	X	x	x	x	x						
5	Solutions (Cont.)	X			x	x						
6	Emulsion	X	x	x	x	x						
7	Emulsion (Cont.)	X	x	x	x	X						
8	Suspension	X	x	x	X	X						
9	Suspension (Cont.)	X	X		X	X						
10	Colloids	x	x	x	x	X						
11	Colloids (Cont.)	x	X	x	x	x						
12	Electrical Double Layer, Nernst And Zeta Potentials, Importance Of Zeta Potential		x									
13	Incompatibility	x								x		
Practical session												
1	Measurement Systems						x	X	x			

2	Dilution and concentration of Solutions						x	x	X			
3	Reducing and Enlarging Formulas, percentage and ratio strength problems						x	x	x			
4	-Preparation of aromatic water -Preparation of Simple mixture of liquorice						x	x	x		x	x
5	-Preparation Ammonium Chloride Cough Mixture -Preparation of Ear drops						X	x	x		x	
6	-Methods of preparation of emulsions						x	X	x		x	
7	Castor oil emulsion (wet method) Castor oil emulsion (Dry Method)						x	X	x		x	
8	Mineral oil emulsion (wet method) Mineral oil emulsion (Dry Method)						x	X	x		x	x
9	preparation of Suspension						x	x	x		x	
10	determination of sedimentation rate						x	x	x		x	
11	Incompatibility									x		x

Matrix II of Pharmaceutics I course

National Academic Reference Standards NARS		Program key elements	Course key elements	Course contents	Sources	Teaching and learning methods			Weighting of assessment			
						lecture	practical session	case study/ think-pair-share self learning	written exam	practical exam& activity	oral exam	Midterm exam
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.C1.2	1.C1.1	Systems of Measurement Systems of Measurement (Cont.) Different Calculations problems Liquid dosage forms Solutions Solutions (Cont.) Emulsion Emulsion (Cont.) Suspension Suspension (Cont.) Colloids Colloids (Cont.)	Student book Essential books	x			x		x	x

			1.C1.2	Liquid dosage forms Solutions	Student book Essential books	x			x		x	x
			1.C1.3	Solutions (Cont.) Emulsion	Student book Essential books	x			x		x	x
			1.C1.4	Emulsion (Cont.) Suspension	Student book Essential books	x			x		x	x
			1.C1.5	Suspension (Cont.) Colloids Colloids (Cont.)	Student book Essential books	x			x		x	x
2-2-2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.	2.C2.2. 2.C2.3	2.C2.1 2.C2.2 2.C2.3 2.C2.4	Measurement Systems Dilution and concentration of Solutions Reducing and Enlarging Formulas, percentage and ratio strength problems -Preparation of aromatic water -Preparation of	Practical notes		x			x		

2.3.1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.	2.C3.1	2.C3.1	Simple mixture of liquorice -Preparation Ammonium Chloride Cough Mixture -Preparation of Ear drops -Methods of preparation of emulsions Castor oil emulsion (wet method) Castor oil emulsion (Dry Method) Mineral oil emulsion (wet method) Mineral oil emulsion (Dry Method) preparation of Suspension determination of sedimentation rate			x			x		

				Incompatibility								
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	4.C1.1	4.C1.1		Practical notes		x			x		

Course Coordinator: Dr. Azza Ali Hasan Soliman

Head of Department: Dr. Nagia Ahmed El Megrab

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