

Fourth Year – First Term

2019-2020

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COURSE SPECIFICATIONS

Phytochemistry-2

Fourth year – first Term 2019-2020

Course Specification of Phytochemistry II

University:	Zagazig	Faculty:	Pharmacy
A- Course sp	ecifications:		
Program(s) on v	which the course is given	n: Bachelor of Phari	nacy
Major or Minor	element of programs:	Major	
Department off	ering the program:		
Department off	ering the course:	Pharmacognosy	
Academic year/	/Level:	Fourth year / sen	nester 7
Date of specific	cation approval:	30 /09/2019	
B- Basic info	rmation:		
Title: Phytoche	emistry II	Code: PG415	
Credit Hours: -			
Lectures: 2 hrs			
Practical: 2 hrs			
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 alkaloids and volatile oils.

2-Intended Learning Outcomes of Phytochemistry II

A-	Knowledge and Understanding
a1	Define, state and classify certain classes of natural products (alkaloids, volatile oils), their physical properties and biosynthetic pathways.
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 alkaloids and volatile oils.
a5	Recognize volatile oils as a type of alternative medicine (aromatherapy).
B-	Professional and Practical skills
b 1	Handle chemicals, solvents and equipment safely.
b2	Examine different alkaloids and volatile oils.
b3	Prepare a lab research report on alkaloids and volatile oils analysis.
C-	Intellectual skills
c1	Choose the proper pharmaceutical terms and abbreviations for certain classes of natural (alkaloids, volatile oils).
c2	Estimate certain classes of naturally occurring products (alkaloids, volatile oils).
c3	Predict the appropriate method for isolation and purification of different alkaloids, 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.
d 4	Develop critical thinking and problem-solving skills.

D- Contents:

Week	Lecture (2hrs/week)	Practical session
No.		(2hrs/week)
1	Alkaloids	General alkaloids chemical
	Classification, isolation and	tests and isolation
	properties	
2	Alkaloids	Chemical tests for
	Biosynthesis of alkaloids	ephedrine and caffeine.
3	Alkaloids	(Activity)
	Non-heterocyclic, pyridine and	Get a copy of pamphlets for
	piperidine alkaloids	pharmaceutical products
		containing alkaloids
4	Alkaloids	Chemical tests for brucine,
	Tropane alkaloids	quinine and papaverine.
5	Alkaloids	Chemical tests for
	Quinoline and isoquinoline	strychnine and atropine.
	alkaloids	
6		(Activity)
	Alkaloids	Get a copy of pamphlets for
	Indolic and terpenoid alkaloids	pharmaceutical products
		containing alkaloids
7	Midterm written exam	
8	Alkaloids	Preparation of volatile oils.
	Xanthine and imidazole alkaloids	Determination of purity of
		volatile oils
9	Volatile oils	Chemical tests for
	- Occurrence, physical properties.	identification of volatile oils
	- Preparation and determination.	(Activity)
	- Chemistry and uses.	Get a copy of pamphlets for
	- Classification of vol. oils	pharmaceutical products
	components.	containing volatile oils
10	-Biosynthesis of volatile oils	Assay of benzaldehyde.
11	Volatile oils	Assay of Eugenol in clove

	Hydrocarbons.	oil.
	Oxygenated components.	Assay of Cineol in
		Eucalyptus oil.
12		Practical exam 1
	Volatile oils Oxygenated components. N and S containing components.	
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.
- Videos.
- 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 (midterm, final) to assess a1, a2, a3, a4, a5, c1, c2, c3 and d4.

- 2- Activity to assess b3, c1, c2, c3, d1, d2, d3 and d4.
- 3- Practical exam to assess b1, b2, b3.
- 4- Oral exam to assess a1, a2, a3, a4, a5, c1, c2, c3 and d4.

Assessment schedule:

Assessment (1): Midterm written exam	Week 7
Assessment (2): Activity	Weeks 3, 6, 9
Assessment (3): Practical exam	Weeks 12, 13
Assessment (4): Final written exam	Week 15
Assessment (5): Oral exams	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Midterm written exam	10	10%
Activity	5	5%
Practical exam	20	20%
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:

Student book of Phytochemistry II 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 AlGendi

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 30 سبتمبر 2019 Date:

	Matrix I of Phytochemistry II course															
		ILOs of Phytochemistry II course														
Course Contents					Knowledge and understanding					Intellectual skills			General and transferable skills			
	Lectures	a1	a2	a3	a 4	a5	b1	b2	b3	c1	c2	c3	d1	d2	d3	d4
1	Alkaloids															
	Classification, isolation and properties	х								х		х				
2	Alkaloids															
-	Biosynthesis of alkaloids	x														
3	Alkaloids															
5	Non-heterocyclic, pyridine and piperidine alkaloids		х	х	х					х	х	х				
4	Alkaloids															
_	Tropane alkaloids		х	х	х					х	х	х				
5	Alkaloids															
2	Quinoline and isoquinoline alkaloids		х	х	х					Х	х	х				
6	Alkaloids															
	Indolic and terpenoid alkaloids		х	х	х					х	х	х				
7	Alkaloids															
	Xanthine and imidazole alkaloids		х	Х	Х					х	х	х				
	Volatile oils															
8	- Occurrence, physical properties.															
	- Preparation and determination.	х	x	x	х					х	х	х				I

	- Chemistry and uses.															
	- Classification of vol. oils components.															<u> </u>
9	-Biosynthesis of volatile oils	х														
	Volatile oils															
10	Hydrocarbons.															
	Oxygenated components.		х	х	x	x				х	х	х				
11	Volatile oils															
11	Oxygenated components.		x	х	х	x				х	х	х				
12	Volatile oils															
12	N and S containing components.		х	х	х	x				х	х	х				
	Practical sessions															
13	General alkaloids chemical tests and isolation						х	x	х			х			х	
14	Chemical tests for ephedrine and caffeine.						х	х	х						x	
15	Alkaloids in pharmaceutical products (activity).						х	х	х	х	х		х	x	х	x
16	Chemical tests for brucine, quinine and papaverine.						х	x	х						х	
17	Chemical tests for strychnine and atropine.						х	х	х						х	
18	Alkaloids in pharmaceutical products (activity).						х	х	х	х	х		х	х	х	х
19	Preparation of volatile oils.															
19	Determination of purity of volatile oils						х	x	х			х			x	
20	Chemical tests for identification of volatile oils															
20	Volatile oils in pharmaceutical products (activity).						х	х	х	х	х		х	x	x	x
21	Assay of benzaldehyde						х	х	х						х	
22	Assay of Eugenol in clove oil.															
22	Assay of Cineol in Eucalyptus oil.						х	x	х						X	

	Matrix II of Phytochemistry II course														
National Academic Reference Standards (NARS)		Prog ram	Co urs				ng and le methods		Method of assessment						
		ILO s	e IL Os	Course contents	Sour ces	Lecture/ interacti ve lecture/ videos	Practica l session/ videos	Self learnin g	Writt en exam	Practic al exam	Or al ex am	Ac tivi ty			
				Theoretical sessions											
2.4	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.	A12, C9	a1, c1, c3	Alkaloids Classification, isolation and properties	Student book Essentia 1 books	X			x		x				
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A12	a1,	Alkaloids Biosynthesis of alkaloids	Essentia 1 books Internet	х		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.	A30, C9	a2, a3, a4, c1, c2, c3	Alkaloids Non-heterocyclic, pyridine and piperidine alkaloids	Student book Essentia 1 books Internet	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,	A30, C9	a2, a3, a4,	Alkaloids Tropane alkaloids	Student book Essentia 1 books Internet	x			x		x				

2.13, 4.5	 identification, and standardization of active substances from different origins. 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. 	A30, C9	c1, c2, c3 a2, a3, a4, c1, c2, c3	Alkaloids Quinoline and isoquinoline alkaloids	Student book Essentia l 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.	A12, A30, C9	a1, a2, a3, a4, c1, c2, c3	Alkaloids Indolic and terpenoid alkaloids	Student book Essentia l books Internet	x		x	х	
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.	A12, A30, C9	a1, a2, a3, a4, c1, c2, c3	Alkaloids Xanthine and imidazole alkaloids	Student book Essentia l books Internet	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.	A30, C9	a2, a3, a4, a5, c1, c2, c3	Volatile oils - Occurrence, physical properties. - Preparation and determination. - Chemistry and uses. - Classification of vol. oils components.	Student book Essentia l books Internet	X		x	x	
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A12	a1	-Biosynthesis of volatile oils	Student book Essentia 1 books Internet	х		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.	A12, A30, C9	a1, a2, a3, a4, a5, c1, c2, c3	Volatile oils Hydrocarbons. Oxygenated components.	Student book Essentia l 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,	A12, A30, C9	a1, a2, a3, a4, a5, c1,	Volatile oils Oxygenated components.	Student book Essentia l books Internet	x		x	x	

2.4 2.13, 4.5	identification, and standardization of active substances from different origins. 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.	A12, A30, C9	c2, c3 a1, a2, a3, a4, a5, c1, c2, c3	Volatile oils N and S containing components.	Student book Essentia l books Internet	X		X		X	
				Practical sessions							
3.2 3.11, 4.5 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. 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, B19, C9, D10	b1, b2, b3, c3, d3	General alkaloids chemical tests and isolation	Practica l notes		X		X		
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, B6, B19, C9, D10	b1, b2, b3, c1, c2, d3	Chemical tests for ephedrine and caffeine.	Practica l notes		X		x		

3.2 3.4, 3.11, 4.2, 4.5, 5.2, 5.3, 5.4, 5.9, 5.10	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 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.	B2, B6, B19, C3, C9, D2, D3, D4, D10, D11	b1, b2, b3, c1, c2, c3, d1, d2, d3, d4	Alkaloids in pharmaceutical products (activity).	Practica l notes Internet Visits for commu nity pharma cies	Х	Х	Х	x
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, B6, B19, C9, D10	b1, b2, b3, c1, c2, d3	Chemical tests for brucine, quinine and papaverine.	Practica l notes	Х		X	

3.2 3.4, 3.11, 4.2, 4.5, 5.2, 5.3, 5.4, 5.9, 5.10	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 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.	B2, B6, B19, C3, C9, D2, D3, D4, D10, D11	b1, b2, b3, c1, c2, c3, d1, d2, d3, d4	Chemical tests for ergometrine, strychnine and atropine. Alkaloids in pharmaceutical products (activity).	Practica l notes Internet Visits for commu nity pharma cies	X	X	X	x
3.2 3.11, 4.5 5.9,	Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations. 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, B19, C9, D10	b1, b2, b3, c3, d3	Preparation of volatile oils. Determination of purity of volatile oils	Practica l notes	X		Х	
3.2 3.4, 3.11, 4.2, 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 Comprehend and apply GLP, GPMP,	B2, B6, B19, C3, C9,	b1, b2, b3, c1, c2,	Chemical tests for identification of volatile oils Volatile oils in pharmaceutical products	Practica l notes Internet Visits for commu nity	Х	X	х	X

5.2, 5.3, 5.4, 5.9, 5.10	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.	D2, D3, D4, D10, D11	c3, d1, d2, d3, d4	(activity).	pharma cies				
3.2	Handle chemicals and pharmaceutical products effectively and safely with	B2,	b1,	Assay of Benzaldehyde					
3.4,	respect to relevant laws and legislations. Extract, isolate, synthesize, purify,	B6,	b2,						
3.11,	identify, and /or standardize active	B19,	b3,		Practica				
4.5	substances from different origins. Conduct research studies and analyze the	D10	d3		l notes				
5.0	results					v		v	
5.9, 3.2	Implement writing and presentation skills.Handle chemicals and pharmaceutical	B2,	b1,	Assay of Eugenol in clove		X		X	
2.4	products effectively and safely with		· · ·	• •					
3.4,	respect to relevant laws and legislations. Extract, isolate, synthesize, purify,	B6,	b2,	oil.	Desetion				
3.11,	identify, and /or standardize active	B19,	b3,	Assay of Cineol in	Practica 1 notes				
4.5	substances from different origins. Conduct research studies and analyze the	D10	d3	Eucalyptus oil.	Thotes				
5.9,	results Implement writing and presentation skills.					х		X	

Course Coordinator: Prof Dr. Mahmoud AbdAlaal

Head of Department: Prof Dr. Amal AlGendi

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 30 سبتمبر Date: 2019

COURSE SPECIFICATIONS

Clinical Biochemistry-1

Fourth year – first Term 2019-2020

Course Specification of Clinical Biochemistry I

Zagazig **University: Faculty: Pharmacy A- Course specifications:** Program(s) on which the course is given: Bachelor of Pharmacy Major or Minor element of programs: Major Department offering the program: _____ Department offering the course: Biochemistry department Academic year/Level: Fourth year/First term Date of specification approval: Sept. 2019 **B-Basic information:** Title: Clinical Biochemistry I Code: BC 412 Lectures : 2 hrs/week Practical: 2 hrs/week Tutorials: ____

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

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

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

 a1 significance in clinical practice. a2 Outline disorders of carbohydrates, lipids and protein metabolism. a3 Recognize different inflammatory markers and their diagnostic value. a4 Illustrate etiology and clinical features of endocrine system. a5 Mention different markers of tumor markers. a6 Distinguish clinical biochemistry in pediatrics and geriatrics. B- Professional and Practical skills b1 Handle chemicals and biological samples safely. b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 		
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 a3 Recognize different inflammatory markers and their diagnostic value. a4 Illustrate etiology and clinical features of endocrine system. a5 Mention different markers of tumor markers. a6 Distinguish clinical biochemistry in pediatrics and geriatrics. B- Professional and Practical skills b1 Handle chemicals and biological samples safely. b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	a1	significance in clinical practice.
 a3 value. a4 Illustrate etiology and clinical features of endocrine system. a5 Mention different markers of tumor markers. a6 Distinguish clinical biochemistry in pediatrics and geriatrics. B- Professional and Practical skills b1 Handle chemicals and biological samples safely. b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	a2	Outline disorders of carbohydrates, lipids and protein metabolism.
 a5 Mention different markers of tumor markers. a6 Distinguish clinical biochemistry in pediatrics and geriatrics. B- Professional and Practical skills b1 Handle chemicals and biological samples safely. b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	a3	Recognize different inflammatory markers and their diagnostic value.
 a6 Distinguish clinical biochemistry in pediatrics and geriatrics. B- Professional and Practical skills b1 Handle chemicals and biological samples safely. b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	a4	Illustrate etiology and clinical features of endocrine system.
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 b1 Handle chemicals and biological samples safely. b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	аб	Distinguish clinical biochemistry in pediatrics and geriatrics.
 b2 Perform laboratory tests to identify various diseases. C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	B-]	Professional and Practical skills
 C- Intellectual skills c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	b1	Handle chemicals and biological samples safely.
 c1 Apply good laboratory practice in pharmacy practice. c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	b2	Perform laboratory tests to identify various diseases.
 c2 Assess different analytical methods used for different metabolites and biological samples. c3 Analyze and interpret quantitative data in a suitable form. c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	C-	Intellectual skills
 and biological samples. Analyze and interpret quantitative data in a suitable form. Integrate scientific information from different sources in clinical biochemistry practice. General and Transferable skills Develop both written and oral communication. Evaluate information from different sources to improve professional abilities. 	c 1	Apply good laboratory practice in pharmacy practice.
 c4 Integrate scientific information from different sources in clinical biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	c2	Assess different analytical methods used for different metabolites and biological samples.
 biochemistry practice. D- General and Transferable skills d1 Develop both written and oral communication. d2 Evaluate information from different sources to improve professional abilities. 	c3	Analyze and interpret quantitative data in a suitable form.
d1Develop both written and oral communication.d2Evaluate information from different sources to improve professional abilities.	c4	Integrate scientific information from different sources in clinical biochemistry practice.
d2 Evaluate information from different sources to improve professional abilities.	D-	General and Transferable skills
abilities.	d 1	Develop both written and oral communication.
12 Work offectively as a member of a tage	d2	Evaluate information from different sources to improve professional abilities.
ds work effectively as a member of a team.	d3	Work effectively as a member of a team.
d4 Write reports and present it.	d4	Write reports and present it.
d5 Develop critical thinking and problem solving abilities.	d5	Develop critical thinking and problem solving abilities.

D- Contents:

Week No.	Lecture	Practical session
	(2hrs/week)	(2 hrs/week)
1	 Introduction to clinical biochemistry. Proteins and proteins of 	
	inflammation and the immune system.	in studying DNA genes.
3		Carbohydrates
4	• Cancer biology and tumor markers	metabolism disorders + case study
5		• Protein metabolism
6	• Disorder of carbohydrate metabolism	disorders + albumin assay
7	• Midterm	• Lipid metabolism
8	• Disorders of lipid metabolism	disorder + case study
9	• Disorders of endocrine system	• Practical exam 1 (case +sheet)
10		 Practical exam 2+ presentation
11		
12	• Clinical biochemistry in	
13	pediatrics and gerriatrics.	
14	- Revision & Open discussion	
15	Final exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Case study

• Self learning on different topics followed by report writing and presentation

F- Student Assessment Methods:

1- Written exam	to assess	a1, a2, a3, a4, a5, a6, c4
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- 2- Activity to assess d1, d2, d3, d4, d5
- 3- Practical exam to assess b1, b2, b3, c1, c2, c3, d1, d2, d3, d4, d5

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

Assessment schedule:

Assessment (1): Midterm	Week 7
Assessment (2): Final exam	Week 15
Assessment (3): Oral exam	Week 15
Assessment (4): Practical exam 1	Week 9
Assessment (5): Practical exam 2	Week 10

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	50	50%
Midterm	10	10%
Practical exam	20	20%
Activity	5	5%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

• Black (white) board, Data show, Laboratory equipment (spectrophotometer, water bath, centrifuge) and Chemicals.

H- List of References:

1- Course Notes: Student book of Clinical Biochemistry I approved by biochemistry department 2019-2020

- Practical notes of Clinical Biochemistry I approved by biochemistry department 2019 -2020.

2- Essential books:

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

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

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

3- Recommended books:

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

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

iii- Essentials of medical biochemistry with clinical cases; BahagavanN.V, Chung-Eun Ha; ElsevierInc. (2011).

4- Periodicals and websites:

https://labtestsonline.org

Indian J. of Clinical Biochemistry

Egyptian J. of biochem. and molecular biology.

Annals of Clinical Biochemistry

Arab J. of Laboratory Medicine,

J. of Cardiovascular diseases.

www.Pubmed.Com

www.sciencedirect.com.

Course Coordinators:

Head of department:

D

	Matrix I of Clinical biochemistry I course																	
		ILOs of clinical biochemistry I course																
	Course Contents			Knowledge and understanding				Profess practio	Intellectual skills				General and transferable skills					
	Lectures	a1	a2	a3	a4	a5	a 6	b1	b2	c1	c2	c3	c4	d1	d2	d3	d4	d5
1	Introduction to clinical biochemistry	x																
2	Proteins and proteins of inflammation and the immune system.			x														
3 4	Cancer biology and tumor markers			X			X					x	x					
5 6	Disorder of carbohydrate metabolism		X				X											
7	Midterm																	
8	Disorders of lipid metabolism		x									х	х					
9 10 11	Disorders of endocrine system				X x x	X X X						X	X					
12 13	Clinical biochemistry in pediatrics and gerriatrics						x x											X
14	Revision and open discussion						~											
	Practical sessions																	
1	Lab safety rules & molecular techniques							х	х		х		x					

2	employed in studying DNA genes.					x	x	x	x						
3	Carbohydrates metabolism disorders + case					X	х	х	х						
4	study					х	x	x	x						
5	Protein metabolism disorders + albumin assay				x	x	x	x	x						
6					Х	х			X		Х		X	X	X
7	Lipid metabolism disorder + case study					х			х		х				х
8	•					х			Х		Х				x
9	Practical exam 1										х		x	x	
10	Practical exam 2				X	x	x	x	x	x	х	х	x	x	х

			Ma	trix II of Clir	nical biocl	nemistr	y I cour	'se							
	al Academic	Program	Course	Course	Sources		ing and le methods	0	Method of assessment						
	ce Standards NARS)	ILOs	ILOs	contents	Sources	Lecture	Practical session	Self learning	Written exam	Practical exam	Periodical exam	Oral exam			
2.1	Principles of body function in health		al	Identify different clinical biochemistry terms and principle and their significance in clinical practice.	Student book Essential books	x			x		x	x			
	function in health and disease states as well as basis of genomic and different biochemical pathways regarding their correlation with different diseases.	A4	a2	Outline disorders of carbohydrates, lipids and protein metabolism.	Student book Essential books	x			x		x	x			
2.11	different diseases.	A25	a3	Recognize different inflammatory markers and their diagnostic value.	Student book Essential books 28	x			x		x	x			

	Etiology, epidemiology,	A27	a4	Illustrate etiology and clinical features of endocrine system and bone diseases.	Student book Essential books	X		X		X
2.12	laboratory diagnosis and clinical features of different diseases and their pharmaco-	A28	a5	Mention different markers of tumor markers.	Student book Essential books	Х		X		x
	therapeutic approaches		аб	Distinguish clinical biochemistry in pediatrics and geriatrics.	Student book Essential books	X		X		x
3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	Lab safety rules & molecular techniques employed in studying DNA genes.	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	b2	Protein metabolism disorders + albumin assay	Practical notes		X		X	

4.2	Comprehend and apply GLP,GPMP, GSP and GCP guidelines in pharmacy practice	C3	c1	Lab safety rules & molecular techniques employed in studying DNA genes.		X		X	
4.7	Apply various principles to determine the characteristics of biopharmaceutical products.	C12	c2	molecular techniques employed in studying DNA genes.	Practical notes	X		X	

4.13	Analyze and interpret experimental results as well as published literature	C18	c3	Protein metabolism disorders + albumin assay Carbohydrates metabolism disorders + case study Lipid metabolism disorder + case study	Practical notes		X		X		
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice	C19	c4	Cancer biology and tumor markers. Disorders of lipid metabolism. Disorders of endocrine system.	Student book, essential books	Х		x		X	x

5.1	Communicate clearly by verbal and written means	D1	d1	Lab safety rules & molecular techniques employed in studying DNA genes. Protein metabolism disorders + albumin assay Carbohydrates metabolism disorders + case study Lipid metabolism disorder + case study	Practical notes Recommended books Internet	Х	Х	Х	
5.2	Retrieve and evaluate information from different sources to improve professional competencies	D2	d2	Activity (Case study- Report)	Recommended books Internet	X	X	X	
5.3	Work effectively in a team	D3	d3	Activity (Case study- Report)	Recommended books Internet	X	х	х	

5.9	Implement writing and presentation skills	D10	d4	Activity (Case study- Report)	Recommended books Internet		Х	Х	х	
5.10	5.10 Implement writing and thinking, problem- solving and decision- making abilities. D11	D11	d5	Revision- open discussion	Student book Essential books Recommended books Internet	х		Х		x
		and decision-		Activity (Case study- Report)	Recommended books Internet		X	х	x	

COURSE SPECIFICATIONS

Bioassay -1

Fourth year – first Term 2019-2020

Course Specification of Bioassay-1

University:

Zagazig

Faculty:

Department

Fourth year /First term

Pharmacy

A- Course specifications:

Program(s) on which the course is given:Bachelor of PharmacyMajor or Minor element of programs:MajorDepartment offering the program:------Department offering the course:Pharmacology & Toxicology

Academic year/Level: Four Date of specification approval: October 2019 **B- Basic information:**

Code: PT 414

Title: Bioassay (1) Credit Hours: ---Lectures: 2 hrs/week Practical: 2 hrs/week Tutorials: ---Total: 3 hrs/week **C- Professional information:**

1-Overall Aims of the Course:

- 1. On completion of the course, the student will be able to:
- 2. Explain the basic principles of biostatistics.
- 3. Choose and apply the proper statistical tests for evaluation of experimental results.
- 4. Explain recent methods of biological screening and standardization of drugs.
- 5. Illustrate animal behavioral assays and their applications.
- 6. Describe processes of drug approval.
- 7. Identify how clinical trials are designed.

2-Intended Learning Outcomes of Bioassay-1 course

A-	A- Knowledge and Understanding								
a1	Mention the basic principles and methods of biostatistics								
a2	Outline different types of biological assay of pharmaceutical compounds								
a3	Illustrate the process of drug approval process & design of clinical trials								
B-]	B- Professional and Practical skills								
b1	Perform statistical analysis of experimental results using suitable statistical methods								
b2	Handle tools (devices & computers) used in bioassay labs in a professional & safe way								
b3	Construct proper research methodology and analyse the results								
b4	Use the appropriate method for screening and standardization of bioactive compounds								
C-	C- Intellectual skills								
c1	Compare experimental results and deduce probable statistical significance of any observed changes								
c2	Select suitable laboratory techniques for biological assay of drugs								
D-	D- General and Transferable skills								
d1	Work effectively as a member of a team.								
d2	Manage time to achieve targets within deadlines.								
d3	Use computer-based statistical methods and internet communication								
d4	Write and present reports.								

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session
		(2hrs/week)
1	Biostatistics: Introduction	Biostatistics
2	Biostatistics: Descriptive statistics	Biostatistics
3	Biostatistics: Theoretical probability distributions	Biostatistics
4	Biostatistics: Hypothesis testing	Biostatistics
5	Biostatistics: Applications	Biostatistics (Activity Report)
6	Biostatistics: Applications	Biostatistics (Activity Report)
7	Periodic Exam	Periodic Exam
8	Pharmacological screening and standardization	Animal behavioural tests
9	Animal bioassays	Animal behavioural tests
10	Animal bioassays	Animal behavioural tests
11	Drug Approval processes	Animal behavioural tests
12	Design of clinical studies	Practical exam
13	Design of clinical studies	Practical exam
14	Revision	
15	Final written exam	

E- Teaching and Learning Methods:

- Lectures (include videos).
- Practical sessions (include videos).
- Self-learning (group assignment)

F- Student Assessment Methods:

- 1- Written exam (periodic, final) to assess a1, a2, a3, c1, c2.
- 2- Activity (group assignment) to assess skills like: d1,d2,d3, d4.
- 3- Practical exam to assess b1, b2, b3, b4
- 4- Oral exam to assess a1, a2, a3, c1, c2.

Assessment schedule:

Assessment (1): Periodic exam	Week 7
Assessment (2): Activity	Week 5,6
Assessment (3): Practical exam	Week 12,13
Assessment (4): Final written exam	Week 15
Assessment (5): Oral exams	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Periodic exam	10	10%
Activity	5	5%
Practical exam	20	20%
Final written exam	50	50%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

• Black (white) board, Data show, Computers, a biostatistics program.

H- List of References:

1- Course Notes: Student book of bioassay – 1 approved by pharmacology and toxicology department.

- Practical notes of bioassay-1 approved by the Pharmacology and

Toxicology Department.

2- Essential books:

i- A Practical Approach to Using Statistics in Health Research: From Planning to Reporting, 1st ed, 2018).

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

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

iv. Clarke's Isolation and Identification of Drugs (second edition); Moffat

A.C., Jackson J. V., Moss M. S., widdop B.; London The Pharmaceutical Press (1986).

3- Recommended books:

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

4- Periodicals and websites:

Aquilina A. The extemporaneous compounding of paediatric medicines at

Mater Dei Hospital. Journal of the Malta College of Pharmacy

Practice.Issue 19, 28 – 30, 2013.

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

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Course Coordinator: Assistant Prof.Dr. Waleed Barakat Head of Department: Prof.Dr. Mona Foad. Date: م مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ / 2019/10 م

	Matrix I of Bioassay-1 course													
		ILOs of Biochemistry 1 course												
	Course Contents			Knowledge and understanding			onal al ski		Intellectual skills		General and transferable skills			
	Lectures	a1	a2	a3	b1	b2	b3	b4	c1	c2	d1	d2	d3	d4
1	Biostatistics: Introduction	x												
2	Biostatistics: Descriptive statistics	x												
3	Biostatistics: Theoretical probability distributions	x												
4	Biostatistics: Hypothesis testing	x												
5	Biostatistics: Applications	x												
6	Biostatistics: Applications	x												
7	Pharmacological screening and standardization		X											
8	Animal bioassays		x											
9	Animal bioassays		x											
10	Drug Approval processes			х										
11	Design of clinical studies			x										
12	Design of clinical studies			х										
13	Revision	Х	х	х										

	Practical sessions	a1	a2	a3	b1	b2	b3	b4	c1	c2	d1	d2	d3	d4
14	Biostatistics				х	х	х							
15	Biostatistics				х	х	х							
16	Biostatistics				х	х	х							
17	Biostatistics				х	х	х							
18	Biostatistics				х	х	х							
19	Biostatistics				х	х	х							
20	Animal behavioural tests					х		х						
21	Animal behavioural tests					х		х						
22	Animal behavioural tests					х		х						
23	Animal behavioural tests					х		х						
20	Activity										х	х	Х	Х

			Μ	atrix II of Bi	oassay-1 o	course						
	National Academic Reference Standards		Course	Course	Sources	Teaching and learning methods			Method of assessment			
	(NARS)	am ILOs	ILOs	contents		Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam	
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental	A2	a2	principles of Pharmacolog ical screening and standardizati on	Student book Essential books	x			x		x	
	sciences as well as pharmacy practice.	A7	a1	principles of Biostatistics	Student book Essential books	x			x		x	
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A13	a2	Animal bioassays	Student book	x			x		x	
2.20	Principles of proper documentation and	A39	a3	Drug Approval	Student book	х			х		X	

	drug filing systems.			processes & Design of clinical studies						
2.17	Methods of biostatistical analysis and pharmaceutical calculations	A35	a1	Biostatistics	Student book	X		X		X
3.2	Handle and dispose chemicals and pharmaceutical preparations safely.	B2	b2	Biostatistics labs	Practical notes		X		X	
3.4	Extract, isolate, synthesize, purify, identify, and /or	B7	b1	Biostatistics labs	Practical notes		x		x	
	standardize active substances from different origins		b4	Animal bioassays	Practical notes		X		X	
3.11	Conduct research studies and analyze the results.	B19	b3	Biostatistics Animal bioassay			X		X	
Ex NARs	Apply proper documentation & drug filling system in pharmacy practice.	B20		methods	Practical notes Internet websites					

4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins	C10	c2	Animal bioassays	Student book Practical notes	x	x		x		x
4.13	Analyze and interpret experimental results as well as published literature	C18	c1	Biostatistics & Activity	Student book Practical notes internet websites	x	X		x		x
5.3	Work effectively in a team	D3	d1	Activity	Internet websites			х		х	
5.4	Use numeracy, calculation and statistical methods as well as information technology tools.	D4	d3	Activity	Internet websites			X		x	

5.8	Demonstrate creativity and time management abilities	D9	d2	Activity	Internet websites		x	x	
5.9	Implement writing and presentation skills	D10	d4	activity	Internet websites		x	x	

COURSE SPECIFICATIONS

Toxicology -1

Fourth year – first Term 2019-2020

Course specification of Toxicology-1 University: Zagazig **Faculty: Pharmacy A- Course specifications:** Program (s) on which the course is given: Bachelor of Pharmacy Major or Minor element of programs: Major Department offering the course: Pharmacology and ToxicologyDepartment Academic year Level: Fourth year/ First semester October 2019 Date of specification approval: **B-Basic information:** Title: Toxicology-1 Code: **PT 415** Credit Hours: ---Lectures: 2hrs/week Practical: 2hrs/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 mechanism of toxicity, target organ and treatment with different drug groups as well as for ensic chemistry applications.

2- Intended Learning Outcomes of Toxicology-1 (ILOs)

 a1 Describe the basic mechanism of toxicity. a2 Define forensic chemistry and its basic applications. a3 Illustrate the response of different body systems to toxici a4 Demonstrate the toxic effects of some drug groups and agents. a5 Describe the basic approach for the treatment of toxicity. B- Professional and Practical skills b1 Handle and dispose chemicals safely 	other
 a3 Illustrate the response of different body systems to toxici a4 Demonstrate the toxic effects of some drug groups and agents. a5 Describe the basic approach for the treatment of toxicity. B- Professional and Practical skills 	other
 a4 Demonstrate the toxic effects of some drug groups and agents. a5 Describe the basic approach for the treatment of toxicity. B- Professional and Practical skills 	other
 a4 agents. a5 Describe the basic approach for the treatment of toxicity. B- Professional and Practical skills 	
B- Professional and Practical skills	
b1 Handle and dispose chemicals safely	
b2 Assess toxicity profiles of some xenobiotics	
b3 Detect the presence of poisons in purified samples.	
Monitor the toxic effects of some agents on blood and t	issue
samples	
C- Intellectual skills	
Determine the risk of drug use according to the target of	organ
of toxicity	
c2 Integrate information from different sources to solve for	ensic
chemistry problems.	
D-General and Transferable skills	
d1 Work effectively as a member of teamwork	
d2 Develop critical thinking , decision making and pro	blem
solving abilities	

D- Contents:

Week	Lecture contents (2 hrs/week)	Practical session (2hrs/week)
No.		
110.		
1	- Introduction to toxicology	Dermatology cases1
		(electrical burn, frost bite)
2	- Approach to treatment	Dermatology cases 2
		Allergic contact dermatitis, photo
		allergic contact dermatitis)
3	-Heavy metals part1	Discussion of toxicology
	(Pb - Hg)	symptoms of
		ethanol,salicylates,acetone and
		nicotine
4	- Heavy metals part2	Discussion of toxicology
	(Fe – Mg)	symptoms of paracetamol,
		novalgin, salicylates, imipramine,
5	Haavy matals part?	quinine Forensic tests1
3	- Heavy metals part3 (Cu – As)	(ethanol,salicylates,acetone and
	(Cu - As)	nicotine toxicity)
6	- Pesticides	Forensic tests2(paracetamol,
U	- I esticides	novalgin, salicylates, imipramine,
		quinine)
7	- Midterm exam	
8	- Toxic effects of solvents & vapors	Tissue spots
•		
9	- Toxic response of immune	Blood spots
	& respiratory systems	
10	- Toxic responses of the kidney&liver	Activity cases in team work of
10	- Toxic responses of the Rune yearver	heavy metals
11	- Toxic responses of the nervous	Activity cases in team work of
	systems&eye	pesticides, gas& vapor
12	- Toxic responses of blood	- Practical exam 1 (spots)
13		Practical exam 2 (dermatology
	-Toxic responses of cardio vascular	& forensic)
	system	
14	- Animal& Food Poisoning	
	-Forensic chemistry	
15	-Written exam	

E- Teaching and Learning Methods:

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

F- Student Assessment methods:

- 1- Written exams to assess: a1, a2, a3, a4, a5, c1, c2,c3
- 2- Case study in team work to assess:c2, d1, d2
- 3- Practical exams to assess: b1, b2, b3, b4
- 4- Oral exam to assess: a1, a2, a3, a4,a5,c1, c2, c3

Assessment schedule

Assessment (1):Midterm exam	Week 7
Assessment (2):Activity (case studies in	Week 10,11
team work)	
Assessment (3):Practical exam	Week 12, 13
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	20	20%
Final written exam	50	50%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities required for teaching and learning:

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

• For practical: Well-equipped labs and chemicals.

H- List of References:

1- Course Notes:Student book of Toxicology (1) approved by Toxicology and Pharmacology department (2019)

- Practical notes of Toxicology (1) approved by Toxicology and Pharmacology department (2019)

2- Essential Books:

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

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

iii- Illustrated Toxicology: with study questions; Gupta, Meric (2018).

3- Recommended Books:

- i- Integrated Pharmacology; Curtis, Suiter, Walker, Hottman; Mosby, London, UK.
- ii- Poisoning & Drug overdose (seventh edition); Olson, IK .
- iii- Fundamental of toxicology.

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.

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

Course Coordinator: Ass.Prof.Dr. Shimaa El-Shazly Head of Department: Prof.Dr. Mona Fouad

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

	N	Aatri	x I o	f To	oxico	ology	y-1							
						ILO	s of 7	Foxi	colo	gy-1	course	•		
	Course Contents			ledge rstand					onal a al skil		Intelle	ectual skills	l g	nnsferab e and eneral skills
	Lectures	a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	d 1	d2
1	Introduction to toxicology	Х		X	Х	X								
2	- Approach to treatment	X		X	Х	X								
3	Heavy metals part1	Х		X	Х	X					X	Х		
4	Heavy metals part2	Х		X	Х	X					Х	Х		
5	Heavy metals part3	Х		х	Х	X					Х	Х		
6	Pesticides	Х		х	Х	Х					Х	Х		
7	Toxic effects of solvents & vapors	X		x	Х	X					X	Х		
8	8 Toxic responses of immune and respiratory systems				X						X	Х		
9	Toxic responses of the kidney & liver	X		X	Х	X X					X	X		
10	Toxic responses of the ave knorvous system			x	X	X					X	Х		

11	Toxic response of blood	x				X					X		Х		
12	Toxic response of cardiovascular system	X				Α					X		Х		
13	Animal & food poisoning	X									X		Х		
14	Forensic chemistry		x									x			
		Pra	actica	al ses	sion	•		•	•			•			
1	Dermatology cases1 (electrical burn, frost bite)						X								
2	Dermatology cases 2 Allergic contact dermatitis, photo allegic contact dermatitis)						X	X	x						
3	Discussion of toxicology symptoms of ethanol,salicylates,acetone and nicotine						x			Х					
4	Discussion of toxicology symptoms of paracetamol, novalgine, salicylates, imipramine, quinine						X			X					
5	Forensic tests1 (ethanol,salicylates,acetone and nicotine toxicity)						X			x					
6	Forensic tests2(paracetamol, novalgine, salicylates, imipramine, quinine)						X			X					
7	Tissue spots						х			Х	х				
8	Blood spots						х			х	х				
9	Activity cases of metals heavy						х							х	х

10	Activity cases of pesticides, gas& vapor						х							х	Х	
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				Matrix II of	f Toxico	logy-1	course					
	National Academic					Teach	ing and l methods	U	Wei	ighting o	f asses	sment
Sta	Reference ndards NARS	Program ILOs	Course ILOs	Course contents	Sources	lecture	practical session	case study/ think- pair- share	written exam	practical exam	oral exam	Midterm exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	Α7	al	 Introduction to toxicology Approach to treatment Toxic effects of solvents & vapors Toxic response of immune & respiratory systems Toxic responses of the kidney & liver Toxic responses of the nervous systems & eye Toxic responses of blood Toxic responses 	Student book Essential books	x			x		x	Х

				of cardio vascular system						
			a2	-Forensic chemistry	Student book Essential books	x		x	x	х
2.16	Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	A33, A34	a3 a4 a5	 Introduction to toxicology Approach to treatment Toxic effects of solvents & vapors Toxic response of immune & respiratory systems Toxic responses of the kidney & liver Toxic responses of the nervous systems & eye Toxic responses of blood Toxic responses of cardio vascular system 	Student book Essential books Student book Essential books	x		X	x	x

3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	Forensic tests1 (ethanol, salicylates, acetone and nicotine toxicity) Forensic tests2(paracetamol, novalgine, salicylates, imipramine, quinine)	Practical notes	x	x	x	
3.7	Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens	B13, B14	b2 b3 b4	- Discussion of toxicology symptoms of paracetamol, novalgin, salicylates, imipramine, quinine Forensic tests1 (ethanol, salicylates, acetone and nicotine toxicity) Forensic tests2(paracetamol, novalgine, salicylates, imipramine, quinine)	Practical notes	x	x	x	

4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions	C14	c1 c2	 Approach to treatment Toxic effects of solvents & vapors Toxic response of immune & respiratory systems Toxic responses of the kidney & liver Toxic responses of the nervous systems & eye Toxic responses of blood Toxic responses of cardio vascular 	Student book Essential books Student book Essential books	x		x	x	x
5.3	Work effectively in a team	D3	d1	Activity cases of metals heavy Activity cases of pesticides, gas& vapor	Internet		x			

	Implement writing and thinking, problem- solving and decision- making abilities	D11	d2		case study/ think- pair-share		x	x					
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Course Coordinator: Ass.Prof.Dr. Shimaa El-Shazly

Head of Department: Prof.Dr. Mona Fouad

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

COURSE SPECIFICATIONS

Medicinal Chemistry-3

Fourth year – first Term 2019-2020

Course specification of Medicinal Chemistry-3

University: Zagazig

Faculty: Pharmacy

Medicinal chemistry department

Fourth year/ First semester

Code: MC412

Major

October 28, 2019

A- Course specifications:

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

Major or Minor element of programs:

Department offering the course: Academic year Level:

Date of specification approval:

B- Basic information:

Title: Medicinal Chemistry-3

Credit Hours:

Lectures: 2hrs/week

Practical: 2hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall aim of the course

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

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

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

D- Contents:

Week No.	Lecture (2bm/mode)	Practical session
1	(2hrs/week) -Non-steroidal antiinflammatory agents: (introduction, salicylates, p- Aminophenols, pyrazoles & derivatives, N-Arylanthranilic acid)	(2hrs/week) - Functional group analysis and their applications -Assay of prescription
2	 Aryl acetic acid derivaties. Aryl propionic acid derivatives. Oxicams and Uricosuric agents -Cox -2 selective inhibitors 	-Titrimetric analysis
3	 -Narcotic analgesics: (natural & semisynthetic narcotic analgesics) -Narcotic antagonists. -synthetic narcotic analgesics 	 -Assay of acetylsalicylic acid (Aspirin) in powder form -Activity(case study)
4	-Drugs acting on the autonomic nervous system: sympathomimetic agents	-Assay of acetylsalicylic acid (Aspirin)in Tablets or suppositories form
5	-Sympathomimetic agents -Parasympathomimetic agents	-Assay of paracetamol -Activity(written reports)
6	-Parasympathomimetic agents: cholinergic antagonists Adrenergic blocking agents	-Assay of Novalgin in tablets or suppositories
7	Midterm exam	
8	-Drugs acting on central nervous system: (central nervous system depressants, sedative and hypnotics)	-Assay of Novalgin in ampoule form
9	-General anesthetics Antiepileptic	 Assay of ibuprofen Activity (case study)

10	Major tranquilizer	Assay of ketoprofen
11	Minor tranquilizer	-Assay of indomethacin
12	Local anesthetics: (P-Aminobenzoic acid derivatives, dialkylaminoalkyl ester, amide derivatives)	-Assay of chloral hydrate
13	Central nervous system stimulants: (analeptics, antidepressants)	-Practical exam (1)
14	- Central sympathomimetic agents and psychedelics	-Practical exam (1)
15	- Final written exam.	<u>.</u>

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self -learning (Internet, report writing)
- Case study.

F- Student Assessment Methods:

1- Written exam	to assess	a1,a2,c2,c3
2- Activity	to assess	d1, d2, d3
3- Practical exam	to assess	b1,b2,c1,c3,d1,d2,d3
4- Oral exam	to assess	a1,a2,c2,c3

Assessment schedule:

Assessment (1): final Written exam	Week 15
Assessment (2): mid term exam	Week 7
Assessment (3): Activity	Week 3,5,9
Assessment (4): Practical exams	Week 13, 14
Assessment (4): Oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
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Midterm exam	10	10%
Final written exam	50	50%
Activities	5	5%
Practical exam	20	20%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

• Black (white) board, Data show, laboratory equipments and chemicals.

H- List of References:

1- Course Notes: Student book of Medicinal chemistry (3) approved by medicinal chemistry department 2019

- Practical notes of Medicinal chemistry (3) approved by medicinal chemistry department 2019

2- Essential Books (Text Books)

i- Wilson & Griswold's Textbook of Organic: Medicinal and Pharmaceutical Chemistry; Wilson, Charles Owens; Beale, John Marlowe; Block, John H.; Block, John H.; Griswold, Ole; Wiley-Interscience (2011).

ii- Foye's Principles of Medicinal Chemistry; Williams, David A., William O. Foye, and Thomas L. Lemke; Lippincott Williams and Wilkins (2013).

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

3- Recommended books

An Introduction to Medicinal Chemistry; Patrick, Graham L, Oxford (2014)

4- Periodicals, Web Sites, etc

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

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

http://www.pharmacopoeia.co.uk/ www.Pubmed.Com www.sciencedirect.com

Course Coordinator: Prof .Dr. Mohamed Baraka Head of department: Prof. Dr. Kamel Metwally Date:

تم مناقشة واعتماد توصيف المقرر من مجلس القسم المقرر بتاريخ 28/10/2019

	Matrix I of Medicinal Chemistry 3 course												
		ILOs of Medicinal Chemistry 3 course											
	Course Contents	a	Knowledge and understanding		Professional and practical skills		Intellectual skills			General and transferable skills			
	Lectures	a1	a2	b1	b1 b2 c1 c2 c3 d1 d2				d2	d3			
1	Nonestroidal antiinflammatory agents Salicylates, p-Aminophenols, Pyrazoles & derivatives ,N-Arylanthranilic acid.	x	X				X	x					
2	Aryl acetic acid, Oxicams and Uricosuric agents	x	X				X	X					
3	Narcotic analgesics, Natural & Semisynthetic narcotic analgesics Narcotic antagonists Synthetic narcotic analgesics	x	x				x	x					
4	Drugs acting on the autonomic nervous system: Sympathomimetic agents	x	X				X	X					
5	Sympathomimetic agents Parasympathomimetic agents	X	X				x	x					

6	Parasympathomimetic agents Cholinergic antagonists Adrenergic blocking agents	X	x		X	X		
7	Drugs acting on central nervous system: (central nervous system depressants, sedative and hypnotics)	X	x		X	X		
8	General anesthetics Antiepileptic							
		х	х		Х	Х		
9	Major tranquilizer	x	x		X	X		
10	Minor tranquilizer Central nervous system stimulants Analeptics,Antidepressants		x		X	x		
11	Local anesthetics P-Aminobenzoic acid derivatives Dialkylaminoalkyl ester Amide derivatives	x	x		X	x		
12	Central nervous system stimulants: (analeptics, antidepressants)	x	x		X	x		
13	- Central sympathomimetic agents and psychodelics	x	x		X	X		

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

			Ma	atrix II of Medicina	l Chemisti	y 3 Co	ourse				
I	National Academic Reference	Program	Course	e Course contents	Sources	Teach	ing and lo methods	<u> </u>	Method of assessment		
Standards (NARS)		ILOs	ILOs	Course contents	Sources	lecture	practical session	Case study	written exam	practical exam	oral exam
				Drugs acting on the autonomic nervous system	student book ,essential books	X			Х		x
2.5	Principles of drug design, development and synthesis.			Local anesthetics	Student book	X			х		x
		A15	a1	Drugs acting on central nervous system	Student book	X			X		x
				Nonestroidal antiinflammatory agents	student book, essential books	Х			Х		x
				Narcotic analgesics	Student book	X			Х		х
	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra- indications, ADRs and drug interactions.		a2	Drugs acting on the autonomic nervous system	student book, essential books	X			X		x
2.13		A30		Local anesthetics	Student book	X			X		x
				Drugs acting on central nervous system	Student book	х			X		x

				Nonestroidal antiinflammatory agents	student book essential books	Х		X		X
				Narcotic analgesics	Student book	х		х		X
				Titrimetric analysis	Practical notes		x		Х	
3.2	Handle and dispose chemicals and pharmaceutical preparations safely.	B2	b1	Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form , Novalgin in tablets or suppositories form& in ampoule form, paracetamol,indomethacin, ibuprofen,chloral hydrate&prescription	Practical notes		x		x	
				Functional group analysis and their applications	Practical notes		X		Х	
3.4	Perform synthesis,	B7	b2	Titrimetric analysis	Practical notes		x		X	

	purification, identification and standardization of active substances from different origins			Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form , Novalgin in tablets or suppositories form& in ampoule form, paracetamol,indomethacin, ibuprofen, ketoprofen,chloral hydrate&prescription	Practical notes	Х		Х	
				Functional group analysis and their applications	Practical notes	Х		Х	
				Titrimetric analysis	Practical notes	Х		Х	
4.2	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	C3	c1	Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form , Novalgin in tablets or suppositories form& in ampoule form, paracetamol,indomethacin, ibuprofen, ketoprofen, chloral hydrate&prescription	Practical notes	X		X	
				Functional group analysis and their applications	Practical notes	x		х	

	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw			Drugs acting on the autonomic nervous system Local anesthetics	student book	X X		 x		x x
	materials as well as pharmaceutical	C6	c2	Drugs acting on central nervous system	student book	X		X		x
	preparations			Nonestroidal antiinflammatory agents	student book	Х		Х		x
				Narcotic analgesics	student book	Х		Х		Х
4.3				Drugs acting on the autonomic nervous system	student book	Х		х		Х
				Local anesthetics	student book	Х		Х		х
		С7	c3	Drugs acting on central nervous system	student book	Х		Х		х
				Nonestroidal antiinflammatory agents	student book ,essential books	Х		х		X
				Narcotic analgesics,	student book	Х		х		х
				Titrimetric analysis	Practical notes		Х		Х	

				Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form , Novalgin in tablets or suppositories form& in ampoule form, paracetamol,indomethacin, ibuprofen, ketoprofen, chloral hydrate&prescription	Practical notes	X		Х	
				Functional group analysis and their applications	Practical notes	х		Х	
5.2	Retrieve and evaluate information from different sources to improve professional competencies	D2	d1	Activities	Practical notes/ Internet		x		
5.3	Work effectively in a team	D3	d2	Assay of acetylsalicylic acid (Aspirin)in powder form ,in Tablets or suppositories form , Novalgin in tablets or suppositories form& in ampoule form, paracetamol,indomethacin, ibuprofen,ketoprofen, chloral hydrate&prescription	Practical notes	x		X	

				Activities	Practical notes/ Internet		X		
5.9	Implement writing and presentation skills	D10	d3	Activities	Practical notes/ Internet		Х		

Course Coordinator: Prof .Dr. Mohamed Baraka

Head of department: Prof. Dr. Kamel Metwally

Date:

تم مناقشة واعتماد توصيف المقرر من مجلس القسم المقرر بتاريخ 28/10/2019

COURSE SPECIFICATIONS

Medical Microbiology

Fourth year – first Term 2019-2020

Course specification of Medical Microbiology

University: Zagazig

Faculty: Pharmacy

A- Course specifications:

Program (s) on which the course is given: Bachelor of PharmacyMajor or Minor element of programs:MajorDepartment offering the program:------Department offering the course:Microbiology and ImmunologyAcademic year Level:Fourth year studentsDate of specification approval:September 2019

B- Basic information:

Title: Medical Microbiology Lectures: 3 hrs/week Practical: 1 hrs/week Total: 3.5 hrs/week Code: MI413

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to Illustrate the etiology, pathogenesis, clinical picture, laboratory diagnosis as well as therapeutic regimen of different bacterial, fungal and viral diseases. Perform the diagnostic laboratory tests for identification of the infectious agents. Specify the appropriate vaccination, treatment and preventive measures for each infectious agent. Develop the critical thinking skills and communicate efficiently with patients and health care professionals.

2- Intended Learning Outcomes of Medical Microbiology(ILOs)

A-	Knowledge and Understanding
a1	Outline the principles of host-parasite relationship and Pathogenesis of
aı	bacterial, fungal and viral diseases
	Illustrate the etiological agents, epidemiological aspects and clinical
a2	manifestations of different pathogenic bacteria, virus and fungi.
	Specify the diagnostic key elements of pathogenic bacteria, viruses and
a3	fungi.
- 1	Outline the therapeutic regimen of different bacterial, fungal and viral
a4	diseases.
B- 1	Professional and Practical skills
b1	Handle and dispose the chemicals and the infectious contaminated
01	materials.
b2	Perform the diagnostic laboratory tests for identification of the infectious
	agents.
C-	Intellectual skills
<u>_1</u>	Select the appropriate vaccination and preventive measures for each
c1	infectious agent.
	Select the appropriate medication for treatment and control of each
c2	infectious agent.
c3	Assess the experimental results for differentiation between the different etiological agents.
c4	Interpret experimental results for giving critical decision about patient's state.
D- (General and Transferable skills
d 1	Communicate efficiently in oral and written manner.
d2	Acquire online search skills through writing reports and researches.
d3	Write reports and present them.
d4	Develop critical thinking and decision-making and problem saving skills.

D- Contents:

Week	Lecture contents (3 hrs/week)	Practical session (1hrs/week)
No.		
1	 Introduction to medical microbiology Host-Parasite relationship GRAM-POSITIVE COCCI -Genus Staphylococcus 	Laboratory safety measures
	 Genus Streptococci: β- hemolytic streptococci 	
2	 Genus Streptococci Genus Streptococci hemolytic streptococci GRAM-POSITIVE NON-SPORE FORMING RODS: Corynebacterium and Listeria GRAM-POSITIVE SPORE-FORMING RODS: Bacillus and Clostridium 	• Genus Staphylococcus: -Staph. aureus -Staph. epidermidis -Staph. saprophyticus
3	 ACID-FAST BACILLI: Mycobacteriae CELL-WALL DEFICIENT BACTERIA: Mycoplasma 	 β- hemolytic streptococci: Strept. pyogenes Strept. agalactiae
4	 OBLIGATE INTRACELLULAR BACTERIA: Spirochetes, Rickettsiae and Chlamydiae GRAM-NEGATIVE COCCI: Neisseria and Branhamella 	 α- hemolytic streptococci: Strept. pneumoniae Strept. viridans -Activity (Report)
5	FERMENTATIVE GRAM-NEGATIVE RODS -Family Enterobacteriaceae: -Lactose Fermenters: Escherichia, Klebsiella, Enterobacter and Citrobacter	 γ- hemolytic streptococci: <i>Enterococci</i> <i>Non- enterococci</i>
6	 FERMENTATIVE GRAM-NEGATIVE RODS Family Enterobacteriaceae:	• Gm +ve bacilli: - Bacillus anthracis - Listeria monocytogenes -Corynebacterium diphtheriae

7	Midterm exam	Midterm exam
8	 CURVED GRAM-NEGATIVE RODS Vibrio, Campylobacter and Helicobacter GRAM-NEGATIVE UNUSUAL BACTERIA (RODS): Haemophilus, Bordetella and Legionella 	 Enterobacteriaceae Lactose fermenters: Escherichia coli Citrobacter spp
9	 MISCELLANEOUS FASTIDIOUS GRAM-NEGATIVE RODS: Brucella and Pasteurella OBLIGATE ANAEROBIC GRAM- NEGATIVE BACTERIA: Bacteroides and Fusobacterium 	 Enterobacteriaceae Lactose fermenters: <i>Klebsiella pneumoniae</i> <i>Enterobacter spp</i>
10	 Introduction to Virology: General properties, morphology, replication, cultivation and classification of viruses Pathogenesis of viral infections 	 Enterobacteriaceae -Lactose non-fermenters: Genus Salmonella Genus Shigella Activity (Report)
11	 Diagnosis of viral infection Immune response to viral infection Chemotherapy and prevention of viral diseases 	 Enterobacteriaceae Lactose non- fermenters: Genus <i>Proteus</i> Genus <i>Serratia</i>
12	 DNA-VIRUSES: Small-pox virus -Herpes Viruses. RNA VIRUSES: Polio-virus Influenza virus Human corona virus (e.g. Common cold) 	 Oxidative Gram–ve rods: Genus Pseudomonas Genus Acinetobacter
13	 RNA VIRUSES: Rubeola (Measles) Mumps virus Rubella (German measles) virus Rabies virus Mycology: Importance of fungi Morphology and reproduction of fungi 	Final practical exam
14	 -RNA VIRUSES: -Hepatitis viruses - Human Immunodeficiency Virus (HIV) -Pathogenic fungi: Superficial, Subcutaneous, Systemic and Opportunistic mycotic infections. 	
15	• Final Written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Case study
- Report writing

F- Student Assessment methods:

- 1- Written exams to assess: a1, a2, a3, a4, c1, c2, c3, c4
- 2- written report to assess: d1, d2, d3
- 3- Practical exams to assess: b1, b2, d4
- 4- Oral exam to assess: a1, a2, a3, a4, c1, c2, c3,c4, ,d4

Assessment schedule

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

Weighting of Assessment

Assessment method	Marks	Percentage
Final written exam	75	50%
Midterm exam	15	10%
Activity	10	6.7%
Practical exam	30	20%
Oral exam	20	13.3%%
TOTAL	150	100%

G- Facilities required for teaching and learning:

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

• For practical: labs equipped with data-show, Chemicals, Autoclaves,

Incubators, Ovens, Water bathes, staining dyes, microscopes,

refrigerators and microbiological culture media

H- List of References:

1- **Course Notes**: Student book of **Medical Microbiology** approved by microbiology department 2019

2- Essential Books (Text Books):

i- Jawetz, Melnick and Adelberg "Medical Microbiology" 27 th edn, Appeiton & Lange; London (2015).

ii- "'Medical Microbiology" 17 TH EDN, BY Greenwood D, Slack R & Peuthere J. Churchill Livingstone. London (2007).

3- Recommended books:

- Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller. Medical Microbiology, 7th ed. (Philadelphia: Elsevier/Mosby, 2012).
- Levinson, W. Review of Medical Microbiology and Immunology, 13th ed. LANGE REVIEW SERIES (NY: McGraw-Hill, 2014).
- Brooks, G.F.; Carroll, K. C.; Butel, J.S.; Morse, S. A. (2007): Jawetz, Melnick and Adelberg's Medical Microbiology. 24th ed. McGraw-Hill.
- Infectious Disease: A Clinical Short Course by F.S. Southwick, McGraw-Hill, 3rd edition, 2013.

4- Periodicals and websites:

Egyptian J. of Microbiology. Arab J. of Laboratory Medicine American journal of microbiology www.Pubmed.Com <u>www.sciencedirect.com</u>.

Course Coordinator: Prof. Mona Abelmoneam

Head of Department: Prof / Nehal Elsayed yousef

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

	Matrix1 of Medical Microbiology														
								ILO)s						
Cou	Course content		Knowledge and Understanding			Professional & Practical skills		Intellectual skills				Transferable & genera skills			eneral
		a1	a2	a3	a4	b1	b2	c1	c2	c3	c4	d1	d2	d3	d4
1	Introduction to medical microbiology Host-Parasite relationship - <u>GRAM-+ve COCCI</u> -Genus Staphylococcus - Genus Streptococci: β- hemolytic streptococci Practical: Laboratory safety measures	X	x	x	X	X	X	x	X	X					
2	Genus Streptococci: α- hemolytic streptococci γ- hemolytic streptococci -GRAM-POSITIVE NON-SPORE FORMING RODS: Corynebacterium and Listeria -GRAM-+ve SPORE-FORMING RODS: Bacillus and Clostridium <u>Practical:</u> Genus Staphylococcus:		x	x	x	x	x	x	x	x	x				
3	ACID-FAST BACILLI: <i>Mycobacteriae</i> CELL-WALL DEFICIENT BACTERIA: <i>Mycoplasma</i>		X	X	X	X	X	X	X	X	x				X

	<u>Practical:</u> β- hemolytic streptococci:													
4	OBLIGATE INTRACELLULAR BACTERIA: Spirochetes, Rickettsiae and Chlamydiae <u>GRAMve COCCI</u> : Neisseria and Branhamella <u>Practical:</u> α- hemolytic streptococci: Activity (Report)	X	x	X	X	x	x	x	X	X	X	X	X	x
5	FERMENTATIVE GRAMve RODS - Enterobacteriaceae: Lactose Fermenters: Escherichia, Klebsiella, Enterobacter & Citrobacter. <u>Practical:</u> γ- hemolytic streptococci: - Enterococci - Non- enterococci	x	x	X	X	x	x	x	X	X				
6	FERMENTATIVE GRAM-NEGATIVE RODS -Family Enterobacteriaceae: -Lactose Non-Fermenters: Salmonella, Shigella, Proteus and Serratia - Lactose Non-Fermenters: Yersinia NON-FERMENTATIVE: GRAMve RODS: Pseudomonas and Acinetobacter Practical:	X	x	x	X	x	x	x	x	x				

	Gm +ve bacilli: <i>Bacillus, Listeria,</i> <i>Corvnebacterium</i>														
7	CORVED GRAM-NEGATIVE RODS Vibrio, Campylobacter and Helicobacter GRAMve UNUSUAL BACTERIA (RODS): Haemophilus, Bordetella and Legionella Practical : Enterobacteriaceae: Lactose fermenters: E. coli & Citrobacter spp		x	x	x	x	x	x	x	x	x				
8	MISCELLANEOUS FASTIDIOUS GRAM-NEGATIVE RODS: Brucella and Pasteurella OBLIGATE ANAEROBIC GRAM- NEGATIVE BACTERIA: Bacteroides and Fusobacterium Practical : Enterobacteriaceae - Lactose fermenters: Klebsiella & Enterobacter		X	X	X	X	X	X	x	X	X				
10	Introduction to Virology: General properties, morphology, replication, cultivation and classification of viruses Pathogenesis of viral infections <u>Practical</u> : Enterobacteriaceae -Lactose non-fermenters: <i>Salmonella & Shigella</i> Activity (Report)	X	x			X	x		x	X	X	X	X	x	x

11	Diagnosis of viral infection. Immune response to viral infection. Chemotherapy and prevention of viral diseases <u>Practical</u> Enterobacteriaceae - Lactose non- fermenters: <i>Proteus & Serratia</i>		X	X	X	X	X	x	X	X	X		
12	DNA-VIRUSES: -Small-pox virus -Herpes Viruses. RNA VIRUSES: -Polio-virus -Influenza virus -Human corona virus (e.g. Common cold) <u>Practical</u> Oxidative Gram–ve rods: <i>Pseudomonas & Acinetobacter</i>		X	x	x	x	x	x	x	X	X		
13	RNA VIRUSES: Rubeola (Measles) Mumps virus Rubella (German measles) virus Rabies virus Mycology : Importance of fungi Morphology and reproduction of fungi	x	x	x	x	X	x	x	x	X	X		
14	RNA VIRUSES: -Hepatitis viruses - Human Immunodeficiency Virus		x	x	x	X	X	x	x	x	x		

	(HIV)							
	-Pathogenic fungi:							
	Superficial, Subcutaneous, Systemic and							
	Opportunistic mycotic infections.							

Matrix II of Medical Microbiology	(2019-2020)
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	Program ILOs	Course	Course contents	Sources	Teachin	g and learnir	ng methods	l	Method of a	ssessment	
NARS		ILOs			lecture	practical session	Activity	written exam	practical exam	oral exam	Midterm exam
2.1 Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	[A4]Explain the principles of medical sciences (Anatomy; histology; physiology and pathology; biochemistry; parasitology; clinical pharmacology; therapeutics; medical microbiology; immunology and virology).	al	Introduction to medical microbiology Host-Parasite relationship Introduction to Virology: General properties, morphology, replication, cultivation and classification of viruses Pathogenesis of viral infections Diagnosis of viral infection. Immune response to viral infection. Chemotherapy and prevention of viral diseases	Student book Essential books	x			x		x	x
2.12 Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	 [A27] Illustrate etiology, epidemiology and clinical features of different diseases. [A28] Specify the laboratory diagnosis of different diseases. 	a2, a3	=GRAM-POSITIVE COCCI -Genus Staphylococcus - Genus Streptococci: =GRAM POSITIVE NON- SPORE FORMING RODS =GRAM-POSITIVE SPORE-FORMING RODS =ACID-FAST BACILLI: =CELL-WALL DEFICIENT BACTERIA =OBLIGATE INTRACELLULAR BACTERIA =GRAM-NEGATIVE COCCI =GRAM-NEGATIVE	Student book Essential books	X			x		X	x

			RODS -Lactose Non-Fermenters: -Lactose Non-Fermenters =NON- FERMENTATIVE:GRAM- NEGATIVE RODS (OXIDATIVE GROUP) =CURVED GRAM- NEGATIVE RODS =GRAM-NEGATIVE UNUSUAL BACTERIA (RODS). = FASTIDIOUS GRAM- NEGATIVE RODS: =OBLIGATE ANAEROBIC GRAM- NEGATIVE BACTERIA =DNA-VIRUSES: =RNA VIRUSES =pathogenic fungi							
3.6 Monitor and control microbial growth and carry out laboratory tests for identification of Infectious and non- infections in biological specimens.	[B10] Control microbial growth & handle biological specimens safely. [B11] Perform microscopical, biochemical and serological laboratory tests to diagnose infectious and non infectious disease.	b1 b2	Practical sessions	Practical book, Internet search		x		x		
4.8 Select and assess appropriate methods of infection control to prevent infections and promote public health.	[C13] Suggest the appropriate methods to prevent infections and promote health care.	c1,c2	GRAM-POSITIVE COCCI =GRAM POSITIVE NON- SPORE FORMING RODS =GRAM-POSITIVE SPORE-FORMING RODS =ACID-FAST BACILLI: =CELL-WALL DEFICIENT BACTERIA =OBLIGATE INTRACELLULAR BACTERIA =GRAM-NEGATIVE	Student book Essential book	x		x		x	x

			COCCI							
			GRAM-NEGATIVE							
			RODS							
			-Lactose Non-Fermenters:							
			-Lactose Non-Fermenters							
			=NON-							
			FERMENTATIVE:GRAM- NEGATIVE RODS							
			(OXIDATIVE GROUP)							
			=CURVED GRAM-							
			NEGATIVE RODS							
			=GRAM-NEGATIVE							
			UNUSUAL BACTERIA							
			(RODS). = FASTIDIOUS GRAM-							
			= FASTIDIOUS GRAM- NEGATIVE RODS:							
			=OBLIGATE							
			ANAEROBIC GRAM-							
			NEGATIVE BACTERIA							
			=DNA-VIRUSES:							
			=RNA VIRUSES							
4.12 Anolyze and	[C10] Evolute and	c3, c4	= Pathogenic fungi		 			×		
4.13 Analyze and interpret experimental	[C18] Evaluate and interpret experimental	c3, c4		practical book&	х			х		
results as well as	results and published		Practical sessions	internet						
published literature.	literature.			search						
5.1 Communicate	[D1] Communicate	d1		Practical		х	х		х	
clearly by verbal and	effectively with	ui		book &		^	~		^	
means.	patients and other			Internet						
incuits.	health care		Activity (reports)	search						
	professionals,		Practical sessions	searen						
	including both									
	written and oral									
	communication									
5.4 Use numeracy,	[D5] Practice	d2		Internet		х	х		х	
calculation and	computer skills			search						
statistical methods as	including word,		Activity (reports)							
well as information	spreadsheet, database		Activity (reports)							
technology tools.	use and internet									
	communications.				1	1		1		

5.9 Implement writing and presentation skills.	[D10] Implement writing and presentation skills.	d3	Activity (reports)	Internet search		х	x		X	
5.10 Implement writing and thinking, problem- solving and decision- making abilities.	D11. Develop critical thinking, problem solving and decision making skills	d4	Activity Case studies	Practical book & Internet search	х		х	х	Х	