Republic of Yemen
Ministry of Higher Education & Scientific Research
Accreditation & Quality Assurance Center
University Of Modern Sciences
Development & Quality Assurance Center
Faculty of Medical Science
Department of Pharmacy

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
مجلس الاعتماد الأكاديمي وضمان الجودة
جامعة العلوم الحديثة
مركز التطوير وضمان الجودة
كلية العلوم الطبية
قسم الصيدلة

توصيف المقررات الدراسية 2019م

برنامج الصيدلة

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Level I

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

GENERAL BIOLOGY

Course Identification and General Information:							
1.	Course Title:	GENERAL BIOLOGY					
2.	Course Code & Number:	FOP 111					
3.	Credit hours:	C.H					TOTAL
		L.	Tut.	S.	P.	Tr.	
		2	-	-	1	-	3
4.	Study level/ semester at which this course is offered:	*(first) Year – (1st) semester*					
5.	Pre –requisite (if any):	None					
6.	Co –requisite (if any):	None					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	Prepared by	Dr/ Hasan Ibrahem					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

This course introduces students to the scientific study of living organisms. Students will investigate biological concepts including the chemical basis of life, cell structure and function, metabolism, reproduction, genetics, evolution, biological diversity and classification, plant structure and function, animal structure and function and ecology..

Intended learning outcomes of the course(CILOs) and their alignment to Program Intended learning outcomes (PILOs)

NO.	PILOs	CILOS
1.	A1	**a1.** Identify the biological structures of living organisms, the common features of Life process& the common genera & species of animal kingdom.
2.		**a2.** Describe the functions & components of the cell as the basic unit of life.
3.		**a3.** Determine the basic processes in the cell and its life cycle.
4.		**a4.** Explicit the Energy sources in living organisms
5.		**a5.** Explain the role of enzymes &the Chemical constituents of the protoplasm in the cell.

6.		**a6.** Discuss Mendel experiments and the molecular basis of inheritance : chromosome, DNA, genes
7.	**B1**	**b1.** Classify living organisms into kingdoms, genera and species
8.		**b2.** Differentiate between living organisms & non-living things and between animal cell and plant cell.
9.		**b3.** Relate hereditary to genetic factors**.**
10.	**C1**	**c1.** Handle efficiently and safely different biological samples in the biology lab.
11.	**C2**	**c2.** Operate successfully the light microscope and other instruments used in the biology lab.
12.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and teachers.
13.	**D2**	**d2.** Demonstrate the ability of time management, self-learning and problem-solving skills**.**
14.	**D3**	**d3.**Work successfully in team-work in the biology lab

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	Lecture, laboratory practice	written exam , Practical assessment (Lab accomplishments, Lab. Reporting , practical exam)
a4, a5	Lecture, feed-back learning	written exam, assignment
a6	Lecture, feed-back learning, Group-project.	written exam , assignment
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	Lecture, feed-back learning	written exam , quizzes
b3	Lecture, feed-back learning	written exam, quizzes
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended	**Teaching strategies**	**Assessment Strategies**

Learning Outcomes		
c1, c2	Lab. Practice	Lab. term works, final practical exam
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	Lab. Practice , Group-project	Lab. term works, final practical exam , assignment
d2.	Lab. Practice, feed-back learning	Lab. term works, final practical exam , assignment

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	Learning Outcomes	Sub Topics List	No. of Weeks	contact hours
1	**Scope of Biology**	a1, a2, b2	• Definitions and brief history of biology • Living organisms and Non-Living things • Chemical context of life • Common features of Life process . • Biological structures of living organisms: cell, tissue, organ, system. • Energy sources in living organisms	4	8
2	**The cell : the basic unit of life**	a3, a4, a5, b2	• Structure and components of the cell: cell membranes : types, Functions and properties, cytoplasm, Micro and macro molecules of cell • Function of enzymes &Chemical constituents of the protoplasm • basic process in the cell (respiration, nutrition, etc.) • life cycle of the cell • differences between animal and plant cell.	4	8
			MID-TERM EXAM	1	2

3	**animal kingdom**	a1, b1	• classification of living organisms into kingdoms, genera and species. • Animal kingdoms classification : Genera and species; common features, diversity &reproduction. • Examples of common species of general of animal kingdoms and their anatomical features.	3	6
4	**Inheritance**	a6, b3	• Mendel Experiments and the Gene Idea • Molecular basis of inheritance : chromosome, DNA, genes	2	4
Course Review and discussion session				1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16	4

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Course Learning Outcomes
1.	**Introduction to biology lab: safety, tools, instruments, scope of experiments and reporting assignments.**	**1**	**2**	**c1, c2, c3, c4, d3, d1, d2,**
2.	**Structure & components of the cells: using illustrative models**	**1**	**2**	**a2, c1, c2, c3, c4, d3, d1, d2**
3.	**Light microscope: sample preparations, operation**	**2**	**4**	**c1, c2, c3, c4, d3, d1, d2**
4.	**Differentiation between animal and plant cells.**	**1**	**2**	**b2, c1, c2, c3, c4, d3, d1, d2**
5.	**Common species of animal genera: morphological and microscopical features**	**4**	**2**	**a1, b1, c1, c2, c3, c4, d3, d1, d2**
6.	**Molecular basis of hereditary using illustrative models.**	**1**	**2**	**a6, b3, c1, c2, c3, c4, d3, d1, d2**
7.	**Mendel experimentation of hereditary**	**1**	**2**	**a6, b3, c1, c2, c3, c4, d3, d1, d2**
PRACTICAL EXAM		**1**	**2**	**c1, c2, c3, c4, d3, d1, d2**

Total	**12**	**24 equivalent to 12 credit hours**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector. A
lecture – discussion: a short lecture/ address followed by discussion
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do certain assignments such as summarizing, internet search, make charts or solve mathematical problems related to the courses topics. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	**Individual**: every student is assigned to do a search report of an enzyme/ chemical constituent in the cell	d2	4-13	3
2	**Group** : each group of students will be assigned to do a search- report about genetic elements	d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method	Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)

2	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	d1, d2, d3
3	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a5, b2, b3
4	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b2, b3, b4, b5, b6, b7
	TOTAL			70	70 %	70

Practical part assessment

No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	10	c1, c2, d1, d2, d3
2		Accomplishments		5	10	
	Final exam (practical)		12	20	20	c1, c2, d1, d2
	Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Sardana. A text book of pharmaceutical biology
2- Essential References.
1. Parthasarathi. Molecular biology of the cell
2. International Journal of Biological Sciences (ijbs.com)
3-Home | International Journal of Biology | CCSE (ccsenet.org)
2- Electronic Materials and Web Sites etc
5-www.biologyjournal.in

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:**

	any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MATHEMATICS

I. Course Identification and General Information:

1.	Course Title:	Mathematics					
2.	Course Code &Number:	FOP112					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	-	-	2
4.	Study level/ semester at which this course is offered:	*(FIRST) Year – (1st) semester*					
5.	Pre –requisite (if any):	NONE					
6.	Co –requisite (if any):	None					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	PREPARED by	Dr/ Saeed Altwqi					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

II. Course Description:

This course provides basic knowledge& skills of solving mathematical processes encountered in pharmacy. Topics include ratio and proportion, percentage, dilution and concentration, milliequivalents, units, intravenous flow rates, solving dosage problems and TPN calculations and using business math in the pharmacy.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A1	**a1.** Discuss the basic mathematical principles commonly encountered during his/her pharmacy study and at practicing the profession.
2.	B1	**b1.** Interpret the linearity and other graphical parameters.
3.	C2	**c1.** Operate and use scientific calculator correctly.
4.	D2	**d1.** Demonstrate the ability of time management, self-learning and problem-solving skills

5.	**D3**	**d2.** Work successfully in team-work.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture-discussion,, feed-back learning,**	**written exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**feed-back learning, Group-project.**	**Written exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Lecture-discussion**	**Written exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Lecture-discussion**	**Quiz**
d2	**Lecture-discussion**	**Assignment**

Course Content:

Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Graphs and Gradients**	a1, b1, , c1,	• Rectangular Co-ordinates. Curve fitting using first-degree equation in both variables. • Determination of slope and intercept and point of intersection • Equation of first degree in both x and y (circle, ellipse, rectangular hyperbola etc. • Exponential and logarithmic curves, graphical solution of equation, graphical solution of • simultaneous equations	6	12

			• Arithmetic progression, geometric progression, permutation-combination, binomial theorem, exponential theorem • Application of curve fitting method in expressing degradation of drugs		
MID-TERM EXAM				1	2
2	**Calculus**	a1, c1	• Rate process, rules of differentiation, successive and partial differentiation, differentiation of a function, relation between the derivatives of inverse functions • Rules of integration, integration as a summation, area under curve, integration by partial fraction, graphical integration, indefinite and definite integrals.	3	6
3	**Matrices**	a1, c1	• Addition. Subtraction and multiplication of matrices • unit matrix, row transformation, determinants, inverse of matrix and solution of equations by matrix	4	8
Course Review		a1, c1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

V. Teaching strategies of the course:

lecture - Discussion: a short lecture/ address followed by discussion.

Seminars: these are mainly used with small groups of students (20-30) students in which they find better chances for discussing and participating in the teaching process.

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to solve mathematical	a1, c1, d2	4-13	6

	problems during Tutorial at the class .			
2	**Group** : each group of students will be assigned to solve mathematical problems during as homework	a1, c1, d1	14	4

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
2	Term Works	Quizzes	4-13, 14	10	10	c1,
		Assignments	7, 12	10	10	a1, c1, d1, d2
3	Mid-semester exam (written exam)		7	20	20	a1, b1, c1
4	Final exam (written exam)		16	60	60	a1, c1
		TOTAL		100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
2. Rao. A text book of mathematics
2- Essential References.
3. Indra K. Reddy Mansoor a. khan, Essential Math and calculations for pharmacy, CRC Press 4. Shahidulla , Bhattacharjee : A text book on Coordinate Geometry and Vector Analysis
3- Electronic Materials and Web Sites *etc*.
www.en.wikipedia.org/

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work

5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHYSICS

Course Identification and General Information:							
1)	**Course Title:**	**Physics**					
2)	**Course Code &Number:**	**FOP113**					
3)	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	1	-	**3**
4)	**Study level/ semester at which this course is offered:**	*(FIRST) Year – (1st) semester*					
5)	**Pre –requisite (if any):**	**None**					
6)	**Co –requisite (if any):**	**None**					
7)	**Program (s) in which the course is offered:**	**Pharmacy**					
8)	**Language of teaching the course:**	**ENGLISH**					
9)	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10)	**Prepared by**	**Dr/ Ibrahem H. ALSURIHY**					
11)	**Date of Approval**	**9/2018**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course deals with the study of basic physics concepts as an introduction to physical pharmacy and pharmaceutics disciplines. Students will study Kinematics and Newtonian`s laws, Work and Energy, pressure, electricity, optical physics and sonic physics.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
3. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Show understanding of the basics physics concepts associated with motion, electricity, light and sound.
2	**B1**	**b1.** Interpret physical phenomena.
3	**B9**	**b2 .** Apply equations to calculate physical parameters
4	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory

5	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
6	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and teacher in the laboratory
7	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
8	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

4. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture-discussion**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2	**Lecture, Lab practice**	**Written exams, Lab. term works, quizzes, assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Lab. Practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Lab. Practice works, feed-back learning**	**Lab. practical works, assignment**

d3	**Lab. practice, group project**	**Lab. term works, assignment**

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to physics**	a1, b1	• Definition, brief history; relation & applications of physics to modern sciences especially medical sciences	1	2
2	**Kinematics and Newtonian`s laws**	a1, b1, b2	• definition, parameters, Newtonian`s law of motion, factors affecting including force, gravity, mass, etc. • Applications in medical/pharmaceutical sciences. • Exercise Problems	2	4
3	**Work and Energy**	a1, b1, b2	• Definitions • differences between energy, work and Power& Laws governing • Forms and sources of energy (electric, optical, chemical, thermal, etc.) • Applications in medical/pharmaceutical sciences.	3	8
			MID-TERM EXAM	1	2
4	**Pressure**	a1, b1, b2	• Definitions, types • Applications in medical/pharmaceutical sciences. • Exercise Problems	1	
5	**Electricity**	a1, b1, b2	• definition, brief history • electromagnetic field electrical resistance, potential and current • generation techniques • Applications in medical/pharmaceutical sciences. • Exercise Problems	3	6
6	**Optical physics**	a1, b1, b2	• photons, light waves, wave length, wave number, frequency.	2	

			• Light spectrum (visible, UV, IR, ..,etc.), light absorbance, light refraction, light scattering • Applications in medical/pharmaceutical sciences. • Exercise Problems		4
7	**Sonic (sound) physics**	a1, b1, b2	• Sonic waves • ultrasonic waves • Echo • Applications in medical/pharmaceutical sciences. • Exercise Problems	1	2
Course Review		a1, b1, b2	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Introduction to Physics lab: safety, tools, instruments, scope of experiments and reporting assignments.	**1**	**2**	c1, c2, d1, d2, d3
2	Determination of gravity acceleration	**1**	**2**	c1, c2, d1, d2, d3
3	Determination of different forms of Forces	**2**	**2**	c1, c2, d1, d2, d3
4	Determination of Energy	**2**	**2**	c1, c2, d1, d2, d3
5	Determination of Pressure	**1**	**2**	c1, c2, d1, d2, d3
6	measuring of electric current and voltage with different electricity sources.	**2**	**2**	c1, c2, d1, d2, d3
7	Light spectrum (Prism)	**1**	**2**	c1, c2, d1, d2, d3
8	Review	**1**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2
Total		**12**	**24 equivalent to 12 credit hours**	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks	**12**

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
lecture - Discussion: a short lecture/ address followed by discussion
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to solve physical problems related to course topics.	b2, d2	4-13	3
2	**Group** : each group of students will be assigned to do a search-based report on one of the physical phenomena in the course topics.	b2, d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b2
		Assignments	7, 12	5	5	b2, d1, d2, d3

2	Mid-semester exam of theoretical part (written exam	7	10	10	a1, b1
3	Final exam of theoretical part (written exam)	16	50	50	a1, b1, b2
TOTAL			70	70 %	70

Practical part assessment

No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
		Total		30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1.Zemansky.M.W "Heat and Thermodynamics, 6th edition" McGraw-hill , 1995
2.Greenwood,M.E" An Illustrated Approach To medical physics" Davis Company, 1998 .
3. Christman. fundamentals of physics

2- Essential References.

1. Parkash. An introduction to medical biophysics
2. Cameron, John R. and James G. Skofronick; Medical Physics. A Wiley-Interscience publication.

3- Electronic Materials and Web Sites *etc*.

1- International Journal of Physics (sciepub.com)
2- International Journal of Physics and Applications (physicsjournal.in)
3- Physics Journals | International Journal of Physics (arcjournals.org)

Course Policies:

Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

INTRODUCTION TO PHARMACY

I. Course Identification and General Information:							
1)	**Course Title:**	**Introduction To pharmacy**					
2)	**Course Code &Number:**	**PHC114**					
3)	**Credit hours:**	C.H					TOTAL
		L.	Tut.	S.	P.	Tr.	
		2	-	-		-	**2**
4)	**Study level/ semester at which this course is offered:**	*(first) Year – (1st) semester*					
5)	**Pre –requisite (if any):**	**None**					
6)	**Co –requisite (if any):**	**None**					
7)	**Program (s) in which the course is offered:**	**Pharmacy**					
8)	**Language of teaching the course:**	**ENGLISH**					
9)	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10)	**Prepared by**	**Dr/** Ashwaq Mohammed Saleh Al-Faiq					
11)	**Date of Approval**	**8/2019**					

II. Course Description:

The course provides essential introduction to pharmacy as profession, its past, current and future carriers and orientations. This course provides a study of and introduction to pharmacy and the role of pharmacist in providing patient care services. It also introduces pharmacy practice and the technician's role in a variety of pharmacy settings..

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

5. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A10	**a1.** Enumerate the current missions of pharmacy profession and the duties of pharmacists as drug experts.
2.		**a2.** Identify the basic pharmacy sciences, academic programs and the foundations that control pharmacy laws

3.		**a3 .** Discuss the progress of pharmacy throughout history and its current and future development and fields.
4.		**a4.** Describe the current carriers of pharmacy profession and the new
5.	**B2**	**b1.** Classify drug risks benefits.
6.	**C6**	**c1.** Use the media technologies to communicate, search and present thoughts
7.	**D3**	**D1.** Demonstrate the ability to work effectively within a team.
8.	**D4**	**d2.** Demonstrate the ability to community and patients serving through understanding of his/her mission as drug experts.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	**Lecture, Lecture-discussion**	**written exam , assignment**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture, Lecture-discussion , feed-back learning**	**written exam , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Feed-back learning , Group-project.**	**Assignment, Written- exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Lecture-discussion**	**Written exam**
d2	**Lecture-discussion**	**Group Assignment**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Pharmacy and pharmacists**	a1, a2, d2	• definitions (pharmacy, pharmacist, drugs, medications, drug products) • pharmacy motto • Pharmacy profession missions • foundations of pharmacy (world , Asian, Arabic and Yemeni) • Relation of pharmacists with other health care professionals.	2	4
2	**Current pharmacy practices**	a4, a2	• Pharmacy career opportunities (academic, industrial, researcher , developer, hospital, clinical and community pharmacists)	2	4
3	**Education of pharmacy**	a2	• basic pharmacy sciences • academic Baccalaureate programs, higher programs.	1	2
4	**Pharmacists as drug experts**	b1, a1	• drugs benefits • drugs risks • Role of pharmacists as drug experts • sources of information (primary, secondary, tertiary).	1	2
MID-TERM EXAM				1	2
5	**History of pharmacy**	a1	History of pharmacy in : ○ in Sumerian, ○ Egyptian ○ Chinese, Indian, ○ Roman, Greek ○ Arabic and Islamic ○ Western civilization	5	10
6	**Future aspects of pharmacy**	a2, a3	• factors influencing future of pharmacy • current development of pharmacy profession • newer pharmacy disciplines e.g. Complementary and alternative therapy, gene therapy and radiopharmacy	2	4
Course Review		a1, a2, a3, a4, b1, c1, d1, d2	Review of the course topics by discussion session	1	2
FINAL – EXAM				1	2
TOTAL				16	32

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks /and Units Per Semester	16	6 units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search-report on one of the newer pharmacy disciplines.	c1,	4-13	6
2	**Group** : each group of students will be assigned to do a search report on one of the famous ancient Muslim Pharmacist	c1, d2	14	4

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Attendance		1 – 15	10	10	a1, a2, a3, a4, b1, c1, d1, d2
2	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	c1, d2

3	Mid-semester exam of theoretical part (written exam	7	20	20	a1, a2, a4,b1, d2, d4
4	Final exam of theoretical part (written exam)	16	60	60	a1, a2, a3, a4, b1, c1, d1, d2
		TOTAL	100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

5. Lillian M. Azzorpardi . Lecture notes in pharmacy practice, 2010, pharmaceutical press

2- Essential References.

1. Howard C. Ansel. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, , 2011, Lippincott Williams & Wilkins
2. Kevin M.G.Taylor. Pharmacy Practice, 2001, Taylor & Francis

3- Electronic Materials and Web Sites *etc*.

1- International Journal of Pharmacy (pharmascholars.com)
2- academic.oup.com
3- International Journal of Pharmacy and Pharmaceutical Sciences (innovareacademics.in)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

COMPUTER SKILLS

Course Identification and General Information:							
1)	Course Title:	COMPUTER SKILLS					
2)	Course Code &Number:	UMS01					
3)	Credit hours:	C.H					TOTAL
		L.	Tut.	S.	P.	Tr.	
		1	-	-	1	-	2
4)	Study level/ semester at which this course is offered:	*(first) Year – (1st) semester*					
5)	Pre –requisite (if any):	None					
6)	Co –requisite (if any):	None					
7)	Program (s) in which the course is offered:	Pharmacy					
8)	Language of teaching the course:	ENGLISH					
9)	Location of teaching the course:	IN THE UNIVERSITY					
10)	Prepared by	Dr/ Nasar Almawery					
11)	Date of Approval	8/2019					

Course Description:
This course is designed for students to develop basic understanding of uses of computer and its applications in scientific studies. It introduces the students to computer concepts, including fundamental functions and operations of the computer. Topics include identification of hardware components, basic computer operations, security issues, and use of software applications..

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:			
PILO	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
A1	**a1.** Discuss various concepts used in computer and the disk operating system.	Lecture Discussion IT Practice Session	Written exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILO	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

B1	**b1**. Interpret data of computer aided teaching and testing.	Lecture Discussion IT Practice Session	Written exam practical exam

C. Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

PILO	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
C7	**c1.** Use operating system, MS Office, multi-media, internet and Email.	Lecture Discussion IT Practice Session	Written exam , practical assessment

(D) Alignment Course Intended Learning Outcomes of General and Transferable Skills to Teaching Strategies and Assessment Strategies:

PILO	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
D1	**d1**. Behave in discipline in the computer lab.	Lab. practice	Lab. term works
D2	**d2.** Demonstrate the ability of time management, self-learning and problem-solving.	Lecture-discussion and Lab. Practice	Written exam , lab. term works, final practical exams

Course Content:

Theoretical and practical Aspect:
1 hour theoretical followed by 1 hour practical; Teaching is performed in the computer Lab.

Order	Units/Topics List	Sub Topics List	No. of Weeks	Contact hours	Learning Outcomes
1	Introduction	▪ Concepts of Computers ▪ Hardware and software; trends and technology	2	4	a1, b1
2	Introduction to disk-operating system	▪ DOS ▪ Windows (all version) ▪ Introduction to MS-Word	6	12	a1, b1

		▪ MS-Excel with pictorial presentation ▪ MS-Access ▪ MS-Power point			
3	Midterm exam		1	2	a1, b1
4	Multimedia	▪ Types & uses ▪ Computer aided teaching & testing.	2	4	a1, b1
5	Internet and e-mail	▪ Internet ▪ e-mail	2	4	a1, b1
7	Final exam		1	2	a1, b1
Number of Weeks /and Units Per Semester			**15**	**30**	

Teaching strategies of the course:
1. Lecture – Discussion 2. Lab. Practice

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	medical Application of computers .	a1, b1, c1, d1	2-10	5

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	10	5	a1, b1, c1, d1
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, b1
TOTAL				70	70 %	70

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, d1, d2
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, d1, d2
		Total		30	30 %	

Learning Resources:	
1- Required Textbook(s) (maximum two).	
	1. N.K. Anand & ShikhaGoel (2009). Computers for Nurses, A.I.T.B.S. Publishers ,India.
2- Essential References.	
	2. Thacker N (2009). Computers for Nurses, India.
3- Electronic Materials and Web Sites *etc*.	

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

مواصفات مقرر (اللغة العربية Arabic language)

معلومات عامة عن المقرر:						
١.	اسم المقرر:	اللغة العربية Arabic language				
٢.	رمز المقرر ورقمه:	UMS 02				
٣.	الساعات المعتمدة:	محاضرة	سمنار	عملي	تدريب	الإجمالي
		2	-	-	-	2
٤.	المستوى والفصل الدراسي:	المستوى (الأول) – الفصل (الأول)				
٥.	المتطلبات السابقة لدراسة المقرر(إن وجدت):	-------				
٦.	المتطلبات المصاحبة (إن وجدت):	------				
٧.	البرنامج الذي يدرس له المقرر:	كافة البرامج في الجامعة				
٨.	لغة تدريس المقرر:	اللغة العربية				
٩.	نظام الدراسة:	فصلي				
١٠.	معد المقرر	د/ عدنان الشعيبي				
١١.	تاريخ اعتماد مواصفات المقرر:	8/2019				

II.وصف المقرر:

يهدف هذا المقرر الى غرس روح الاعتزاز باللغة العربية لدى الطالب و مساعدته على الالتزام بأصولها نحوا وصرفا و قراءة وكتابة

III – مخرجات تعلم المقرر

بعد الانتهاء من هذا المقرر سيكون الطالب قادرا على أن :

مخرجات المعرفة والفهم

a١ . يحدد طرق إعراب الكلمات نحويا و يوزنها صرفيا .

a2 .يصف محتويات المعجم العربي و طرق البحث عن معاني الكلمات.

المهارات الذهنية

b1 .يميز بين أنواع الكلمات ويعرب الكلمات حسب قواعد النحو.

المهارات العملية و المهنية

لا يوجد

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

المهارات العامة
d1 .يطور مهارة الذائقة الأدبية للنص الأدبي .

ربط مخرجات التعلم باستراتيجيات التدريس والتقييم		
أولا: ربط مخرجات تعلم المقرر (المعارف والفهم) باستراتيجية التدريس والتقييم:		
مخرجات المقرر / المعرفة والفهم	استراتيجية التدريس	استراتيجية التقويم
a1	المحاضرة و النقاش	اختبارات تحريرية
a2	المحاضرة و النقاش - التعلم عن طريق التغذية الراجعة	اختبارات تحريرية – اختبارات مفاجئة
ربط مخرجات تعلم المقرر (المهارات الذهنية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات الذهنية	استراتيجية التدريس	استراتيجية التقويم
b1	المحاضرة والنقاش -التعلم عن طريق التغذية الراجعة	اختبارات تحريرية – تكاليف
ثالثا: ربط مخرجات تعلم المقرر (المهارات المهنية والعملية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات المهنية والعملية	استراتيجية التدريس	استراتيجية التقويم
رابعا: ربط مخرجات تعلم المقرر (المهارات العامة) باستراتيجية التدريس والتقييم:		
مخرجات المقرر	استراتيجية التدريس	استراتيجية التقويم
d1	التعلم عن طريق التغذية الراجعة	تكاليف

مواضيع المقرر الرئيسة والفرعية

كتابة وحدات /مواضيع محتوى المقرر					
الرقم	وحدات/ موضوعات المقرر	المواضيع التفصيلية	عدد الأسابيع	الساعات الفعلية	مخرجات تعلم المقرر
١	قواعد النحو	– الكلمة و أقسامها – الاسم أقسامه وعلاماته و اعرابه – الفعل أقسامه وعلاماته و اعرابه – الحرف أقسامه وعلاماته و اعرابه – صور ائتلاف الكلام – الاعراب	٥	١٠	a1,a2, b1
٢	الصرف	– الميزان الصرفي – المجرد و المزيد –	١	٢	a1,a2, b1
		اختبار نصف الفصل	1	٢	a1,a2, b1
٢	الثقافة الإسلامية	-وعي المسلم و دوره للدفاع عن الاسلام	3	٦	a1,a2, b1

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3	قضايا معاصرة	رأي الاسلام في عدد من القضايا و المسائل الانسانية و العلمية و الثقافية	5	١٠	a1,a2, b1
	اختبار نهاية الفصل		١	٢	
	إجمالي الأسابيع والساعات		**١٦**	**٣٢**	

استراتيجية التدريس:

١- المحاضرة و النقاش
٢- التعلم عن طريق التغذية الراجعة

الأنشطة والتكليفات:

الرقم	النشاط / التكليف	مخرجات التعلم	الأسبوع	الدرجة
1	تكليف بحثي : الفرق بين الثقافة الاسلامية و غيرها في أحدى القضايا المعاصرة	**b1**	**5**	**5**
	تكليف كتابي تعبيري : نقد لقصور المسلمين في مواجهة الثقافات الاخرى	**d1**	**12**	**5**

تقييم التعلم:

الرقم	أنشطة التقييم	الأسبوع	الدرجة	نسبة الدرجة إلى درجة التقويم النهائي	المخرجات التي يحققها
1	**امتحانات مفاجئة**	----	١٠	١٠	a2
2	**التكاليف**	5, 12	10	10	b1, d1
3	**اختبارنصف الفصل**	7	20	20	a1,a2, b1
5	**الاختبار النهائي**	١٧	٦٠	٦٠	a1,a2, b1

مصادر التعلم:

نحو ثقافة إسلامية أصيلة : د. عمر الأشقر ، الطبعة الثانية عشرة ، ١٤١٣هـ ، دار النفائس ، الأردن

المراجع الرئيسة: (لا تزيد عن مرجعين)

١. المدخل إلى الثقافة الإسلامية : د . محمد رشاد سالم ، دار القلم ، الكويت ، الطبعة التاسعة ، ١٤٠٧هـ .
٢.

المراجع المساعدة

١. أضواء على الثقافة الإسلامية: نادية شريف العمري.

مواد إلكترونية وإنترنت: (إن وجدت)

-1
-2

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

الضوابط والسياسات المتبعة في المقرر.	
بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:	
١.	**سياسة حضور الفعاليات التعليمية:** تحدد سياسة الحضور ومتى يعتمد الغياب وكيفيته ونسبته، ومتى يعد الطالب محروماً من المقرر
٢.	**الحضور المتأخر :** يتم تحديد السياسة المتبعة في حالات تكرار تأخر الطالب عن حضور الفعاليات التعليمية
٣.	**ضوابط الامتحان:** تحديد السياسات المتبعة في حالات الغياب عن الامتحان و توصيف السياسة المتبعة في حالات تأخر الطالب عن الامتحان.
٤.	**التعيينات والمشاريع:** تحديد السياسات المتبعة في حالات تأخير تسليم التكاليف والمشاريع ومتى يجب أن تسلم إلى الأستاذ.
٥.	**الغش:** تحدد هنا السياسات المتبعة في حالات الغش إما في الامتحانات أو في التكاليف بأي طريقة من طرائق الغش.
٦.	**الانتحال:** يحدد تعريف الانتحال وحالاته والإجراءات المتبعة في حالة حدوثه.
٧.	**سياسات أخرى:** أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

ENGLISH LANGUAGE

Course Identification and General Information:							
1)	**Course Title:**	**ENGLISH LANGUAGE**					
2)	**Course Code &Number:**	**UMS 03**					
3)	**Credit hours:**	C.H					TOTAL
		L.	Tu.	S.	P	Tr.	
		2	2	-	-	-	***4***
4)	**Study level/ semester at which this course is offered:**	*First Year – 1ST semester*					
5)	**Pre –requisite (if any):**	**None**					
6)	**Co –requisite (if any):**	**None**					
7)	**Program (s) in which the course is offered:**	**Pharmacy**					
8)	**Language of teaching the course:**	**ENGLISH**					
9)	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10)	**Prepared by**	**Dr. Safa Alhadad**					
11)	**Date of Approval**	**8/2019**					

Course Description:
This course provides the student with basic structure and grammars in English language. The course covers medical terminology, practice in specialist vocabulary and a review of basic grammatical structures.

Program Intended learning outcomes (PILOs) & the Course Intended learning outcomes (CILOs) and their alignment to teaching and assessment strategies			
A) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
PILOs	CILOs	Teaching strategies	Assessment Strategies
A3	**a1-** comperhind the basic grammars and rule of basic English	**lecture, Tutorial**	**written exam , assignments, quizzes**
(B) Alignment Course Intended Learning Outcomes of Intellectual Skillsto Teaching Strategies and Assessment Strategies:			
PILOs	CILOs	Teaching strategies	Assessment Strategies

B1	**b1-** Differentiate between various English words & phrases	**lecture, Tutorial**	**written exam , assignments, quizzes**
(C)Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:			
C7	**c1-** Effectively & correctly use language grammars & fundamental skills (reading, writing and speech) to present thoughts/ideas.	**lecture, Tutorial**	**written exam , assignments, quizzes**
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
	Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
D2	**d1-**demonstrate self learning and time management skills.	**lecture, Tutorial**	**Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours

1	**Basic English**	b1, c1, d1	• English letters : A to Z, capitals, small letters
			• Classification of words
			  ○ Nouns
			  ○ Articles
			  ○ Pronouns
			  ○ Quantity
			  ○ Adjective
			  ○ Adverbs
			  ○ Prepositions
			• verbs : Be, have, do , Modal auxiliaries and related verbs
				4	16

2	**The sentence**	b1, c1, d1	• Simple, compound, complex • Passive and causative • Questions, answers, negatives • Conditional sentences • Direct and indirect speech	3	12

			• The infinitive and the "ing" form		
			MID-SEMESTER EXAM	1/2	2
3	**Tenses**	b1, c1, d1	• Past simple	1/2	2
			• Past perfect • Past continuous (progressive) • Present simple • Present perfect • Present continuous(progressive) • Future simple • Future perfect • Future continuous (progressive)	7	28
			Total	15	60
Number of Weeks /and Units Per Semester				**15**	**3**

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	
1	Tutorial exercises	a1, b1, c1, d1	3	
2	Homework Exercises	a1, b1, c1, d1	7	

VII. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method	Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

2	Term Works	Quizzes	4-13, 14	10	10	a1, b1, c1, d1
		Assignments	7, 12	10	10	a1, b1, c1, d1
3	Mid-semester exam of theoretical part (written exam		7	20	20	b1, c1, d1
4	Final exam of theoretical part (written exam)		16	60	60	b1, c1, d1
		TOTAL		100	100 %	

Note: Minimum marks to pass the course: The student must gain at least 75% of the total estimation of the course to pass this course**.**

Learning Resources:
1- Required Textbook(s) (maximum two).
L.G. Alexander, 2007, Longman English grammar practice, , Longman Group, UK
2- Essential References.
Mary Lou, 2011, The English Teacher's Survival Guide: Ready-To-Use Techniques & Materials for Grades 7-12 , 2nd Edition, Jossey-Bass teachers, USA
3- Electronic Materials and Web Sites *etc*.
1-literacyworldwide.org *2- World English Institute - Free English Lessons* *3- Medical English Online Course*

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course

6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

GENERAL CHEMISTRY

Course Identification and General Information:							
1)	Course Title:	General chemistry					
2)	Course Code &Number:	FOP 121					
3)	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	3
4)	Study level/ semester at which this course is offered:	*(FIRST) Year – (2nd) semester*					
5)	Pre –requisite (if any):	NONE					
6)	Co –requisite (if any):	NONE					
7)	Program (s) in which the course is offered:	Pharmacy					
8)	Language of teaching the course:	ENGLISH					
9)	Location of teaching the course:	IN THE UNIVERSITY					
10)	Prepared by	Dr.Sadeq Azam					
11)	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course concerns with study of basic concepts of chemistry as an introduction to specific pharmaceutical and medicinal chemistry courses. It covers the qualitative and quantitative aspects of scientific measurement, the nature of matter, gases, liquids and solids, energy, atomic theory, properties of elements, chemical bonding, molecular structure and properties, stoichiometry, thermochemistry, and solutions.

Intended learning outcomes of the course: (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No	PILOs	Intended learning outcomes of the course (CILOs)
1)	A1	**a1.** Explain the roles of chemistry in modern sciences .
2)		**a2.** Explicit the chemical structures of matters and their chemical properties
3)	A3	**a3.** Discuss the principles and types of chemical reactions
4)	B1	**b1.** Interpret the type of chemical compound based on bond formed between atoms
5)		**b2 .**Solve chemical problems related to chemical formula, electronic configuration , quantum (molecular weight, molarity, normality), pH, ionization constant and pKa.

6)		**b3.** Interpret the electronic configuration and transition in atoms
7)		**b4.** Compare between the different types of chemistry disciplines and also between inorganic and organic compounds.
8)		**b5 .**Express the chemical compounds and elements using abbreviate letters.
9)		**b6.** Relate the atom reactivity to electronic configuration to.
10)		**b7.** Predict the outcomes of a chemical reaction between two chemical entities.
11)	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the chemistry lab.
12)	**C2**	**c2.** Operate the instruments and perform experiments successfully in the chemistry lab.
13)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and in teacher in the lab..
14)	**D2**	**d2.** Demonstrate the ability of time management, self-learning and problem-solving skills.
15)	**D3**	**d3.** Work successfully in team-work during performing experiments in chemistry lab.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2,a3	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1,b2,b3, b5, b6, b7	**Lectures, feed-back learning**	**Written exams , assignment, quizzes**
b4	**Lectures**	**Written exams**
(c)Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Lab. Practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

d1	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Lab. Practice works, feed-back learning**	**Lab. practical works, individual assignment**
d3	**Lab. practice, group project**	**Lab. term works, group-assignment**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	Aligned Course Learning Outcomes	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, b4	• chemistry (definition, brief history) • disciplines of chemistry : general, organic, inorganic, analytical, medicinal, physical, etc.) • importance and alications of chemistry in modern sciences.	1	2
2	**Chemical structures**	a2, b1, b2, b3, b6	• atoms , atomic structure • electronic configuration • molecules and molecular formula, • elements, periodic table of elements, • compounds (types) • chemical bonds (ionic, covalent, etc)	3	6
3	**Chemical properties**	a2, b2	• electronegativity, dipole moments, polar and non-polar molecules • acidity, basicity. (pH), ionization constant , pKa • buffer systems	2	4
			MID-TERM EXAM	1	2
4	**Quantum in chemistry**	b2	• atomic weight, molecular weight, equivalent weight, milliequivalent, moles • molarity, molality, normality	2	4
5	**Chemical reactions and equilibrium**	a3, b7, c2	• chemical reactivity, inertness, energy change and heat of reaction • chemical equations balance • reactions catalysts	3	6

			• acid-base reactions, Redox reactions, addition reaction, elimination reactions, substitution reactions, decomposition reactions etc.		
6	**Inorganic chemistry**	b4, c2	○Comparison between inorganic and organic compounds. ○Identification and reactions of common inorganic compounds • Cationic radicals • Anionic radicals	3	6
Course Review and discussion session				1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Learning Outcomes**
1	Introduction to chemistry lab: safety, td3ls, instruments, scope of experiments and reporting assignments. Chemical structures (atoms, molecules, bonds) using models	**1**	**2**	c1, c2 a2
2	pH- meter principle and standard operation procedure: determination of pH of water, weak acids / bases determination of pH of strong acids/bases, salts	**1**	**2**	c1, c2, , d3, , d1, d2
3	Preparation of buffers phosphate , citrate , acetate	**1**	**2**	c1, c2, , d3, , d1, d2
4	Oxidation reactions using potassium permanganate & Decomposition reaction of sodium bicarbonate in water.	**1**	**2**	c1, c2, , d3, , d1, d2
5	Acid/base reaction s e.g : HCl and NaOH	**1**	**2**	c1, c2, d3, , d1, d2
6	Scheme Identification of cationic inorganic radicals	**3**	**6**	c1, c2, d3, , d1, d2
7	Scheme Identification of anionic inorganic radicals	**3**	**6**	c1, c2, , d3, , d1, d2
PRACTICAL EXAM		**1**	**2**	a2, c1, c2,
Total		**12**	**24 equivalent to 12 credit hours**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classrd3m.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do certain assignments such as summarizing, internet search, make charts or solve mathematical problems related to the courses topics. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical mad2er &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	**Individual**: every student is assigned to solve problems presented by the teacher on chemical formula, electronic configuration , quantum (molecular weight, molarity, normality), pH, ionization constant and pKa	d2	4-13	3
2	**Group** : each group of students will be assigned to do a search-report about one type of chemical reactions	d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	b2, a3, d1, d2
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a5, b2, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b2, b3, b4, b5, b6, b7
TOTAL				70	70 %	70

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
	Total			30	30 %	

Learning Resources:
1- Required Textbd3k(s) (maximum two).
6. Cotton . Basic inorganic chemistry
2- Essential References.
7. Bothara. inorganic pharmaceutical chemistry 8. Richard E. Beleil , General chemistry Lab. Manual, 2005, Dakota State university 9. British pharmacopeia, 2013
3- Electronic Materials and Web Sites *etc*.
1-Home | International Journal of Chemistry | CCSE (ccsenet.org) 2-International Journal of Chemistry Research (ijcr.info) 3-International Journal of Chemistry, Material and Environmental Research (IJCMER) 4-International Journal of New Chemistry (ijnc.ir)

Course Policies:	
1)	**Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2)	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3)	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4)	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5)	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6)	**Plagiarism**:

	Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the faculty rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL CALCULATIONS

Course Identification and General Information:							
1	Course Title:	PHARMACEUTICAL CALCULATIONS					
2	Course Code &Number:	PHT122					
3	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	-	-	2
4	Study level/ semester at which this course is offered:	*(first) Year – (2^{nd}) semester*					
5	Pre –requisite (if any):	• Introduction to pharmacy • Mathematics					
6	Co –requisite (if any):	Mathematics					
7	Program (s) in which the course is offered:	Pharmacy					
8	Language of teaching the course:	ENGLISH					
9	Location of teaching the course:	IN THE UNIVERSITY					
10	Prepared by	Dr / Ahmed Algani					
11	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course deals with study of essential mathematical calculations related to drug formulation, dispensing and dosing. This course focuses on quantitative and qualitative principles encompassing calculations performed by pharmacists in various practice settings

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

6. Alignment CILOs to PILOs

No.	PILOs	CILOs
1	A11	**a1.** Describe the methods of pharmaceutical calculations.
2	B1	**b1.** Interpret abbreviations employed in pharmaceutical prescriptions.
3	B9	**b2.** Apply pharmaceutical calculations in preparation of medications and dispensing of prescriptions
4	C2	**c1.** Operate calculator correctly during formulation of pharmaceutical preparations
5	D2	**d1.** Demonstrate the skill of time management and self-learning

6	**D3.**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture**	**Written exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**lecture, Lecture-discussion, feed-back learning**	**Written exam , quizzes,**
b2	**lecture, Lecture-discussion, feed-back learning**	**Written exam , quizzes, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	**Lecture-discussion, Feed-back learning**	**written exam , Quizzes**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Feed-back learning**	**Assignment**
d2	**Group-project**	**Assignment**
d3	**Group project**	**assignment**

Course Content:

Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1	basic mathematical processing, calculators , source of errors, Roman and Arabic Numerals	1	2
2	**Pharmaceutical measurement**	a1, b2,c1	:	2	

	systems of weights		• Apothecary and avoird. systems • metric system. • Equivalent weight and milliequivalent weight		4
3	**Pharmaceutical measurement systems of volumes**	a1, b2, c1	• Apothecary • Metric system • house-hold systems	2	4
4	**Expressions of concentrations**	a1, b2,c1	percentage, ratio, quantity/quantity, PPM, PPB, molarity	1	2
5	**Dilution &Allegation**	a1, b2,c1	• Dilution of conc. Solutions • dilution of potent solids	1	2
			MID-TERM EXAM	1	2
6	**Isotonicity**	a1, b2,c1	• definition & significance • determination	1	2
7	**Buffer capacity**	a1, b2,c1	• definition & significance • determination	1	2
8	**Medical prescriptions**	a1,b1, b2,c1	• ideal prescription, • components of the prescriptions • common symbols and abbreviations	2	4
9	**Enlarging and reducing prescription formulas**	a1,b1, b2,c1	• definition • determination	1	2
10	**Pediatric Dose**	a1,b1, b2,c1	• definitions of doses • Expression of doses • Rules for calculation the child`s dose based on age, weight and body surface area	2	4

Course Review	a1, , , , c1	Review of the course topics by discussion session.	1	2
FINAL – EXAM			1	2
TOTAL			16	32
Number of Weeks /and Units Per Semester			16 weeks	10 Units

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

lecture - Discussion: a short lecture/ address followed by discussion

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provide the students with mathematical problems after each unit. Every student is assigned to solve some of those problems individually.	b2, d2	4-13	6
2	**Group** : each group of students will be assigned to present a report of typical answers of problems of one unit with assessing the correction of answers.	b2, d1, d3	14	4

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
2	Term Works	Quizzes	4-13, 14	10	10	c1, b1
		Assignments	7, 12	10	10	d1, d2, d3, b2
3	Mid-semester exam of theoretical part (written exam		7	20	20	a1, b2, c1
4	Final exam of theoretical part (written exam)		16	60	60	a1, b1, b2, c1
	TOTAL			100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
10. Howard C. Ansel, Pharmaceutical Calculations, 2010, Lippincott Williams & Wilkins .
2- Essential References.
1. Winfield. calculations for pharmaceutical practice 2. Ryan F Donnelly, Johanne Barry, MCQs in Pharmaceutical Calculations, 2009, pharmaceutical press
3- Electronic Materials and Web Sites *etc*.
1-International Journal of Pharmaceutical Compounding – A pharmacy journal focused on compounding pharma practice. (ijpc.com) 2-repository.akfarmahadhika.ac.id/E-BOOK/%40MedicalBooksStore_2017_Pharmaceutical.pdf 3-https://de.cdn-website.com/dcd39678c7e140728c4783df708ba9c9/files/uploaded/6_NvtQuTrSES9YIDVxESVM.pdf 3- academic.oup.com 5- Pharmaceutical calculations | Oxford Handbook of Clinical Pharmacy | Oxford Academic (oup.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course

6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICAL TERMINOLOGY

Course Identification and General Information:						
1	**Course Title:**	**Medical Terminology**				
2	**Course Code &Number:**	**FOP123**				
3	**Credit hours:**	C.H				TOTAL
		L.	Tutorial	Pr	Tr.	
		2		-		2
4	**Study level/ semester at which this course is offered:**	First year/second semester				
5	**Pre –requisite:**	**None**				
6	**Co –requisite :**	**English language**				
7	**Program (s) in which the course is offered:**	**Pharmacy**				
8	**Language of teaching the course:**	English				
9	**Location of teaching the course:**	In the university				
10	**Prepared by**	Dr. Safa Alhadad				
11	**Date of Approval**	8/2019				

Course Description:

This course is designed to help the student acquire a good command and comprehension of the Medical English terminology through individual, papers and conferences. Students will practice their skills in verbal and written English during clinical and classroom experience. This course provides the students with the four skills of English language in the medical context. The course covers medical terminology, practice in specialist vocabulary and a review of basic grammatical structures.

Alignment Course Intended Learning Outcomes (CILOs)to program intended learning outcomes (PILOs) , Teaching Strategies and Assessment Strategies

1. Alignment Course Intended Learning Outcomes (CILOs) to program intended learning outcomes (PILOs)

PILOs	**CILO**
A3	**a1.** Identify the principles of basic structures and components of medical terms.
B1	**b1**. Interpret medical terms .
C6	**c1**. Use capably medical term in construction articles and reports
D2	**d1.** Demonstrate the ability of self-learning

2. Alignment Course Intended Learning Outcomes to Teaching Strategies and Assessment Strategies:

CILO	Teaching strategies	**Assessment Strategies**
CILOs of knowledge & understanding		
a1.	Lecture Discussion	Written exam
CILOs of intellectual skills		

b1.	Lecture Discussion	Written exam , quizzes,
CILOs of practical & professional skills		
c1.	Lecture Discussion	Written exam , assignments
CILOs of general skills		
d1. Demonstrate the ability of self-learning	Feed-back learning	Assignments

Course Content:

Order	Units/Topics List	Sub Topics List	No. of Weeks	Contact hours	Learning Outcomes
1	Introduction	▪ Origin of medical terms ▪ Parts of a medical term: prefix, suffix, root ▪	1	2	a1, b1, c1, d1
2	Prefixes	▪ Prefixes related adjectives e.g. numeric (e.g.mono) , size" large and small" (e.g. micro, macro) , dimension "short (e.g. brachy) , speed" slow, fast (e.g. brady, tachy), location (intra, exter, per, ante, post) increased and decreased (e.g. hypo, hyper , mal, olig, a, an), different (e.g. dis, pseud, meta,) , colors (e.g. leuco, erytho) ▪	3	6	a1, b1, c1, d1
3	Suffixes	▪ Suffixes related to science (e.g. -logy, -logist), tests (-scope, -scopy, ----- ▪ -graph, -graphy, , measurement (e.g. -meter), case (-ia, -iasis, -osis,), diseases (e.g.- pathy, -oma, -neoplsm), operations(e.g. –ectomy)	3	6	a1, b1, c1, d1
	Midterm exam		1	2	a1, b1, c1, d1
4	Roots of terms	▪ Roots related to body : ○ cells (e.g. cyte, cyto) tissues(hist) , organs (vaso, card)	5	a1, b1, c1, d4	a1, b1, c1, d1

		○ systems and organs ○ pjysio, patho,			
		▪ chemical names (glyc, hydr, chlor, proteo), sciences Multi-roots terms e.g. hyperglycemia	1		a1, b1, c1, d1
5	No suffix or prefix terms	▪ Terms without suffix e.g. erythrocytes ▪ Terms without prefix e.g. cardiology	1		a1, b1, c1, d1
6	Final exam		1	3	a1, b1, c1, d1
Number of Weeks /and Units Per Semester			**16**	**32**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by usingtechniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do certain assignments such as summarizing, internet search, make charts or solve mathematical problems related to the courses topics. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Construction of an article with 20 medical term (individual assignment)	d1	4-10	10

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1

	Assignments	7, 12	10	10	c1, d1
2	Mid-semester exam of theoretical part (written exam	7	20	20	a1, b1, c1
3	Final exam of theoretical part (written exam)	16	60	60	a1, b1, c1
	TOTAL		100	100 %	

Note: Minimum marks to pass the course: The student must gain at least 75% of the total estimation of the course to pass this course**.**

Learning Resources:	
1- Required Textbook(s)	
	1. Selva Rose. (1997), Career English for Nurses. Cheiu;ai: OientLongrnanLtd. 2. Quirk, Randolph and Jreenbaum Sidney(1987). A University Grammar of English, Hong Kong: Longman group (FE) Ltd.
2- Essential References.	
	1. Thomson A. J. and Maitüiet A. V. (1987). A 1icticl English Grammar, Delhi: Oxford University Press. 2. Gimson A. E. (1986). An Introduction to pronunciation of English. Hong kong: Wing King Tong Ca. Ltd. 3. O' Connor J. D, (1986). Better English h'onuwiation. Cambridge:University Press.
3- Electronic Materials and Web Sites *etc*.	
	1-literacyworldwide.org 2- World English Institute – Free English Lessons 3- Medical English Online Course

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments &Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHYSICAL PHARMACY

Course Identification and General Information:								
1	**Course Title:**	**PHYSICAL PHARMACY**						
2	**Course Code &Number:**	**PHT124**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(First) Year – (2ND) semester*						
5	**Pre –requisite (if any):**	• **Physics**						
6	**Co –requisite (if any):**							
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr. Abdulkarim Alzome**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course deals with study of the various physical phenomena applied or observed in pharmacy in particular pharmaceutical dosage forms design and formulation. Therefore, this course can be referred so as to introduction to "pharmaceutics" courses.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
7. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1)	**A3**	**a1.** Show sound understanding of physical properties and phenomena that influence the design of pharmaceutical preparations
2)	**B9**	**b1.** Apply relevant equations to calculate physical measurements related to formulation and stability of pharmaceutical preparations
3)	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory.
4)	**C2**	**c2.** Operate the instruments and measure physical properties successfully in the laboratory.

5)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and in teacher in the lab..
6)	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
7)	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	**Lecture-discussion**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion, feed-back learning**	**Written exam, Quizzes, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Lab. Practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Lab. Practice, feed-back learning**	**Lab. term works, assignment**
d2.	**Lab. Practice ,feed-back learning**	**Lab. term works, assignment**
d3	**Lab. Practice , Group-project**	**Lab. term works, assignment**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to physical pharmacy**	a1,	• Scope and purposes of physical pharmacy • State of matters : factors affecting (intermolecular forces, vapor pressure, atmospheric pressure, thermal energy) • Circle of inter-conversion of a matter from a state of state ; name of processes, factors affecting • Pharmaceutical Application of inter-conversion of matters in pharmacy	2	4
2	**solid state physical properties**	a1, b1	• Melting points of solids • Liquefaction of mixed solids • Crystallization : principles and applications • Amorphous and crystalline forms • Polymorphism, hydrates, anhydrous • Micrometrics : particle size definition, analysis • Tapped and bulk density • porosity, flowability and Carr`s index • Mathematical problems related to the studied topics • summary of Pharmaceutical Applications of solid state properties.	3	6
	liquid states physical properties	a1, b1	• evaporation, boiling, vaporization and volatilization • Viscosity and types of flow of fluids • Mathematical problems related to the studied topics • Pharmaceutical Applications of liquid state properties.	2	4
			MID-TERM EXAM	1	2
4	**Gas state physical properties**	a1, b1	• Ideal gases and Real gases • Laws and equations of ideal and real gases	1	2

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

			• Aerosols :principles and applications		
5	**Physical interactions between matters**	a1, b1	Principles, equations, factors and problems of the following physical matters interactions: • solubility , miscibility and dissolution • insolubility and immiscibility • dispersion and surface tensions (Solid dispersion in liquids , Liquid dispersion in liquids) • Sedimentation • Coalescences • partition coefficient: hydrophilicity and lipophilicity • Adsorption • Complexation • Mathematical problems related to the studied topics • Summary of pharmaceutical applications of the	3	6
6	**Stability and degradation kinetics**	a1, b1	• Degradation of matters : definition and types of degradation, definition of stability, factors enhancing degradation, approaches to reduce or limit degradation • Orders of degradation (zero,first, second) • Degradation parameters: degradation rate constant, half-life($t_{1/2}$) , shelf life (t_{90}) • Mathematical problems related to degradation order kinetics	3	6
Course Review		a1, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Intended Learning Outcomes CILOs**
1.	**introduction to** Lab.: safety requirements, list of experiments, How to report, etc + liquefaction of solids	**1**	**2**	c1, c2, d1, d2, d3
2.	Tapped and bulk density porosity and Carr`s index of flowability description ..	**1**	**2**	c1, c2, d1, d2, d3
3.	Crystallization phenomena	**1**	**2**	c1, c2, d1, d2, d3
4.	Density of l liquids	**1**	**2**	c1, c2, d1, d2, d3
5.	Viscosity determination	**1**	**2**	c1, c2, d1, d2, d3
6.	Particle size determination (sedimentation method)	**1**	**2**	c1, c2, d1, d2, d3
7.	Surface tension determination (Drop weight method)	**1**	**2**	c1, c2, d1, d2, d3
8.	Solubility description	**1**	**2**	c1, c2, d1, d2, d3
9.	Adsorption phenomenon	**1**	**2**	c1, c2, d1, d2, d3
10.	Partition coefficient determination	**1**	**2**	c1, c2, d1, d2, d3
11.	Review	**1**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
lecture - Discussion: a short lecture/ address followed by discussion

Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, home-works, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provide the students with mathematical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	b1, d2	4-13	3
2	**Group** : each group of students will be assigned to make a search-report supported by illustrating videos on one of the studied physical phenomenon.	d1, d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b1, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, b1
TOTAL				70	70 %	70

Practical part assessment

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
			Total	30	30 %	

VIII. Learning Resources:
1- Required Textbook(s) (maximum two).
1. Martin`s : Physical pharmacy and pharmaceutical sciences, 2011, Lippincott Williams & Wilkins, UK
2- Essential References.
1. Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK 2. Subrahmanyam. A text book of physical pharmaceutics, 2015, VallabhPrakashan, India 3. R.S. Gaud G.T. Gupta practical physical pharmacy, 2012, CBS, USA
3- Electronic Materials and Web Sites *etc*.
1- International Journal of Pharmaceutics | ScienceDirect.com by Elsevier 2- www.pharmacyjournal.info 3- Pharmacy journal | International Journal of Pharmaceutical Sciences and Drug Analysis 4- https://edwiserinternational.com/news.php?id=Mjg= 5- Physical Pharmacy | List of High Impact Articles | PPts | Journals | Videos (longdom.org).

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

ANATOMY & HISTOLOGY

I. Course Identification and General Information:						
1	**Course Title:**	**Anatomy and Histology**				
2	**Course Code &Number:**	**FOP 125**				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2	-	1		3
4	**Study level/ semester at which this course is offered:**	1st year/Second semester				
5	**Pre –requisite:**	General biology				
6	**Co –requisite :**	-				
7	**Program (s) in which the course is offered:**	**Pharmacy**				
8	**Language of teaching the course:**	English				
9	**Location of teaching the course:**	In the university				
10	**PREPARED BY**	Dr. Amar Omer				
11	**Date of Approval**	8/2019				

II. Course Description:
The course focuses on the components of the main anatomical structure and functioning of the body and its systems and organs. The course includes the structure and function of the human body & organs tissues, their different types, location, distribution and function in human body and of the different organ system and their prospective roles and function in the organization of the body. Gross anatomy is treated in its broadest aspects and includes the human skill and the different system: Skeletal, muscular, nervous, sensory and circulatory and lymphatic.

III. Intended learning outcomes of the course(CILOs) and their alignment to Program Intended learning outcomes (PILOs)

NO.	PILOs	CILOS
1)	A1	**a1.** Show understanding of the basic concepts of anatomy and organization of human body.
2)		**a2.** Describe the types of tissues from which human body organs are formed
3)	B2	**b1.** Classify human body into systems and organs
4)		**b2.** Differentiate between different types of tissues in human body.

5)		**b3.** Relate anatomical/histological structure with functions of organs and tissues in human body
6)	**C1**	**c1.** Handle efficiently and safely different biological samples and chemicals in the laboratory
7)	**C2**	**c2.** Operate successfully the light microscope and other instruments used in the laboratory.
8)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and teachers.
9)	**D2**	**d2.** Demonstrate time management and self-learning skills**.**
10)	**D3**	**d3.** Work successfully in team-work in the biology lab

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**written exams**
b2	**Lecture, lab. Practice**	**written exam, lab. term works, final practical exam**
b3	**Lecture, Feed-back learning**	**Written exams, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Lab. Practice, Feed-back learning, group-project**	**lab. term works, final practical exam, assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Lab. Practice , Group-project**	**lab. term works, final practical exam, assignment**
d2.	**Lab. Practice, feed-back learning**	**Lab. attitude, individual assignment**

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	No. of Weeks	Contact hours	Learning Outcomes
1	Histology	▪ Definitions ▪ Human Cell structure ▪ Tissues -Definition, Types, characteristics, classification, location, functions and formation ▪ General Histology, study of the basic tissues of the body ▪ Microscope, Cell, Epithelium, Connective Tissue, Cartilage, Bone, Muscular tissue, Nerve, Tissue – TS & LS, Circulatory system – large sized artery, medium sized artery, large sized vein, lymphoid tissue, Skin and its appendages.	4	8	a1, a2, b1, b3
2	The Skeletal System	▪ Bones- types, structure, Axial & Appendicular Skeleton, ▪ Bone formation and growth ▪ Description of bones ▪ Joints - classification and structure	1	2	a1, a2, b1, b3
3	The Muscular System	▪ Types and structure of muscles ▪ Muscle groups Alterations in disease Applications and implications in nursing	1	2	a1, a2, b1, b3
4	Midterm exam		1	2	
5	The Nervous System	▪ Structure of neurologia& neurons ▪ Somatic Nervous system	1	2	a1, a2, b1, b3

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

		- Structure of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves ▪ Autonomic Nervous System - sympathetic, parasympathetic - Structure, location			
7	Circulatory and lymphatic system	▪ The Circulatory System - Blood-Microscopic: structure - Structure of Heart - Structure of blood vessels- Arterial & Venous System, - Circulation: systemic, pulmonary, coronary ▪ Lymphatic system: - Lymphatic vessels and lymph - Lymphatic tissues - Thymus gland - Lymph nodes ○ Lymphatic nodules	2	4	a1, a2, b1, b3
8	The Respiratory System	▪ Structure of the organs of respiration ▪ Muscles of respiration: Intercostal and Diaphragm	1	2	a1, a2, b1, b3
9	The Digestive System	▪ Structure of Alimentary tract and accessory organs of digestion	1	2	a1, a2, b1, b3
10	The Excretory System (Urinary)	▪ Structure of organs of urinary ▪ System: Kidney, ureters, urinary bladder, urethra, structure of skin	1	2	a1, a2, b1, b3
11	The Endocrine System	▪ Structure of Pituitary, Pancreas, thyroid, Parathyroid, thymus and adrenal glands	1	2	a1, a2, b1, b3
12	The Reproductive system including breast	▪ Structure of female reproductive organs ▪ Structure of male reproductive organs. ▪ Structure of breast	1	2	a1, a2, b1, b3
13	Final exam		1	2	a1, a2, b1, b3
Number of Weeks /and Units Per Semester			**16**	**32**	

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Learning Outcomes**
1	Introduction	1	2	b2, c1, c2, d1, d2, d3
2	Histology : microscopical features of different types of tissues	2	4	b2, c1, c2, d1, d2, d3
3	Tissue histology and Models of skeletal system	3	6	b2, c1, c2, d1, d2, d3
4	Tissue histology and Models of circulatory system	1	2	b2, c1, c2, d1, d2, d3
5	Tissue histology and Models of central nervouys system	2	4	b2, c1, c2, d1, d2, d3
6	Tissue histology and Models of peripheral nervouys system	2	4	b2, c1, c2, d1, d2, d3
7	Final practical exam	1	2	b2, c1, c2, d1, d2, d3
Number of Weeks /and Units Per Semester		**12**	**24**	

V. Teaching strategies of the course:

1. Lecture
2. Feed-back learning
3. Laboratory practice

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Each student is assigned to draw anatomical features of an organ/system in the body	d1	4-10	5

VII. Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	d1

2	Mid-semester exam (written exam)	7	10	10	a1, a2, b1, b3
3	Final exam (written exam)	16	50	50	a1, a2, b1, b3
	TOTAL		70	70 %	

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	b2, c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b2, c1, c2, d2
		Total		30	30 %	

VII. Learning Resources:

1- Required Textbook(s)

1. Cohen : Memmler's Structure & Function of Human Body, LWW.
2. Tortora, G.J. : Introduction to the human body. Harper and Row Publisher, New York.

2- Essential References.

1. Alexander P. : Human anatomy and physiology. Benjamin/Cummings Pub. California.
2. Waugh: Ross & Wilson Anatomy & Physiology, Elsevier

3- Electronic Materials and Web Sites *etc*.

1. International Journal of Human Anatomy | About | Open Access Pub
2. IJAR | Anatomy | International Journal of Anatomy and Research | Int J Anat Res (ijmhr.org)
3. Italian Journal of Anatomy and Embryology (fupress.net)
4. Anatomical Science International | Home (springer.com)

VIII. Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments &Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

BOTANY

Course Identification and General Information:							
1	**Course Title:**	**BOTANY**					
2	**Course Code &Number:**	**PHG 126**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(1ST) Year – (SECOND) semester*					
5	**Pre –requisite (if any):**	• **General biology**					
6	**Co –requisite (if any):**	----------					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr. Hasan Ibrahem**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course provides essential knowledge and skills in plants as an introduction to pharmacognosy and phytochemistry courses. This course is designed in order to help the student in the identification of natural drugs from plant kingdom as well as their proper collection, storage, marketing according to pharmacopoeias and methods of drug adulteration.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

8. Alignment CILOs to PILOs

No.	PILOs	CILOs
1)	A6	**a1.** Identify the general characters, life cycles and nutritional sources of the common orders, families, genera and species of the plant kingdom
2)		**a2.** Describe the types morphological and microscopical features of plant seeds, roots, leaves, stems , barks, flowers and fruits
3)		**a3.** Determine the structural/functional components and biological processes of plant cell and the anatomical and physiological features of tissues and systems in common plant species.
4)		**a4.** Explicit the economic and medical uses of common plant genera and species in particular plants belonging to Angiosperm .

5)	**B6**	**b1.** Differentiate between various plant species based on their morphological and microscopical features.
6)		**b2 .** Classify plant kingdom into orders, families, genera and species.
7)		**b3.** Compare between animal cell and plant cell.
8)	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the chemistry lab.
9)	**C2**	**c2.** Operate the instruments and perform experiments successfully in the chemistry lab.
10)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues and in teacher in the lab..
11)	**D2**	**d2.** Demonstrate the ability of time management, self-learning and problem-solving skills.
12)	**D3**	**d3.** Work successfully within a team.

3. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3 , a4	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1,b2,b3	**Lectures, feed-back learning**	**Written exams , assignment, quizzes**
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Lab. Practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Lab. Practice works, feed-back learning**	**Lab. practical works, individual assignment**
d3	**Lab. practice, group project**	**Lab. term works, group-assignment**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to botany**	a1, a3, a4,b1, b2,b3,	• Definition and Brief history of botany • Basis of plant structures: plant cell and plant cellular contents , types of plant tissues and plant organs • Differences between plant kingdom and animal kingdom • Nutrition, metabolism and growth of plant • Plant taxonomy : basis of classification of plant kingdom intoorders, families,, suborders, genera, species.	2	4
2	**Plant Order (1) THALLOPHYTES (Thallophyta)**	a1, a3, a4,b1, b2,	• General characters • **Algae**e.g. Pleurococcus, Spirogyra, Vaucheria, Diatoms.), economic use of algae • **Fungi :** differences from algae, types phycomycetes (oomycetes e.g. saprolegnia), (zygomycetes e.g. black mold) eumycetes (ascomycetes e.g. yeasts: Ergot fungi) (Basidiomycetes edible mushroom, amanita) economic use of fungi • **lichens** types and examples • **Bacteria** (only brief study on general characters and differences from fungi, algae and lichens. • **Viruses** : general characters, examples	2	4
3	**Plant order (2) ARCHEGONIATES (Archegoniatae)**	a1, a3, a4,b1, b2,	• General characters • Bryophytes e.g. Hepaticae, mosses • Pteridophytes e.g. Ferns, club mosses	2	4
4	**Plant order (3) SPERMOPHYTES (seeding plants)**	a1, a3, a4,b1, b2,	• Gymnosperms , characters, differences, examples of plants • Angiosperms: characters, differences, economically and medically valuable families.	1	2

MID-TERM EXAM				1	2
5	**Plant parts in Angiosperms**	a1, a2, a3, a4, b1,b2,	(morphology, anatomy and physiology) of : • The roots • The stems • The bark • The leaf • The flower • The fruit • The seed	3	6
6	**classification of angiosperms yielding vegetable drugs**.	a1, a3, a4,b1, b2,	• **Monocotyledons :** general characters, classification, examples of plants and their yielding drugs • **Dicotyledons : (**Archichlamydeae or Choripetalae, Metachlamydeas or Sympetalas): general characters, classification, examples of plants and their yielding drugs	3	9
Course Review		a1, a2, a3, a4, b1,b2,	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
8.	introduction to pharmaceutical organic chemistry Lab.: safety requirements, list of experiments, How to report, etc.	**1**	**2**	a1, a2, c1, c2, , d3, d1, d2,

9.	Algea: microscopical slides	**1**	**2**	a1, a2, c1, c2,, d3, d1, d2,
10.	Fungi: microscopical and morphological features of different fungi species	**2**	**4**	a1, a2, c1, c2, d3, d1, d2,
11.	Plant leaves: morphology and microscopy	**2**	**4**	a1, a2, c1, c2, d3, d1, d2,
12.	Plant barks: morphology and microscopy	**1**	**2**	a1, a2, c1, c2, d3, d1, d2,
13.	Plant roots and rhizomes: morphology and microscopy	**1**	**2**	a1, a2, c1, c2,, d3, d1, d2,
14.	Plant flowers: morphology and microscopy	**1**	**2**	a1, a2, c1, c2,, d3, d1, d2,
15.	Plant fruits: morphology and microscopy	**1**	**2**	a1, a2, c1, c2 , d3, d1, d2,
16.	Differentiation between Monocotyledons Dicotyledons : morphology and microscopy	**1**	**2**	a1, a2, c1, c2,, d3, d1, d2,
PRACTICAL EXAM		**1**	**2**	a1, a2, b2, c1, c2, d1, d2,
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Seminars: these are mainly used with small groups of students (20-30) students in which they find better chances for discussing and participating in the teaching process.
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to do a search report on one species of one medically valuable plant family.	d2	4-13	3
2	**Group** : each group of students will be assigned to do a search report supported with illustrating videos on one of the followings|: • Plant taxonomy • Plant cell • Algae • Phycomycetes	d1, d3	14	2

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a4, b1, b2, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, b1, b2, b3
TOTAL				70	70 %	70

Practical part assessment					
No.	**Assessment Method**	**Week Due**	**Mark**	**Proportion To Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2,d1, d2
			Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
11. MesSchooley , introduction to botany, 1997, Delmar publisher
2- Essential References.
1. W.C. Evans, Trease and Evans pharmacognosy, 2009, W.B.Saunders 2. Stern. Introductory plant biology
3- Electronic Materials and Web Sites *etc*.
1- International Journal of Botany - Home (scialert.net) 2- International Journal of Botany Studies l Web of Science (botanyjournals.com) 3- International Journal of Botany (ansinet.com) 4- International Journal of Botany (scimagojr.com)

	Course Policies:
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

FIRST AID

Course Identification and General Information:								
1	Course Title:	FIRST AID						
2	Course Code &Number:	FOP127						
3	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		2
4	Study level/ semester at which this course is offered:	*(1st) Year – (2nd) semester*						
5	Pre –requisite (if any):	NONE						
6	Co –requisite (if any):	Anatomy and histology						
7	Program (s) in which the course is offered:	Pharmacy						
8	Language of teaching the course:	ENGLISH						
9	Location of teaching the course:	IN THE UNIVERSITY						
10	Prepared by	Dr. Osama A, AL sudani						
11	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course provides necessary knowledge of how to provide first aid to people who got injured , hit by accidents or have serious life-threatening conditions. Besides, the course is alongside with general chemistry and physical pharmacy courses in which the student should have knowledge to diminish risks of accidents and injuries in the laboratories.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
9. Alignment CILOs to PILOs		
No.	PILOs	CILOs
1)	A1	**a1.** Define first aid and its objectives and significance.
2)		**a2.** Discuss the principles of first aid in various emergency situations
3)		**a3.** Identify the steps to be carried out in first aid of different types of accidents and injuries.
4)	A10	**a4.** Comprehend his/her role as a pharmacist to implement and participate in primary health care and epidemic-diseases control programs and in assisting health care team to provide first aid services.

5)	**B1**	**b1.** Interpret signs of mild and sever accidents and injuries.
6)	**C7**	**c1 .** Search efficiently for information using documented and electronic sources of information.
7)		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
8)	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
9)	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3 , a4	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture, feed-back learning**	**Written exam , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**group project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2	**group project**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to first-aid**	a1, a2, a3, a4	• Definition, concept and history of fist aid • objectives and responsibilities of first aid	2	4

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

			• role of pharmacist in assisting health care team in providing first-aid to patients. • General principles of first-aid		
2	**First aid of injuries , bleeding, burn , bites**	a1, a2, a3, a4, b1	• Handling of chemicals • First aid of poisoning • First aid of cuts: injuries, bleeding • first-aid of burns & sunburn & frost • first-aid of animal bites, stings • First aid Hit accident	5	10
Mid-term exam				1	2
3	**First aid of conditions affecting, respiratory systems and CVS and CNS**	a1, a2, a3, a4, b1	• First aid of asphyxia • first aid of hypotension & shock • first aid of cardiac arrest • First aid of seizure • First aid of coma	7	14
Course Review		a1, a2, a3, a4, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
lecture - Discussion: a short lecture/ address followed by discussion
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
2	**Group** : each group of students will be assigned to provide a search-based report for comparison of first-aid procedures of cases not included in the theoretical part of the course.	c1, c2 , d1, d2	14	10

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	7, 12	10	10	c1, c2, d1, d2
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, a4, b1
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, a4, b1
TOTAL				100	100 %	

VIII. Learning Resources:

1- Required Textbook(s) (maximum two).

David Pencheon. Oxford handbook of First aid

2- Essential References.

القواعد العامة للاسعافات الاولية / د/ محمد ابراهيم شلبي

3- Electronic Materials and Web Sites *etc*.

Course Policies:

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Level II

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICS I

Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICS I**					
2	**Course Code &Number:**	**PHT 211**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(2nd) Year – (first) semester*					
5	**Pre –requisite (if any):**	• **Introduction to pharmacy** • **Physical pharmacy** • **Pharmaceutical calculations**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr. Anes A. Thabet**					
11	**Date of Approval**	**8/2019**					

Course Description:
The first topics in this course provides an introduction to the science and art of pharmaceutical dosage form design in particular knowledge in roles and types of excipients and also in the subsequent stages of design including preformulation, formulation and development. Then, the next topics of the course provides essential knowledge and skills for preparation of liquid dosage forms. The course is preceded by the course (Physical pharmacy) and (Pharmaceutical calculations) which are critical in comprehending the concepts in (Pharmaceutics courses)

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
10. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Describe the significance of pharmaceutics as art and science of dosage form design
2		**a2.** Explicit the types and roles of excipients included in different types of pharmaceutical liquid dosage forms.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3		**a3.** Describe the stages of designing a pharmaceutical dosage form
4	A10	**a4.** Describe the role of pharmacist in formulation of pharmaceutical dosage forms
5	A11	**a5.** Explicit the general properties, advantages and disadvantages of pharmaceutical liquid dosage forms.
6		**a6**. Discuss the principles, pharmacopeial requirements, methods of preparation, of various types pharmaceutical liquid dosage forms.
7	B2	**b1 .** Classify pharmaceutical dosage forms and categorize liquid dosage forms.
8		**b2.** Compare between various types ofpharmaceutical liquid dosage forms in particular between old and current dosage forms and between solutions and dispersion liquids.
9	B3	**b3.** Design liquid pharmaceutical dosage forms
10	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
12	C5	**c3.** Employ the relevant way to prepare liquid extemporaneous pharmaceutical dosage forms.
13	C7	**c4 .**Search efficiently for information using documented and electronic sources of information.
14		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
16	D2	**d2.** Demonstrate the skills of time management and self-learning.
17	D3	**d3.** Participate efficiently with colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

b1, b2, b3, b4	**Lecture-discussion, Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a4	Definitions and brief history of pharmaceutics, dosage forms, pharmacopeia, active ingredients, excipients.	1	2
2	**Types of Pharmaceutical dosage form**	a1, a2, a4, b1, b2	Definition of dosage form, the components, the need to dosage forms, classification of dosage forms	1	

3	**Pharmaceutical excipients**	a1, a2, a4	Roles, types with examples	1	2
4	**Design of dosage form: Preformulation, Formulation and development**	a1, a2, a3, a4, b3	• Preformulation stage: physicochemical properties and analytical data required. Scheme of preformulation, Problems of incompatibilities: types and reasons, avoidance. • Formulation: general rules, sources of raw materials, economic impact • Development and improvement: recognition, palatability	2	4
5	**Compounded (extemporaneous) prescriptions**	a1, a2, a3, a4, b3	formula, incompatibilities, general operations (maceration, percolation, filtration, mixing, size-reducing, etc)	2	
6	**Old pharmaceutical dosage forms**	a1, a2, a3, a4, b3	Galenicals, mucilages, lozenges, cachets, pills, glycerites, etc.	1	2
Mid-semester exam				1	2
7	**Introduction to Non-sterile Pharmaceutical solutions**	a1, a2, a3, a4, a5, a6, b1, b2, b3	definition of solutions, types, advantages, disadvantages, general method of preparation, enhancement of dissolution, excipients, types of waters	1	2
8	**Aqueous Pharmaceutical solutions**	a1, a2, a3, a4, a5, a6, b1, b2, b3	(aromatic waters, douches, mouthwashes, syrups, linctuses, non-syrup oral solutions, and enemas**)** **:**general characters advantages, disadvantages, method of preparation, purpose of each type.	1	2
9	**Non-Aqueous Pharmaceutical solutions**	a1, a2, a3, a4, a5, a6, b1, b2, b3	(concentrated water, spirits, elixirs, collodions, liniments, sprays, fluidextracts, tinctures), , method of preparation, purpose of each type, general characters	1	2

10	**Non-sterile liquid Dispersion systems**	a1, a2, a3, a4, a5, a6, b1, b2, b3	definition, difference from solutions, advantages,disadvantages. • **Colloidals**: types, advantages, disadvantages, properties , examples. • **suspensions** definition, types, advantages, disadvantages, physical properties (sedimentation, stability, flocculated, deflocculated, zeta-potential), excipients, method of preparation, examples • **emulsions** definition, types, advantages, disadvantages, physical stability, excipients, method of preparation, examples • **Microemulsions and nanoemulsion:** definition, types, advantages, disadvantages, physical stability, excipients, method of preparation, examples	3	6
11	**Non-sterile Drops**	a3, a4, a5, b1, b2, b3,	e.g. oral drops, definition, types, formulation requirements,	1	2
Course Review		a3, a4, a5, b1, b2, b3,	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**

17.	introduction to the Lab.: safety requirements, list of experiments, How to report, etc.	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
18.	Preparation of aqueous solutions : aromatic water (Peppermint water)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
19.	Preparation of aqueous solutions : mouthwash (boric acid M.W.)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
20.	Preparation of aqueous solutions : Syrups (simplesyrup.)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
21.	Preparation of aqueous solutions : cough Syrup (linctuses : ammonium chloride syrup.)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
22.	Preparation of non-aqueous solutions : Elixirs (Aromatic elixir)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
23.	Preparation of non-aqueous solutions : liniments (camphor liniment)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
24.	Preparation of liquid dispersion systems : emulsions (castor oil emulsion)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
25.	Preparation of liquid dispersion systems : emulsions (liquid paraffin emulsion)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
26.	Preparation of liquid dispersion systems : suspensions (calamine lotion)	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
27.	Preparation of paracetamol oral suspension	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
28.	Review	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b3, c1,c2, c3, d1, d2, d3
Total		**11**	**22 equivalent to 12 credit hours**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on

sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied dosage forms	c4, c5, d2	4-13	3
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of studies dosage forms.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, a6, b1, b2, b3
TOTAL				70	70 %	70

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
			Total	30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
12. Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK 13. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
2- Essential References.
1. Rawlins. Bentley s of text book of pharmaceutics 2. Kasture pharmaceutics
3- Electronic Materials and Web Sites *etc*.
1-International Journal of Pharmaceutics and Drug Analysis (ijpda.com) 2-0378-5173 (elsevier.com) 3-International Journal of Pharmaceutics (researchgate.net) 4-Ovid - International Journal of Pharmaceutics | Wolters Kluwer

Course Policies:	
1)	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2)	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3)	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4)	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5)	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course

6)	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the faculty rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

ANALYTICAL CHEMISTRY I

Course Identification and General Information:								
1	Course Title:	ANALYTICAL CHEMISTRY I						
2	Course Code &Number:	PHC 212						
3	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-		3
4	Study level/ semester at which this course is offered:	*(SECOND) Year – (1ST) semester*						
5	Pre –requisite (if any):	General chemistry						
6	Co –requisite (if any):	Pharm. Organic chemistry 1						
7	Program (s) in which the course is offered:	Pharmacy						
8	Language of teaching the course:	ENGLISH						
9	Location of teaching the course:	IN THE UNIVERSITY						
10	Prepared by	Dr. Abdullah ALswat						
11	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of basic principles of pharmaceutical analytical chemistry including titrimetric and electrochemical analysis. The course accompanied the phar. organic chemistry to provide link between analysis and the chemical nature of compounds. Topics discussed include introduction to qualitative and quantitative analysis, role of analytical chemistry in pharmacy and medicine, methods of expression of concentrations, Neutralization reactions; acid-base titrations, titration curve, factors affecting and theory of indicators, etc.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1)	A3	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis
2)	A4	**a2**. Describe the principles of titrimetric and electrochemical analysis.

3)	A10	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.
4)	B1	**b1.** Interpret data obtained by titrimetric and electrochemical analysis.
5)	B2	**b2.** Design a suitable titrimetric and electrochemical analysis. based on the substance physicochemical properties.
6)	B3	**b3.** Select appropriate standard operating procedure for titrimetric and electrochemical analysis.
7)	B9	**b4.** Calculate the content % of a material in a sample using titrimetric and electrochemical analysis.
8)	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9)	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10)	C7	**c3 .**Search efficiently for information using documented and electronic sources of information.
11)		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12)	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
13)	D2	**d2.** Demonstrate the skills of time management and self-learning.
14)	D3	**d3.** Participate efficiently with his colleagues in a team work.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2,	laboratory practice	Lab. term works, final practical exam
c3, c4	feed-back learning, Group-project	Assignments
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	laboratory practice, group-project	Practical assessment (Lab. attendance, attitude, practical exam), Assignments
d2	Lab. practice, group-project, feed-back learning	Practical assessment (Lab. attendance, attitude, practical exam), Assignments

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to analytical chemistry& analytical techniques**	a1,a2, a3, b1, b2, b3, b4	• Definitions, brief history, scope of applications • Quantitative and qualitative analysis (purposes , types) • Validation of analysis o Source of errors o Sampling procedures. o calibration of analytical equipment o preparation of standard solutions and calibration curve o Analyzing of results : average, SD, coefficient of variation (CV%), accuracy , precision o Significant numbers, rejection of doubtful values • Manual versus instrumental analytical	2	4

			techniques: types, advantages , disadvantages.		
2	**Titrimetric analysis (1-Aqueous Acid Base Titration)**	a1,a2, a3, b1, b2, b3, b4	Types & comparison of titrimetric analysis Definitions Distribution of acid-base species with pH of the medium. Acid-Base titrimetry for determination of weakly acidic and basic drugs. Indicators (theories) and their selection **applications and solve problems**	2	4
	Titrimetric analysis (2-Non-Aqueous Acid Base titration)	a1,a2, a3, b1, b2, b3, b4	Theoretical considerations and principles. Bronsted Lowery of acids and bases. Non-aqueous solvents. Titration of weak acids and weak bases. **Applications and solve problems**	2	4
2	**Titrimetric analysis (3- Oxidation Reduction Titration)**	a1,a2, a3, b1, b2, b3, b4	Principles and concepts, determination involving oxidizing agents iodimetric and iodometric determination, miscellaneous oxidation and reduction titrations. Indicators applications. • chromometric determination, miscellaneous oxidation • Applications and **solve problems**	1	2
	Titrimetric analysis (4- Complexometric Titration)	a1,a2, a3, b1, b2, b3, b4	Principle, Complexes and chelates, stability of complex ions. Types of Complexometric titrations. Technique employed in complexometric titration, End point detection • Applications and **solve problems**	2	4
			MID-TERM EXAM	1	2
3	**Electrochemical analysis**	a1,a2, a3, b1, b2, b3, b4	• **Electrogravimetric analysis:** Theory of electroanalysis, polarizatuon, decomposition, potential and over voltage electrolytic determination at constant current and with controlled potential at the cathode.	4	

			• **Conductometry**: experimental details of conductometric titration and applications. • **Potentiometry**: Principles, methods and application. • **Amperometry:** theory and technique of amperometric titration with dropping mercury electrode, high frequency titration, its applications. • **Polarographic analysis**: Introduction, principles, diffusion current and half wave potential, quantitative techniques. • **Applications and solve problems**		8
Course Review		a1,a2, a3, b1, b2, b3, b4	Review	1	3
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	**introduction to the Lab.: safety requirements, list of experiments, How to report, source of errors, etc**	**1**	**2**	c1, c2, d1, d2, d3
2	**aqueous titration of weak acids e.g. acetic acid**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
3	**aqueous titration of weak bases e.g. ammonium chloride**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
4	**non-aqueous titration of weak acids e.g. salicylic acid**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
5	**Oxidation/reduction titration (iodometry) ; titration of H_2O_2 using iodine**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
6	**Complexim etric titration of calcium salt**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3

7	**Potentiometric titration of drugs : diclofenac sodium**	**2**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
8	**Review**	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total		**10**	**20 equivalent to 10 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

lecture - Discussion: a short lecture/ address followed by discussion

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provides the students with problems related to the studied topics. Every student is assigned to solve some of those problems individually.	c3, c4, d1, d2	4-13	3
2	**Group** : each group of students will be assigned to do a search report on pharmaceutical applications of one method of the studied titrimetric analysis.	c3, c4, d1, d2, d3	14	2

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
	Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Gary G. Christian, analytical chemistry, 2004, John Wiley & sons 2. Dean's Analytical Chemistry Handbook by Pradyot Patnaik, 2004. 3. Basic Tables for Chemical Analysis by Thomas J. Bruno; Paris D. N. Svoronos, 2011 4. Encyclopedia of Analytical Chemistry by R. A. Meyers, 2011.
2- Essential References.
1. Leslie G Chatten: Deans analytical chemistry handbook, 2003, McGraw Hill 2. Verma. Analytical chemistry. 3. Ewing's Analytical Instrumentation Handbook by Nelu Grinberg (Editor); Sonia Rodriguez (Editor), 2003.

4. Handbook of Food Analytical Chemistry by Ronald E. Wrolstad (Editor); Eric A. Decker (Editor); Steven J. Schwartz (Editor); Peter Sporns (Editor); Terry E. Acree (Editor); Michael H. Penner (Editor); David S. Reid (Editor); Charles F. Shoemaker (Editor); Denise M. Smith (Editor).

3- Electronic Materials and Web Sites *etc*.

Volume 33, Issue 1 (2019) | Society for Scientific Exploration
Technium Social Sciences Journal (techniumscience.com)
Free Pharma Journals | Pharmaceutical Research Journals List (omicsonline.org)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHYSIOLOGY I

I. Course Identification and General Information:							
1	**Course Title:**	**PHYSIOLOGY I**					
2	**Course Code &Number:**	**FOP 2١٣**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (FIRST) semester*					
5	**Pre –requisite (if any):**	• **General biology**					
6	**Co –requisite (if any):**	• **Anatomy & histology**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr.Afrah Alasbahi**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to attain knowledge in the mechanism of normal body functions. It concerns with normal process in the cells such as cell repairing, transport of materials in and out the cell membrane. Moreover, the course also provides knowledge in functions and regulations of vital organs/systems in the body : nervous system, endocrine and muscles.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
3. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1)	**A1**	**a1.** Discuss the concept of homeostasis and feedback mechanisms observed in normal functions of human body organs.
2)		**a2. .** Identify the mechanisms of transport of material into and out of human cells.
3)		**a3.** Determine the normal functions and regulation of nervous system, endocrine glands and muscles.
4)		**a4.** Explain the biological role of certain endogenous substances in regulation the normal functions of nervous system, endocrine glands and muscles.

5)	**B1**	**b1.** Identify the signs of normal functions of nervous system, endocrine glands and muscles.
6)		**b2.** Interpret the outcomes of normal functions of nervous system, endocrine glands and muscles.
7)	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8)		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9)	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
10)	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills o Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture, Feed-back learning, Group-project.**	**Written exam, quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2	**Group-project , feed-back learning**	**Assignment**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a2, a3, a4, b1, b2	physiology definition, the concept of homeostasis. Negative feedback.	1	2
2	**The Cell and body fluids physiology**	a1, a2, a3, a4, b1, b2	• structure, functions, membrane transport mechanisms: (passive diffusion , mediated transport, osmosis) • membrane potential(resting, action) • Cell repair : mechanisms. • Composition and regulations of Body fluids, electrolytes and acid-base balance	2	4
3	**The Nervous system**	a1, a2, a3, a4, b1, b2	• Classification of nervous system • classes of neurons • Synaptic transmission (chemical synapsis, summation, interconnection between neurons, factors affecting the transmission)	1	2
4	**Central nervous system (CNS) Part (1)**	a1, a2, a3, a4, b1, b2	• Components of CNS • level of CNS functions • functions of brain composition (cerebrum, cerebral cortex, etc.), • blood brain barrier • spinal cord (function, composition, spinal reflex, cerebrospinal fluid)	2	4
			MID-TERM EXAM	1	2
4	**Central nervous system (CNS) Part (2)**	a1, a2, a3, a4, b1, b2	• Sensation: nociception, hyperalgesia, pain pathway, neurotransmitters of pain, types of pain (cutaneous, visceral, deep, , referred , phantom) , endogenous analgesic system • Regulating areas in brain (function, neurotransmitters) : nociceptionarea, psychic area, heat regulating center, area controlling muscles relaxation and contraction vasomotor center,	2	4

			Chemoreceptor trigger zone and other areas involved in diseases.		
5	**Autonomic nervous system**	a1, a2, a3, a4, b1, b2	• definition and composition & regulation • sympathetic system (functions, neurotransmitters, receptors), adrenal medulla , • parasympathetic system (functions, neurotransmitters, receptors)	2	4
6	**Endocrine system**	a1, a2, a3, a4, b1, b2	• hormones (biochemical classification, transport, mechanism of actions) • functions and regulation of • hormones of (pituitary gland, thyroid gland, parathyroid gland, pancreas, sex organs)	2	4
7	**Muscles**	a1, a2, a3, a4, b1, b2	• types , functions • factors affecting contraction and relaxation	1	2
Course Review		a3, a4, , , ,d1, d2	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to do a search on one endogenous mediator that is involved in one of the physiological studied and provide a summary report on it.	b1, b2, c1, c2, d1, d2	4-13	6
2	**Group** : each group of students will be assigned to do a search on one of the physiological processes studied and make a summary report.	b1, b2, c1, c2, d1, d2	14	4

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b1, b2
		Assignments	7, 12	10	10	b1, b2, c1, c2, d1, d2
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1.C.C.Chatterjee. Human physiology 2.Laurie kelly . Essential of human physiology for pharmacy, 2004, CRC press
2- Essential References.
1. Hassan Hamdi, Fundamentals of human physiology 2. Salah Abu-Sitta , Synopsis of medical physiology 3. W. F. Ganong. Review of medical physiology 4. Guyton : Textbook of Medical Physiology 5. Ganong: Review of Medical Physiology.
3- Electronic Materials and Web Sites *etc*.
1-International Journal of Physiology (ijop.net)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

2-About the Journal | International Journal of Physiology (ijop.net)
3-Archive of "International Journal of Physiology, Pathophysiology and Pharmacology". - PMC (nih.gov)
4- International Journal of Physiology, Health and Physical Education (physiologyjournals.com)

	Course Policies:
1)	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2)	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3)	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4)	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5)	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6)	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL ORGANIC CHEMISTRY I

Course Identification and General Information:								
1	Course Title:	Pharmaceutical Organic chemistry I						
2	Course Code &Number:	PHC 2١٤						
3	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-		3
4	Study level/ semester at which this course is offered:	*(2ND) Year – (FIRST) semester*						
5	Pre –requisite (if any):	General chemistry						
6	Co –requisite (if any):	Phar. analytical chemistry I						
7	Program (s) in which the course is offered:	Pharmacy						
8	Language of teaching the course:	ENGLISH						
9	Location of teaching the course:	IN THE UNIVERSITY						
10	Prepared by	Dr. Sadeq Azam						
11	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course concerns with study of the chemistry of carbon from which all organic compounds are derived. It provides essential knowledge of fundamental functional groups in organic compounds as a threshold of more complicated compounds and drugs studied in the next semesters. Furthermore, the course is preceded by the course (General chemistry) and accompanied with the course (Ph. Analytical chemistry I) to provide a link between chemical nature of compounds and their analysis.

Intended learning outcomes of the course: (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

4. Alignment CILOs to PILOs

No	PILOs	Intended learning outcomes of the course (CILOs)
1)	A1	**a1.** Explain the significance of organic chemistry in modern sciences.
2)	A3	**a2.** Discuss the properties of Carbon atom, models of structural formula, specific properties and mechanisms of reactions of organic compounds.
3)	B1	**b1.** Differentiate, name and draw the chemical structure of organic compounds.

4)		**b2.** Relate functional group in organic compounds to the physical and chemical properties of the compounds.
5)		**b3.** Predict the catalysts required and the outcomes of a reaction between an organic compound and other chemicals.
6)	**B3**	**b4.** Design a sequence to synthesize an organic compound from a parent compound.
7)	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
8)	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
9)	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
10)		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
11)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
12)	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
13)	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**

b2, b3	**Lecture-discussion Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	Aligned Course Learning Outcomes	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to organic chemistry**	a1, a2	• definition, brief history • significance of organic chemistry in modern sciences	2	

			• Carbon chemistry: carbon atomic structure, chemical bonds, atomic Orbitals and electron configuration; sp^3, sp^2, sphybridization • Physical state • stereochemistryof organic compounds • isomerism • Resonance • dipole moment • structural theory • Models of Structural formula (all-stick formula, dot formula, dash formula, condensed formula, bond-line formula		4
2	**Functional groups & Classification of organic compounds**	a1, a2, b1, b2, b3, b4	• Definition and types of functional groups • classification into categories based on functional groups. • Role of functional group in physical & chemical properties of organic compounds. • Cod1on names Origin • IUPAC Nomenclature priority (which functional group is more important ?) • Differences between aliphatic & aromatic organic compounds	1	2
3	**Hydrocarbons**	a1, a2, b1, b2, b3, b4	**(1) Aliphatic** (**Alkanes, Alkenes, Alkynes, cycloalkanes, cycloalkenes)**: definitions, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, synthesis and reactions (including mechanisms of reactions). **(2) Aromatic hydrocarbon** (definitions, types, general formula, structural models, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, , synthesis and reactions (including mechanisms of reactions).	1	2
4	**Haloalkanes**	a1, a2, b1, b2, b3, b4	• **Aliphatic and aromatic Alkyl halides (Haloalkanes)** and organometallic compounds: (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature,	1	2

			physical properties, synthesis and reactions (including mechanisms of reactions).		
MID-TERM EXAM				1	2
5	**Aliphatic and aromatic Alcohols , ethers and thioethers**	a1, a2, b1, b2, b3, b4	• (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, synthesisreactions (including mechanisms of reactions).	2	4
6	**Aliphatic and aromatic Amines**	a1, a2, b1, b2, b3, b4	• (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, synthesis and reactions)	1	2
7	**Aliphatic and aromatic Nitro compounds**	a1, a2, b1, b2, b3, b4	• **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).	1	2
8	**Aliphatic and aromatic aldehydes and ketones**	a1, a2, b1, b2, b3, b4	• **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions)	2	4
9	**Aliphatic and aromatic carboxylic acids**	a1, a2, b1, b2, b3, b4	• **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).	2	4
10	**Aliphatic and aromatic derivatives of carboxylic acids**	a1, a2, b1, b2, b3, b4	**Esters, amides, acyl halides, acid anhydrides:** • **:** (definitions, types, general formula, nomenclature, influence of functional group on physical and chemical properties, radical groups nomenclature, physical properties, synthesis and reactions (including mechanisms of reactions).	1	2
Course Review and discussion session				1	2
FINAL – EXAM				1	2
TOTAL				16	32

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks /and Units Per Semester	16 weeks	10 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Learning Outcomes**
1	Physical properties & Chemical identification of compounds belonging to the following aliphatic and aromatic organic groups:			
2	Hydrocarbons / Haloalkanes.	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
3	Alcohols	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
4	Ethers	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
5	Amines	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
6	Aldehydes	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
7	Ketones	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
8	Carboxylic acids	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
9	Esters	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
10	Scheme of identification of organic compounds	**2**	**2**	b1, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b4, c1, c2, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
lecture - Discussion: a short lecture/ address followed by discussion.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do certain assignments such as sud1arizing, internet search, make charts or solve mathematical problems related to the courses topics. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:				
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	
1	**Individual**: every student is assigned to solve problems at home. The problems are provided by the teacher at the end of each unit. Problems are related to completion of a chemical reaction, nomenclature, draw structures, mechanisms of reactions and others. The student should deliver his/her work every second week in a specific homework booklet. The teacher may ask the student, either personally, or at the class to make sure that the student work belongs to his/her lonely effort.	d1, d2, c3, c4	7	
2	**Group** : each group of students will be assigned to do a search-report about one type the mechanism of a reaction.	d1, d2, d3, c3, c4	12	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4
		Assignments	7, 12	5	5	d1, d2, d3, c3, c4
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3, b1, b4
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2, b1, b4
			Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
5. Cotton . Basic inorganic chemistry
2- Essential References.
1. Bothara. inorganic pharmaceutical chemistry 2. Richard E. Beleil , General chemistry Lab. Manual, 2005, Dakota State university
3- Electronic Materials and Web Sites *etc*.
1- Articles - IJOC - Scientific Research Publishing (scirp.org) 2- International Journal of Organic Chemistry (researchgate.net) 3- The Journal of Organic Chemistry (acs.org)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOGNOSY I

1.Course Identification and General Information:							
1	**Course Title:**	**PHARMACOGNOSY I**					
2	**Course Code &Number:**	**PHG215**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(SECOND) Year – (1ST) semester*					
5	**Pre –requisite (if any):**	• **General biology** • **Botany**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr.** Tunis Mohammed Thabet Saeed					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course concerns with plants as a source of drugs. It provides essential knowledge in identification, cultivation, collection and processing of the plant parts as crude drugs. The course also provide detailed knowledge on botanical, morphological and microscopical features and medical uses of leaves, barks, roots and rhizomes that have scientific-based evidences to be used as complementary and alternative medicines.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

4. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	**A4**	**a1**. Explicit the methods used for detection of active constituents and discovering adulteration of medicinal plants.
2.		**a2**. Discuss the principles and procedures applied for cultivation, collection and processing of plants as crude drugs.
3.	**A6**	**a3.** Identify the botanical origin, morphological and microscopical characteristics of common medicinal leaves, barks, roots and rhizomes.

4.		**a4.** Determine the active constituents and therapeutic use of medicinal leaves, barks, roots and rhizomes.
5.	**A10**	**a5.** Describe his/her role as pharmacist in identification and evaluation of medicinal plants
6.	**B1**	**b1.** Express with drawings the morphology and key microscopical features of medicinal plants
7.		**b2.** Differentiate between medicinal leaves, barks, roots and rhizomes based on morphological and microscopical features.
8.	**B2**	**b3 .**Classify active constituents in medicinal plants.
9.	**B4**	**b4.** Select standard operation procedures to identify medicinal plants and crude drugs
10.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11.		**c2.** Operate the instruments and perform experiments successfully in the laboratory
12.	**C3**	**c3.** Screen drugs in medicinal leaves, barks, roots and rhizomes
13.	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14.		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4, a5	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture, laboratory practice**	**Written exam , lab. term work, final practical exam**

b2, b4	**laboratory practice**	**lab. term work, final practical exam**
b3	**Lecture-discussion, feed-back learning**	**Written exams quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3,	**laboratory practice**	**Lab. term work, final practical exam**
c4, c5	**Feed-back learning , Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3	**laboratory practice** **Feed-back learning**	Lab. term work, final practical exam, Assignments

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a2, a3, a4, a5, b1, b3	Definition, importance, and function, brief history Crude, official and unofficial drugs. Nomenclature of crude drugs (botanical, geographical and commercial sources of drugs) Classification of crude drugs (alphabetical ,taxonomical, morphological, pharmacological and chemical) Cultivation (Disadvantages of collecting wild plants and advantages of cultivation, factors affecting cultivation). Collection (Time of the year, time of the day, stage of the development of the plant and general rules of collection). Post-collection processing of crude drugs: Drying(Natural methods, artificial methods, changes occurring after drying), Preservation and protection of crude drugs(deterioration during storage, physicochemical factors, biological factors, methods to destroy and control of insects)	6	

			Adulteration(sophistication, substitution, admixture and deterioration, determination of adulteration.)		12
MID-TERM EXAM				1	2
3	**Medicinal leaves**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal leaves: Digitalis, Senna, Stramonium, Belladonna, Hyoscymus, Bucho, Boldo , Coca, Jaborandi, Henna.	3	6
4	**Medicinal barks**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the followingmedicinal barks:Cinchona, Cinnamon, Frangula, Quillaia, Pomegranate, Hamamelis and Galls.	2	4
5	**Medicinal roots and rhizomes**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal roots and rhizomes :Liquorice,Ipecacuanha,Rauwolfia,Senega,Ginger,Colchicum,Squill,Ginseng,Rhubarb,Curcuma,Podophylum,Aconite,Veratrum,Sasaparilla,Kava-kava	2	4
Course Review		a1, a2, a3, a4, a5, b1, b3	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	preparation of hard parts of plant(e.g. roots, seeds), for investigation : drying, grinding, treating with reagents , etc	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
2	preparation of soft parts of plant(e.g. leaves, flowers), for investigation : drying, grinding, treating with reagents , etc	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
3	microscopical Detection of types of calcium oxalate in plant	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
4	microscopical Detection of types of starch in plant	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
5	morphology and microscopical determination of medicinal leaves : senna leaves	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
6	morphology and microscopical determination of medicinal leaves : Henna leaves	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
7	morphology and microscopical determination of medicinal barks : cinnamon bark	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
8	morphology and microscopical determination of medicinal barks : pomegranate bark	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
9	morphology and microscopical determination of medicinal roots & rhizomes: Ginger	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
10	morphology and microscopical determination of medicinal roots & rhizomes: liquorice	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
11	Review	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks	**12**

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search on the pharmaceutical products available in the drug market of one plant drug studied in the course.	c4, c5, d2	4-13	3
2	**Group** : each group of students will be assigned to do search report for adulteration of one crude drug studied in the course.	c4, c5, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method	Week Due	Mark	Proportion to Total	Aligned Course Learning Outcomes (CILOs)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

					course Assessment	
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, a4, a5, b1, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b3
	TOTAL			70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b4, c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b4, c1, c2, c3, d2
	Total			30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1.W.C. Evans, Trease and Evans pharmacognosy, 2009, W.B.Saunders
2.Trease, G.E.& Evans, W.C.; "Pharmacognosy", W.B. Saunders Publishers, Ltd, 15th ed., 2002.
3.Periodicals, Web sites, … etc

2- Essential References.

1. Jarald. Colour atlas of medicinal plants
2. Bhandari. Textbook of pharmacognosy.
3. Gokhale. Practical pharmacognosy

3- Electronic Materials and Web Sites *etc*.

1-Pharmacognosy Journal | Journal of Pharmacognosy and Phytochemistry | Phytochemistry Journal (phytojournal.com)
2- International Journal of Pharmacognosy and Phytochemical Research | ICI Jou (indexcopernicus.com)
3- International Journal of Pharmacognosy and Phytochemical Research (scimagojr.com)

Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

مواصفات مقرر (ثقافة اسلامية Islamic culture)

معلومات عامة عن المقرر:						
1	اسم المقرر:	ثقافة إسلامية Islamic culture				
2	رمز المقرر ورقمه:	UMS 04				
3	الساعات المعتمدة:	محاضرة	سمنار	عملي	تدريب	الإجمالي
		2	-	-	-	2
4	المستوى والفصل الدراسي:	الثاني الفصل الدراسي الاول				
5	المتطلبات السابقة لدراسة المقرر(إن وجدت):	-------				
6	المتطلبات المصاحبة (إن وجدت):	------				
7	البرنامج الذي يدرس له المقرر:	كافة البرامج في الجامعة				
8	لغة تدريس المقرر:	اللغة العربية				
9	نظام الدراسة:	فصلي				
10	اعداد	د/يحي القليصي				
11	تاريخ اعتماد مواصفات المقرر:	8/2019				

IV.وصف المقرر:

يتناول هذا المقرر مفهوم الثقافة الإسلامية وأسس العقيدة الاسلامية و التحديات و القضايا المعاصرة التي تواجههما و يمد الطالب بحصيلة مناسبة من المعارف المتعلقة بالإسلام عقيدة وشريعة ومنهج حياة

III – **مخرجات تعلم المقرر**

بعد الانتهاء من هذا المقرر سيكون الطالب قادرا على أن :

مخرجات المعرفة والفهم

a١ . يبين مدى تميز الأمة الإسلامية بثقافة عريقة بين الثقافات البشرية في مقوماتها وعناصرها وخصائصها.

a2 .يصف موقف الإسلام من قضايا العصر في مجالات العلوم النظرية والتطبيقية المختلفة ويناقشها من المنظور الإسلامي.

المهارات الذهنية

b1 .يفرق بين الثقافة الإسلامية وغيرها من الثقافات و يستنتج مساوئ الثقافات الأخرى.

المهارات العملية و المهنية

لا يوجد

المهارات العامة

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

d1 .يطور مهارة النقد الهادف والبناء والحوار والمناقشة مع الآخرين .

IV. ربط مخرجات التعلم باستراتيجيات التدريس والتقييم		
أولا: ربط مخرجات تعلم المقرر (المعارف والفهم) باستراتيجية التدريس والتقييم:		
مخرجات المقرر / المعرفة والفهم	**استراتيجية التدريس**	**استراتيجية التقويم**
a1	**المحاضرة و النقاش**	**اختبارات تحريرية**
a2	**المحاضرة و النقاش - التعلم عن طريق التغذية الراجعة**	**اختبارات تحريرية – اختبارات مفاجئة**

ثانيا: ربط مخرجات تعلم المقرر (المهارات الذهنية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات الذهنية	**استراتيجية التدريس**	**استراتيجية التقويم**
b1	**المحاضرة والنقاش -التعلم عن طريق التغذية الراجعة**	**اختبارات تحريرية – تكاليف**
ثالثا: ربط مخرجات تعلم المقرر (المهارات المهنية والعملية) باستراتيجية التدريس والتقييم:		
مخرجات المقرر/ المهارات المهنية والعملية	**استراتيجية التدريس**	**استراتيجية التقويم**
رابعا: ربط مخرجات تعلم المقرر (المهارات العامة) باستراتيجية التدريس والتقييم:		
مخرجات المقرر	**استراتيجية التدريس**	**استراتيجية التقويم**
d1	**التعلم عن طريق التغذية الراجعة**	**تكاليف**

مواضيع المقرر الرئيسة والفرعية

كتابة وحدات /مواضيع محتوى المقرر					
الرقم	**وحدات/ موضوعات المقرر**	**المواضيع التفصيلية**	**عدد الأسابيع**	**الساعات الفعلية**	**مخرجات تعلم المقرر**
١	الإسلام عقيدة و منهج حياه	– تعريفات و مفاهيم – أسس العقيدة الاسلامية – الاسلام منهج حياة	3	٦	a1,a2, b1
٢	الثقافة الإسلامية	– تعريفات و مفاهيم – الأهمية – أهم المصادر – مقارنة بالثقافات الأخرى	٣	٦	a1,a2, b1
	اختبار نصف الفصل		1	٢	a1,a2, b1
٢	الثقافة الإسلامية	-وعي المسلم و دوره للدفاع عن الاسلام	3	٦	a1,a2, b1
3	قضايا معاصرة	رأي الاسلام في عدد من القضايا و المسائل الانسانية و العلمية و الثقافية	5	١٠	a1,a2, b1
	اختبار نهاية الفصل		١	٢	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

إجمالي الأسابيع والساعات	١٦	٣٢	

استراتيجية التدريس:

٣- المحاضرة و النقاش
٤- التعلم عن طريق التغذية الراجعة

الأنشطة والتكليفات:

الرقم	النشاط / التكليف	مخرجات التعلم	الأسبوع	الدرجة
1	تكليف بحثي : الفرق بين الثقافة الاسلامية و غيرها في أحدى القضايا المعاصرة	**b1**	**5**	**5**
	تكليف كتابي تعبيري : نقد لقصور المسلمين في مواجهة الثقافات الاخرى	**d1**	**12**	**5**

تقييم التعلم:

الرقم	أنشطة التقييم	الأسبوع	الدرجة	نسبة الدرجة إلى درجة التقويم النهائي	المخرجات التي يحققها
1	**امتحانات مفاجئة**	----	١٠	١٠	a2
2	**التكاليف**	5, 12	10	10	b1, d1
3	**اختبار نصف الفصل**	7	20	20	a1,a2, b1
5	**الاختبار النهائي**	١٧	٦٠	٦٠	a1,a2, b1

مصادر التعلم:

نحو ثقافة إسلامية أصيلة : د. عمر الأشقر ، الطبعة الثانية عشرة ، ١٤١٣هـ ، دار النفائس ، الأردن

المراجع الرئيسة: (لا تزيد عن مرجعين)

٣. المدخل إلى الثقافة الإسلامية : د . محمد رشاد سالم ، دار القلم ، الكويت ، الطبعة التاسعة ، ١٤٠٧هـ .
٤.

المراجع المساعدة

٢. أضواء على الثقافة الإسلامية: نادية شريف العمري.

مواد إلكترونية وإنترنت: (إن وجدت)

-1
-2

الضوابط والسياسات المتبعة في المقرر.

بعد الرجوع للوائح الجامعة يتم كتابة السياسة العامة للمقرر فيما يتعلق بالآتي:

1	**سياسة حضور الفعاليات التعليمية:** تحدد سياسة الحضور ومتى يعتمد الغياب وكيفيته ونسبته، ومتى يعد الطالب محروماً من المقرر
2	**الحضور المتأخر :** يتم تحديد السياسة المتبعة في حالات تكرار تأخر الطالب عن حضور الفعاليات التعليمية
3	**ضوابط الامتحان:** تحديد السياسات المتبعة في حالات الغياب عن الامتحان و توصيف السياسة المتبعة في حالات تأخر الطالب عن الامتحان.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

4	**التعيينات والمشاريع:** تحديد السياسات المتبعة في حالات تأخير تسليم التكاليف والمشاريع ومتى يجب أن تسلم إلى الأستاذ.
5	**الغش:** تحدد هنا السياسات المتبعة في حالات الغش إما في الامتحانات أو في التكاليف بأي طريقة من طرائق الغش.
6	**الانتحال:** يحدد تعريف الانتحال وحالاته والإجراءات المتبعة في حالة حدوثه.
7	**سياسات أخرى:** أي سياسات أخرى مثل استخدام الموبايل أو مواعيد تسليم التكليفات ..... الخ

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

COMMUNICATION SKILLS

Course Identification and General Information:								
1	**Course Title:**	**COMMUNICATION SKILLS**						
2	**Course Code &Number:**	**UMS05**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	-	-		**2**
4	**Study level/ semester at which this course is offered:**	*(Second) Year – (1st) semester*						
5	**Pre –requisite (if any):**	• **Nil**						
6	**Co –requisite (if any):**	• **Nil**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr.Ahmed Algani**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

This course introduces students to the field of verbal and nonverbal communication and how it affects pharmacists interaction. Emphasis is on public speaking with attention to audience analysis, organizational, and delivery skills. The aim of the course is introduce students to practice and perfect those communication skills of effective speaking and critical listening valued in all professions, the community, and personal relations.

By the end of this course the student should have a better understanding about :-

1. The role of communication in Pharmacy practice.
2. The need for and the benefits of effective communication and the negative consequences of poor communication.
3. The practical skills for pharmacists needed for effective communication with patient.

Interviewing and assessment of patients..

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
5. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1.** Explain the impact of good communication with colleagues , healthcare professionals and patients.
2		**a2.** Determine the main types of communication media
3		**a3.** Discuss the techniques for effective communication
4	**A10**	**a4.** Recognize his/her role as pharmacist in effectively communicating with patients and health care team
5	**B1**	**b1.** Interpret signs of non-verbal communication.
6		**b2.** Compare between various techniques of effective communication
7		**b3.** Predict the person status from his/her body language.
8	**C7**	**c1.** Properly conduct search for information related to communication techniques using books and suitable media technologies.
9		**c2.** Report his/her work efficiently.
10	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
11	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3	**Lecture-discussion, feed-back learning**	**Written exam, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**Feed-back learning , Group-project.**	**assignments**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2	**Group-project , feed-back learning**	**Assignment**

Course Content:					
No.	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a4	• Definitions • Importance of communication in pharmacists with other pharmacists, patients, physicians and other health care professionals • History of development of communication skills	2	4
2	**The communication process and Communication media**	a2, a4	• Steps of communication process • Types and use of communication media : air, eye to eye, writing, technologic media: videos, social networks	3	6
3	**Effective communication**	a2, a4	• Difference between effective and non-effective communication • Importance and Conditions for effective communication • Techniques of active communication • Active-listening skills • Thoughts presentation • Questions skills • Barriers of communication	2	4
	• MID-TERM EXAM			1	2
	Effective communication		• Active-listening skills • Thoughts presentation • Questions skills • Barriers of communication	2	4
4	**Non-verbal communication (Body language)**	a3, a4, b1, b2, b3	• Facial signs • Hands • Distance	4	

			• Interpretation of body language signs		8
Course Review		a3, a4, b1, b2, b3	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.

Lecture-discussion : is a type of lecturing usually followed by discussion at the end of lecture.

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to do a search-based report on one communication media	c1, c2, d1, d2	4-13	
2	**Group** : each group of students will be assigned to do a search-based report on one effective communication techniques	c1, c2, d1, d2	14	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1, b2, b3
		Assignments	7, 12	10	10	c1, c2, d1, d2
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a4
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, a4, b1, b2, b3
	TOTAL			100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1- Tara Dixon, Communication skills, Northumria university
2- Adler, R. B. & Elmhorst, J. M. (1999) Communicating at Work: Principles and Practices for Business and the Professions, McGraw Hill Singapore
3- Hargie, O. and Dickson, D. (2004) Skilled Interpersonal Communication: Research Theory and Practice, 4th edition, London: Routledge.

2- Essential References.

Tindall, W.N., 2003 Pharmaceutical care ; Insights from community pharmacists, pharmaceutical press
Clampitt, P. (1991) Communicating for Managerial Effectiveness, Newbury Park: Sage.
Hargie, O. and Tourish, D. (eds) (2000) Handbook of Communication Audits for Organisations, London: Routledge.
Davies, J.W. (2001) Communication Skills: A Guide for Engineering and Applied Science Students, Harlow: Prentice Hall.
O'Hair, D. and Friedrich, G. (1998) Strategic Communication in Business and the Professions, 3rd edition, Boston: Houghton Mifflin.

3- Electronic Materials and Web Sites *etc*.

Avoid These 6 Mistakes for Better Email and Text Communication (makeuseof.com)
Communication Skills | SkillsYouNeed

Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work.
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course.
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICS II

1.Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICS II**					
2	**Course Code &Number:**	**PHT 221**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (SECOND) semester*					
5	**Pre –requisite (if any):**	**Pharmaceutics I**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/ Anes A. Thabet**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the second part of "Pharmaceutics "courses that are intended to provide knowledge and skills in designing pharmaceutical dosage forms. It deals with designing of compressed gases (pharmaceutical aerosols), semisolid dosage forms and suppositories.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
6. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A4**	**a1.** Describe the significance of pharmaceutics as art and science of dosage form design
2.		**a2.** Explicit the types and roles of excipients included in aerosols, semisolid preparations and suppositories.
3.		**a3.** Describe the stages of designing pharmaceutical aerosols, semisolid preparations and suppositories.
4.	**A10**	**a4.** Describe the role of pharmacist in formulation of pharmaceutical aerosols, semisolid preparations and suppositories.

5.	**A11**	**a5.** Explicit the general properties, advantages and disadvantages of pharmaceutical aerosols, semisolid preparations and suppositories.
6.		**a6**. Discuss the principles, pharmacopeial requirements, methods of preparation, of various types of pharmaceutical aerosols, semisolid preparations and suppositories.
7.	**B2**	**b1 .** Classify pharmaceutical aerosols, semisolid preparations and suppositories.
8.		**b2.** Compare between various types of pharmaceutical aerosols, semisolid preparations and suppositories.
9.	**B3**	**b3.** Design pharmaceutical aerosols, semisolid preparations and suppositories.
10.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
12.	**C5**	**c3.** Employ the relevant way to prepare extemporaneous semisolid preparations and suppositories.
13.	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14.		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17.	**D3**	**d3.** Participate efficiently with colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1, b2, b3, b4	**Lecture-discussion, Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Pharmaceutical aerosols**	a1, a2, a3, a4, a5, a6, b1, b2, b3	Definition , advantages, disadvantages, types of aerosols, anatomical features of the bronchi, Pressurized packages (Type of propellants , Containers , Formulation aspects, Air-blast nebulizers), methods of preparation (pressurized filling, cold filling), quality control evaluation	3	6

2	**Semisolid dosage forms (1) Introduction**	a1, a2, a3, a4, a5, a6, b1, b2, b3	• **introduction:** definitions , advantages, disadvantages, types, anatomical features and targets of the skin, • Classification of semisolid preparation	1	2
	Semisolid dosage forms :(2)Ointments and pastes	a1, a2, a3, a4, a5, a6, b1, b2, b3	• **ointments** (definitions, advantages, advantages, disadvantages, classification based on type of ointment base, formulation considerations, method of preparation**)** • **Pastes:** (definitions, advantages, advantages, disadvantages, classification based on type of ointment base,	4	8
Mid-term exam				1	2
3	**Semisolid dosage forms (3) Creams and gels**	a1, a2, a3, a4, a5, a6, b1, b2, b3	• **Creams** (definitions, advantages, advantages, disadvantages, classification, formulation considerations, method of preparation • **Gels** (definitions, advantages, classification, formulation **,** considerations, method of preparation	3	6
3	**Suppositories**	a1, a2, a3, a4, a5, a6, b1, b2, b3	definitions, advantages, advantages, disadvantages, classification (rectal, vaginal) formulation, types of suppository bases, method of preparation	3	6
Course Review		a1, a2, a3, a4, a5, a6, b1, b2, b3	Review of the course topics : discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks /and Units Per Semester	16 weeks	3 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	Pharmaceutical aerosols: construction and use	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
2.	Preparation of salicylic acid 2 % ointment in simple ointment base	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
3.	Preparation of hydrophilic ointment USP	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
4.	Preparation of Polyethylene glycol ointment base.	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
5.	Preparation of o/ w creams: vanishing cream base	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
6.	Preparation of w/o creams: cold cream base	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
7.	Preparation of hydrophilic gel base : Carbomer or Carboxymethyl cellulose gel	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
8.	Preparation of Aspirin in cocoa butter base suppositories.	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
9.	Preparation of Glycerin suppositories.	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
10.	Preparation of Dusting powders	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
11.	Preparation of Effervescent base granules	**1**	**2**	b3, c1,c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b3, c1,c2, c3, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied dosage forms	c4, c5, d2	4-13	3
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of studies dosage forms.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, a6, b1, b2, b3
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
			Total	30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
1.Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK 2.Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
2- Essential References.
3. Rawlins. Bentley s of text book of pharmaceutics 4. Kasture pharmaceutics 5. Raje. pharmaceutics 6. Raph. practical pharmaceutics
3- Electronic Materials and Web Sites *etc*.
1--International Journal of Pharmaceutics and Drug Analysis (ijpda.com) 2-0378-5173 (elsevier.com) 3-International Journal of Pharmaceutics (researchgate.net) 4-Ovid - International Journal of Pharmaceutics | Wolters Kluwer

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work.
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course.

6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

ANALYTICAL CHEMISTRY II

Course Identification and General Information:								
1	**Course Title:**	**ANALYTICAL CHEMISTRY II**						
2	**Course Code &Number:**	**PHC 222**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (2nd) semester*						
5	**Pre –requisite (if any):**	• **General chemistry** • **Pharmaceutical Analytical chemistry I**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr. Abdullah Alswat**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to (Analytical chemistry I) and both deals with the study of principles, instrumentation and applications of basic analytical techniques. This course concerns with study of basic optical, thermal and UV-visible spectrophotometric analytical methods.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis
2	**A4**	**a2**. Describe the principles of optical and thermal analysis and UV-visible spectrophotometry
3	**A10**	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.

4	B1	**b1.** Interpret data obtained by titrimetric and electrochemical analysis.
5	B2	**b2.** Design a suitable optical and thermal analysis and UV-visible spectrophotometry method based on the substance physicochemical properties.
6	B3	**b3.** Select appropriate standard operating procedure for optical and thermal analysis and UV-visible spectrophotometry method.
7	B9	**b4.** Calculate the content % of a material in a sample using UV-visible spectrophotometry method
8	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	C7	**c3 .**Search efficiently for information using documented and electronic sources of information.
11		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
13	D2	**d2.** Demonstrate the skills of time management and self-learning.
14	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2, b3, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Optical analysis**	a1,a2, a3, b1, b2, b3, b4	• **Flow cyometry:** Principle, apparatus, procedures, applications • **Polarimetery: Determination of optical and specific optical rotation:** Principle, purpose, apparatus, procedures**,** • **Determination of refractive index:** Principle, purpose, apparatus, procedures	3	6

2	**Thermal analysis**	a1,a2, a3, b1, b2, b3, b4	• **Thermogravimetry:** principle, instrumentation, temperature, verification, verification of electrobalance, procedures. • **Differential scanning calorimetry (DSC):** principles, instrumentation, calibration of equipments, procedures, phase change, applications, determination of purity • **Melting point testing :**Principle, instrumentation, procedures, applications • **Thermomicroscopy:** principle, apparatus, applications • **Freezing point tester:**Principle, purpose, apparatus • **Determination of Distillation Range :** Principle, purpose, apparatus, procedures, applications. • **Determination of boiling point** Principle, purpose, apparatus, procedures, applications.	4	8
Mid-term exam				1	2
3	**Introduction to spectrophotometry**	a1,a2, a3, b1, b2, b3, b4	• Electromagnetic radiation, units, electromagnetic • Light spectra • Principle: Absorption and emission of radiation • Lambert's and Beer's Laws • Deviation from Lambert-Beer's law • Instrumentation • Colorometry, Chromophores and Auxochromes shifts	2	4

4	**Visible and UV Spectrophotometry**	a1,a2, a3, b1, b2, b3, b4	• Applications of Ultraviolet and Visible in quantitative analysis of drugs; data validation : calibration curve linearity, regression equation • Applications of Ultraviolet and Visible in qualitative analysis: Wavelength of maximal absorbance with illustrates examples • Factors Affecting Spectral Response • Data validation: specificity, robustness	3	6
5	**Fluorescence spectrophotometry (Fluorimetry)**	a1,a2, a3, b1, b2, b3, b4	• Principle, emission and Intensity: governing law • Instrumentation • Applications of quantitative analysis of drugs • Data validation: specificity, robustness	1	2
Course Review		a1, a2 , a3, b1, b2, b3, b4, b5, b6, d2	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
29.	Polarimetric analysis of specific rotation of D- and L- compounds e.g. glucose	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3

30.	Determination of melting point by (capillary-thermometer-parrafin oil) method for : benzoic acid	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
31.	Determination of boiling point of toluene by (capillary- thermometer-parrafin oil)	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
32.	Uv-visible spectrophometric operation and handling	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
33.	Uv-visible spectrophometric analysis of potassium permanganate aqueous solution (prepare standard solution, determine UV spectrum and 300-700 nm . Wavelength max.)	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
34.	Uv-visible spectrophometric analysis of potassium permanganate aqueous solution at wavelength max. (calibration curve and concentration of sample with unknown concentration)	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
35.	Uv-visible spectrophometric analysis of aspirin in methanol solution (UV spectrum 200-400 nm, wavelength max.)	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
36.	Uv-visible spectrophometric analysis of aspirin in methanol at wavelength max (calibration curve and concentration of sample with unknown concentration)	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
37.	Review	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**10**	**20**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total		**10**	**20 equivalent to 10 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.

Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: the teacher provides the students with problems related to the studied topics. Every student is assigned to solve some of those problems individually.	c3, c4, d1, d2	4-13	3
2	**Group** : each group of students will be assigned to do a search report on pharmaceutical applications of one method of the studied titrimetric analysis.	c3, c4, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
			Total	30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1. Gary G. Christian, analytical chemistry, John Wiley & sons
2. Analytical chemistry: principles and techniques.[FACSIMILE] publisher: prentice Hall College Div; Facsimile edition (January 1, 1988) ISBN: 013033507X
3. Analytical chemistry: principles and techniques. By Larry G. Hargis.(editors) (December 17, 1996), publisher: Pearson Education POD; Facsimile edition

2- Essential References.

1. Leslie G Chatten: Deans analytical chemistry handbook, McGraw Hill
2. Verma. Analytical chemistry
3. Analytical Chemistry by Gary D. Christian publisher: Wiley; 6edition (March7,2003)
4. Analytical chemistry (an introduction) by Skoog/West/Holler (edition)6th (1994), Saunders Golden SunBurst series, ISBN:0-03-097285.
5. Quantitative analysis by R.A-Day, JR, A.L-UNDERWOOD (editors) 6th edition (1991), prentice-Hall,
6. Quantitative analysis chemistry by James S. FRITZ, GOERG H. SCHENK (editors) 5th edition (1987), prentice-Hall, Englewood Clifts,
7. Analytical chemistry (principles) by john H. Kennedy (editor) 1st edition (1984), HARCORT BRACE JOANOVICH.

3- Electronic Materials and Web Sites *etc*.

Volume 33, Issue 1 (2019) | Society for Scientific Exploration
Technium Social Sciences Journal (techniumscience.com)
Free Pharma Journals | Pharmaceutical Research Journals List (omicsonline.org)

Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHYSIOLOGY II

I.	Course Identification and General Information:							
1	**Course Title:**	**PHYSIOLOGY II**						
2	**Course Code &Number:**	**FOP 2 ٢٣**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-	**2**	
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (2ND) semester*						
5	**Pre –requisite (if any):**	• **General biology** • **Anatomy & histology** • **Physiology I**						
6	**Co –requisite (if any):**	----------						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr. Afrah Alasbahi**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to the pre-requisite course (Physiology I) and both are designed to attain knowledge in the mechanism of normal body functions. It concerns with normal functions and regulations of blood, cardiovascular respiratory, alimentary, renal and immunity systems**.**

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A1**	**a1.** Discuss the significance and normal functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems

2.		**a2. .** Identify the mechanisms and cells involved in functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
3.		**a3.** Determine regulation of blood, cardiovascular respiratory, alimentary, renal and immunity systems
4.		**a4.** Explain the biological role of certain endogenous substances in regulation blood, cardiovascular respiratory, alimentary, renal and immunity systems.
5.	**B1**	**b1.** Identify the signs of normal functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
6.		**b2.** Interpret the outcomes of normal functions of blood, cardiovascular respiratory, alimentary, renal and immunity systems
7.	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
10.	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills o Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2	**Lecture, Feed-back learning, Group-project.**	**Written exam, quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2	**Group-project , feed-back learning**	**Assignment**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**The Blood**	a1, a2, a3, a4, b1, b2	• Blood composition, functions and regulation of plasma, RBCs, WBCs and platelets. • Circulation: regulations and factors affecting venous return and blood flow.	2	4
2	**Cardiovascular system**	a1, a2, a3, a4, b1, b2	• the heart: functions and regulation of the heart work, physiologic parameters of the heart work: heart rate, cardiac output, heat rhythmicity, conductivity, contraction • Blood vessels: functions and regulation of the blood vessels (veins, arteries, capillaries), physiologic parameters of the blood vessels : blood pressure, peripheral vascular resistance.	3	6
3	**Respiratory system**	a1, a2, b1, b2, b3, b4, b5, d2	• blood-gas interface, airways, the pleura, mechanism of breathing, Ventilation, Diffusion , Partial pressures of oxygen and carbon dioxide, Ventilation–perfusion matching, Gas transport in blood , Regulation of ventilation, Ventilator response to exercise.	2	4
				1	2
4	**Alimentary system**	a1, a2, a3, a4, b1, b2	• functions and regulations of the mouth, pharynx and the gastrointestinal tract (esophagus, stomach, small and large intestine • the digestive system associated –organs: the liver, gall bladder., spleen and pancreases	3	6
5	**Renal system**	a1, a2, a3, a4, b1, b2	• basic unit of the kidney • renal blood flow, glomerular filtration, active excretion tubular reabsorption,	2	4

			• regulation of plasma volume and plasma osmolality		
6	**immune system**	a1, a2, a3, a4, b1, b2	• Definition , functions • Passive immunity and involved mechanisms and cells: naturally acquired, artificially acquired, transfer of activated T-cells • Active immunity and involved cells and mechanism naturally acquired, artificially acquired,	3	6
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search on one endogenous mediator that is involved in one of the physiological studied and provide a summary report on it.	b1, b2, c1, c2, d1, d2	4-13	6

2	**Group** : each group of students will be assigned to do a search on one of the physiological processes studied and make a summary report.	b1, b2, c1, c2, d1, d2	13	4

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1, b2
		Assignments	7, 12	10	10	b1, b2, c1, c2, d1, d2
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
	TOTAL			100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1.C.C.Chatterjee. Human physiology
2.Laurie kelly . Essential of human physiology for pharmacy, 2004, CRC press

2- Essential References.

1.QHassan Hamdi, Fundamentals of human physiology
2.Salah Abu-Sitta , Synopsis of medical physiology
3.W. F. Ganong. Review of medical physiology

3- Electronic Materials and Web Sites *etc*.

1-International Journal of Physiology (ijop.net)
2-About the Journal | International Journal of Physiology (ijop.net)
3-Archive of "International Journal of Physiology, Pathophysiology and Pharmacology". - PMC (nih.gov)
4- International Journal of Physiology, Health and Physical Education (physiologyjournals.com)

Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL ORGANIC CHEMISTRY II

I. Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL ORGANIC CHEMISTRY**						
2	**Course Code &Number:**	**PHC 242**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(2ND) Year – (second) semester*						
5	**Pre –requisite (if any):**	• **General chemistry** • **Pharmaceutical Organic chemistry I**						
6	**Co –requisite (if any):**	-						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr/ Sadeq Azam**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is the complement of the previous course (Ph. Organic chemistry I). It deals with more complicated organic compounds including monocyclic, polycyclic, homocyclic and heterocyclic compounds. Similar to the previous course, this course is accompanied with the analytical course (ph. Analytical chemistry II) to link between chemical structure and analysis.

Intended learning outcomes of the course: (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No	**PILOs**	**Intended learning outcomes of the course (CILOs)**
1.	**A3**	**a1.** Discuss the physicochemical properties of monocyclic, polycyclic, homocyclic and heterocyclic organic compounds..
2.	**B1**	**b1.** Differentiate, name and draw the chemical structure of monocyclic, polycyclic, homocyclic and heterocyclic compounds. organic compounds.
3.		**b2.** Relate structures of monocyclic, polycyclic, homocyclic and heterocyclic compounds to their physical and chemical properties. .

4.		**b3.** Predict the outcomes of a reaction of monocyclic, polycyclic, homocyclic and heterocyclic compounds. organic compound and other chemicals.
5.	**B3**	**b4.** Design a sequence to synthesize monocyclic, polycyclic, homocyclic and heterocyclic organic compounds from a parent compound.
6.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
7.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
8.	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
9.		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
10.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
12.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
b2, b3	**Lecture-discussion Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**

c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Monocyclic Alicyclic compounds**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
2	**Benzyl and Benzhydryl derivatives**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
3	**Phenethyl and Phenylpropylamines**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	2	4
4	**Arylacetic and Arylpropionic Acids**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	2	4
MID-TERM EXAM				1	2
5	**Arylethylenes compounds**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
6	**Polycyclic Aromatic compounds**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions,	2	2

			examples of drugs and their medical uses.		
7	**Steroids**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	1	2
8	**Heterocyclic compounds: 5, 6, 7 – membered fused to one ring and two rings**	a1, b1, b2, b3, b4	Classification, physicochemical properties, preparation, reactions, examples of drugs and their medical uses.	3	6
Course Review		a1, b1, b2, b3, b4	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	8 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
General physicochemical properties of the chemical group. experiments of Chemical identification and synthesis of one-two drugs belonging to the following groups				
1.	Monocyclic Alicyclic compounds e.g. Hyoscine	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
2.	Benzyl and Benzhydryl derivatives e.g. Orphenadine	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
3.	Phenethyl and Phenylpropylamines e.g. adrenaline	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
4.	Phenethyl and Phenylpropylamines e.g. methyldopa	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
5.	Arylacetic and Arylpropionic Acids e.g. Thyroxin	**2**	**4**	b1, b4, c1, c2, d1, d2, d3
6.	Polycyclic Aromatic compounds e.g. Tetracycline	**1**	**2**	b1, b4, c1, c2, d1, d2, d3

7.	Heterocyclic compounds e.g. Mebendazole	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
8.	Heterocyclic compounds e.g. indomethacin	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
9.	Heterocyclic compounds e.g. aminophylline	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
10.	Heterocyclic compounds e.g. ascorbic acid	**1**	**2**	b1, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b4, c1, c2, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: the teacher provide the students with chemical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	d1, d2, c3, c4	7	
2	**Group** : each group of students will be assigned to do a search-report supported by illustrating	d1, d2, d3, c3, c4	12	

	figures for all drugs belonging to one of the studied homocyclic/hetrocyclic organic compounds.			

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4
		Assignments	7, 12	5	5	d1, d2, d3, c3, c4
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3, b1, b4
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2, b1, b4
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
6. Daniel Ledincer : Organic chemistry of drug synthesis, John Wiley & Sons
2- Essential References.
1. Saraf. The chemistry of heterocyclic compounds

2. Anil. A text book of pharmaceutical organic chemistry
3. British pharmacopeia BP, 2013
4. United states pharmacopeia USP, 31
5. Ali. A text book of pharmaceutical organic chemistry

3- Electronic Materials and Web Sites *etc*.

1- Articles - IJOC - Scientific Research Publishing (scirp.org)
2- International Journal of Organic Chemistry (researchgate.net)
3- The Journal of Organic Chemistry (acs.org)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOGNOSY II

I. Course Identification and General Information:							
1	**Course Title:**	**PHARMACOGNOSY II**					
2	**Course Code &Number:**	**PHG 252**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(second) Year – (2ST) semester*					
5	**Pre –requisite (if any):**	• **General biology** • **Botany** • **Pharmacognosy I**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr /** Tunis Mohammed Thabet Saeed					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course , similar to the previous course (pharmacognosy I), concerns with plants as source of drugs. However, it deals with botanical, morphological, microscopical features and medical uses of flowers, seeds, fruits , herbs and unrecognized plant parts that are evidence-based proved to be used as complementary and alternative medicines.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1)	**A4**	**a1**. Explicit the methods used for detection of active constituents and discovering adulteration of medicinal flowers, seeds, fruits , herbs and unrecognized plant parts.
2)		**a2**. Discuss the principles and procedures applied for cultivation, collection and processing of medicinal flowers, seeds, fruits , herbs and unrecognized plant parts. as crude drugs.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3)	**A6**	**a3.** Identify the botanical origin, morphological and microscopical characteristics of medicinal flowers, seeds, fruits , herbs and unrecognized plant parts..
4)		**a4.** Determine the active constituents and therapeutic use of medicinal flowers, seeds, fruits , herbs and unrecognized plant parts.
5)	**A4**	**a5.** Describe his/her role as pharmacist in identification and evaluation of medicinal plants
6)	**B1**	**b1.** Express with drawings the morphology and key microscopical features of medicinal plants
7)		**b2.** Differentiate between medicinal flowers, seeds, fruits , herbs and unrecognized plant parts based on morphological and microscopical features.
8)	**B2**	**b3 .**Classify active constituents in medicinal flowers, seeds, fruits , herbs and unrecognized plant parts.
9)	**B4**	**b4.** Select standard operation procedures to identify medicinal plants and crude drugs.
10)	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11)		**c2.** Operate the instruments and perform experiments successfully in the laboratory
12)	**C3**	**c3.** Screen drugs in medicinal leaves, barks, roots and rhizomes
13)	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14)		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16)	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17)	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4, a5	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

b1	**Lecture, laboratory practice**	**Written exam , lab. term work, final practical exam**
b2, b4	**laboratory practice**	**lab. term work, final practical exam**
b3	**Lecture-discussion, feed-back learning**	**Written exams quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3,	**laboratory practice**	**Lab. term work, final practical exam**
c4, c5	**Feed-back learning , Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3	**laboratory practice** **Feed-back learning**	Lab. term work, final practical exam, Assignments

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Medicinal flowers**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, cultivation, adulteration detection, active constituents and medical uses of the following medicinal flowers : Clove, Chammoile, Pyrethrum, Tilia, Santonica, Lavender and Saffron..	3	6
2	**Medicinal seeds**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, active constituents and medical uses of the following medicinal bark seeds:Cardamom, Colchicine , nux vomica, Linseed, Nutmeg, Black and White Mustard, Fenugreek, Clabar and Nigella.	3	6

Mid-term exam				1	2
3	**Medicinal fruits**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, active constituents and medical uses of the following medicinal fruits Ammi vinaga, Anise, Fennel, Caraway, Capsicum, star Anise, Coriander, Vanilla	3	6
4	**Medicinal herbs**	a1, a2, a3, a4, a5, b1, b3	Study of botanical origin, microscopical features, active constituents and medical uses of the following medicinal herbs : Ergot, Indian hemp, Chatharanthus, Lobelia, Peppermint, Thyme,Passiflora and Ephedra	2	4
5	**Unrecognized plant drugs**	a1, a2, a3, a4, a5, b1, b3	• Definition , classification, chemical and physical properties • Study of medicinal resin and resin combinations: Colophony, Myrrh, Tolu peru, Tolu Balsam, Oliabanum and Benzoin • Medicinal gums , juices and extracts	2	4
Course Review		a1, a2, a3, a4, a5, b1, b3	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Course Intended Learning Outcomes CILOs
1	morphology and microscopical investigation of medicinal flowers : clove	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
2	morphology and microscopical investigation of medicinal flowers : Saffron	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3

3	morphology and microscopical investigation of medicinal seeds cardamom	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
4	morphology and microscopical investigation of medicinal seeds Black & white mustard	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
5	morphology and microscopical investigation of medicinal fruits Anise	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
6	morphology and microscopical investigation of medicinal fruits Fennel	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
7	morphology and microscopical investigation of medicinal fruits Capsicum	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
8	morphology and microscopical determination of medicinal herbs : Peppermint	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
9	morphology and microscopical investigation of medicinal herbs : Thyme	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
10	investigation of medicinal resin : Myrrh	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
11	investigation of medicinal gum	**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b2, b4, c1, c2, c3, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search on the pharmaceutical products available in the drug market of one plant drug studied in the course.	c4, c5, d2	4-13	3
2	**Group** : each group of students will be assigned to do search report for adulteration of one crude drug studied in the course.	c4, c5, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, a4, a5, b1, b3
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, b1, b3
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method	Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b4, c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b4, c1, c2, c3, d2
			Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
W.C. Evans, Trease and Evans pharmacognosy, 2009, W.B.Saunders Trease, G.E. and Evans, W.C. "Pharmacognosy" (2002). Wallis, T.A. Textbook in Pharmacognosy (1967). Barnes, J., Anderson A.L. and Philipson J.D., "Herbal medicine" 2002 De Smet, P.A., Keller, K., Hausel, R. and Chandler, R.F., Adverse effects of herbal drugs (1993). Saber, A.H., Practical Pharmacognosy 4th Ed. (1966).
2- Essential References.
1. Jarald. Colour atlas of medicinal plants 2. Bhandari. Textbook of pharmacognosy. 3. Gokhale. Practical pharmacognosy 4. Jackson, B.P. and Snowdon D.W., Atlas of microscopy of medicinal plants, culinary herbs and spices (1990). 5. Shafik B. Chemistry of crude drugs (1976)
3- Electronic Materials and Web Sites *etc*.
1-Pharmacognosy Journal | Journal of Pharmacognosy and Phytochemistry | Phytochemistry Journal (phytojournal.com) 2- International Journal of Pharmacognosy and Phytochemical Research | ICI Jou (indexcopernicus.com) 3- International Journal of Pharmacognosy and Phytochemical Research (scimagojr.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work.
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course

6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICAL BIOCHEMISTRY I

I.	Course Identification and General Information:							
1.	Course Title:	MEDICAL BIOCHEMISTRY I						
2.	Course Code &Number:	FOP 2 ٢٦						
3.	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		3
4.	Study level/ semester at which this course is offered:	*(2ND) Year – (SECOND) semester*						
5.	Pre –requisite (if any):	• General chemistry • Pharm. Organic chemistry I • General biology • Physiology I						
6.	Co –requisite (if any):	----------						
7.	Program (s) in which the course is offered:	Pharmacy						
8.	Language of teaching the course:	ENGLISH						
9.	Location of teaching the course:	IN THE UNIVERSITY						
10.	Prepared by	Dr .Mohammed A. ALsenwi						
11.	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

II. Course Description:
The course deals with study of types, regulation, chemical structure, biosynthesis, metabolic pathways and physiological/pathological roles of essential biochemical compounds, including carbohydrates, lipids, protein

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	PILOs	CILOs
1.	A1	**a1.** Identify the roles of biochemical compounds in human body.
2.		**a2.** Explicit the physiological/pathological involvement of carbohydrates, lipids, proteins.
3.	A3	**a3**. Explain the physicochemical properties of carbohydrates, proteins and lipids.

4.	**B1**	**b1.** Interpret body diseases resulted from disturbances in levels of carbohydrate, proteins and lipids.
5.		**b2.** Predict the outcomes of biochemical reactions involving carbohydrate, proteins and lipids..
6.	**B2**	**B3 .** Classify carbohydrates, proteins, and lipids. .
7.		**b3.** Compare between metabolic reactions of carbohydrates, proteins and lipids.
8.	**B4**	**b4.** Select standard operation procedure for isolation of carbohydrates, proteins and lipids from blood.
9.		**b5.** Choose a method for identification of carbohydrates, proteins and lipids.
10.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory.
12.	**C3**	**c3 .** Bioassay proteins, carbohydrates and lipids in blood
13.	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14.		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
15.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture, laboratory practice**	**written exams , Lab. term work, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2, b3	**lecture, feed-back learning**	**Written exam, quizzes**

b4, b5	**Lecture, , feed-back learning, Lab. Practice**	**written exam , quizzes, Lab. term work, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**Lab. Practice**	**Lab. term work, final practical exam**
c4, c5	**Group-project, feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Group-project , Lab. Practice**	**Assignment s, Lab. term work, final practical exam**
d2	**Feed-back learning , Lab. practice**	**Assignment s, Lab. term work, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a2, a3	• Definition and significance • General roles of biochemistry • Properties and classification of biochemicals	1	2
2	**Carbohydrates**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Glycolysis • Citric acid cycle • Glycogenesis and glycogenolysis • Hexose monophosphate shunt • Uronic acid pathway • Blood sugar and its regulation. • Pathological conditions related carbohydrates.	4	8
3	**Lipids (1)**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Biosynthesis of fats • Oxidation of fatty acids • Ketogenesis and ketosis	2	

			• Metabolism of cholesterol • Essential fatty acid and eicosanodis phospholipids. • Sphingolipids. • Bile salts • Pathological conditions related to lipids.		4
			MID-TERM EXAM	1	2
3	**Lipids (2)**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Biosynthesis of fats • Oxidation of fatty acids • Ketogenesis and ketosis • Metabolism of cholesterol • Essential fatty acid and eicosanodis phospholipids. • Sphingolipids. • Bile salts • Pathological conditions related to lipids.	2	4
4	**Proteins**	a1, a2, a3, b1, b2, b3, b4,b5	• Classification of aminoacides • General biochemical reaction of amino acids like • Transamination • Deamination • Decarboxylation • Peptides and polypeptides • Biosynthesis of proteins : role of DNA • Classifications and physiological roles of proteins • Metabolism of proteins • Urea cycle • Nitrogen balance • Pathological conditions related to proteins.	5	10 4
Course Review		a1, a2, a3, b1, b2, b3, b4,b5	Review of the course topics by discussion session.	1	2
			FINAL – EXAM	1	2
TOTAL				16	32

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks /and Units Per Semester	16 weeks	4 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	introduction to biochemistry chemistry Lab.: safety requirements, list of experiments, How to report, etc.	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
2.	**carbohydrates** monosaccharaides : physicochemical properties and in vitro identification & differentiation.	**2**	**4**	b4, b5, c1, c2, c3, d1, d2, d3
3.	**carbohydrates** disaccharides physicochemical properties and in vitro identification & differentiation.	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
4.	**carbohydrates** polysaccharides physicochemical properties and in vitro identification & differentiation.	**2**	**4**	b4, b5, c1, c2, c3, d1, d2, d3
5.	**Sampling and preserving of human samples : blood, urine**	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
6.	**Bioassay of blood glucose**	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
7.	**Lipids** physicochemical properties and in vitro identification of cholesterol.	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
8.	**Assay of cholesterol in human blood.**	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
9.	**Proteins:** physicochemical properties and in vitro identification of certain types of proteins	**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: the teacher provide the students with biochemical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	d2, c4, c5	4-13	
2	**Group** : each group of students will be assigned to present a search report on one pathological condition related to disturbances in biochemical levels in the body.	d1, d2, d3, c4, c5	14	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1, b2, b3, b4, b5
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4, b5
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b4, b5, c1, c2,c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b4, b5, c1, c2,c3, d1, d2, d3
	Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Pamela C. Champe, Lippincott's illustrated review in Biochemistry, 2010, Lippincott William & Wilkins
2- Essential References.
1. Hiram f. Gilbert , Basic concepts in biochemistry ; a student's survival guide, 2000, McGraw-Hill 2. Vyas . Pharmaceutical biochemistry
3- Electronic Materials and Web Sites *etc*.
1- Archive of "International Journal of Biochemistry and Molecular Biology". - PMC (nih.gov) 2- International Journal of Biochemistry and Molecular Biology (scimagojr.com) 3- International Journal of Biochemistry and Molecular Biology - SCI Journal

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	Course Policies:
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PSYCHOLOGY

I. Course Identification and General Information:							
1	**Course Title:**	**PSYCHOLOGY**					
2	**Course Code &Number:**	**FOP 272**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(SECOND) Year – (2ND) semester*					
5	**Pre –requisite (if any):**	**NONE**					
6	**Co –requisite (if any):**	**NONE**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/ Ali Whaban**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course focuses on study of development of human personality according to various psychological and the importance of the caring environment for the health of patients.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
7. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1)	**A1**	**a1.** Identify the schools of psychology and the role of psychology in management of modern diseases
2)		**a2.** Define the essential psychological concepts such as mental ability, motives and emotions
3)		**a3.** Determine the basic human psychological needs and the emotional needs of ill people.
4)		**a4.** Describe various types of personalities and how to deal with each type.
5)	**A3**	**a4**. Discuss the stages in development of human personality.

6)	**A4**	**a5.** Describe the role of pharmacists as health care professional in dealing with various personalities of patients and grasp their emotional needs.
7)	**B2**	**b1 .** Compare between psychiatry, behavior medicine and psychology
8)		**b2.** Classify personalities of human into various categories.
9)		**b3.** Differentiate between psychopathic and normal persons.
10)	**B4**	**b4 .** Assess the emotional needs of patients. Select
11)	**C4**	**c1 .** Present his/her thoughts , search for information and report works effectively using language.
12)	**D1**	**d1.** Share successfully in team-work.
13)	**D2**	**d2.** Show respect to life.
14)	**D3**	**d3.** Communicate effectively with patients.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture, feed-back learning**	**written exam , assignment**
a4, a5	**Lecture**	**written exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2, b3, b4	**lecture ,Feed-back learning**	**Written exam , assignment, quiz**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Feed-back learning ,Group-project.**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Group-project , feed-back learning**	**Assignment**
d2	**lecture, Group-project, feed-back learning**	**Written exam , assignment**

d3.	**Group-project, feed-back learning**	**Assignment**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to psychology**	a1	• Definition, historical progress • Purposes of psychology • schools of psychology.	2	2
2	**Human needs and drives**	a3	• Basic human needs and biological or primary drives, Secondary social and psychological drives.	2	2
3	**Psychology concepts**	a2	• Mental ability , Motor skills, motives • Sensation , Conceit , emotion	2	2
MID-TERM EXAM				1	1
4	**Personality**	a4,a5, b2, b3, b4, d2	• Definition and dimensional types • Growth and environment factors • Relationship between achievement of development stages goals and basic structure of personality. • Types of personalities • Methods of assessment • Dealing and communication with various types of personalities • Differences between psychopathic and normal persons.	4	4
5	**Medical psychology**	b1, d2	• Fear, anxiety and depression associated with Illness. • Emotional needs of ill persons • Psychological health and behavioral Medicine. • Psychiatry	3	3
Course Review		a1, a2, a3, a4,a5, b2, b3, b4, d2	Review of the course topics by discussion session.	1	1
FINAL – EXAM				1	2
TOTAL				16	19
Number of Weeks /and Units Per Semester				16 weeks	Units

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search-based report on one of the subtopics studies such as : psychology schools and concepts.	a1, b1, b2, b3, c1	4-13	6
2	**Group** : each group of students will be assigned to do a search report on how to deal with one of the following : • Mentally disables • Nervous personalities • Depressed patients • Self-proud persons	c1, d1, d2, d3	14	4

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester					
No.	**Assessment Method**	**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Assignments	4-13, 14	10	10	a1, b1, b2, b3, c1, d1, d2, d3
2	Quizzes	7, 12	10	10	b1, b2, b3
3	Mid-semester (written exam)	7	20	20	a1, a2, a3
4	Final exam (written exam)	17	60	60	a1, a2, a3, b1, b2, b3, b4, d2
TOTAL			100	100 %	100

Learning Resources:
1- Required Textbook(s) (maximum two).
2- Essential References.
3- Electronic Materials and Web Sites *etc*.

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Level III

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICS III

I. Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICS III**					
2	**Course Code &Number:**	**PHT 311**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(3RD) Year – (FIRST) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I & II**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/ Anes A. Thbet**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course was designed as complimentary part of (Pharmaceutics I, II) courses. In contrast to the previous course which deal with liquid, semisolid or gaseous dosage form , this course provides knowledge and skills in designing solid pharmaceutical dosage, including powders, granules, tablets and capsules, which are globally the most widely manufactured dosage forms. In addition, The course covers sterile pharmaceutical products.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
8. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A4**	**a1.** Describe the significance of pharmaceutics as art and science of dosage form design
2.		**a2.** Explicit the types and roles of excipients included in solid and sterile dosage forms
3.		**a3.** Describe the stages of designing pharmaceutical solid and sterile dosage forms
4.	**A10**	**a4.** Describe the role of pharmacist in formulation of pharmaceutical solid and sterile dosage forms .
5.	**A11**	**a5.** Explicit the general properties, advantages and disadvantages of pharmaceutical solid and sterile dosage forms .
6.		**a6**. Discuss the principles, pharmacopeial requirements, methods of preparation, of various types of pharmaceutical solid and sterile dosage forms
7.	**B2**	**b1 .** Classify pharmaceutical solid and sterile dosage forms
8.		**b2.** Compare between various types of pharmaceutical solid and sterile dosage forms
9.	**B3**	**b3.** Design pharmaceutical solid and sterile dosage forms
10.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
12.	**C5**	**c3.** Employ the relevant way to prepare extemporaneous solid and sterile dosage forms
13.	**C7**	**c4 .**Search efficiently for information using documented and electronic sources of information.
14.		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
15.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17.	**D3**	**d3.** Participate efficiently with colleagues in a team work.

1. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2, b3, b4	**Lecture-discussion, Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:

A – Theoretical Aspect:

No.	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Solid dosage forms: (1) : Introduction & Powders**	a1, a2, a3, a4, a5, a6, b1, b2, b3	**Introduction** □ classifications of dosage forms □ Advantages and disadvantages □ Formulation consideration **Powders** □ Definitions, advantages, disadvantages □ classification (coarse, fine, microfine, etc; divided, bulk; compounded; medicated, cosmetic) □ Formulation considerations □Bulk powder, divided powder and Dusting powder:: formulation, examples □ Powders packaging □ Quality control evaluation	2	4
2	**Solid dosage forms: (2) Granules**	a1, a2, a3, a4, a5, a6, b1, b2, b3	□ Definition, advantages, disadvantages □ Method of preparation □ Formulation considerations **Effervescent granules** o Definition, composition o Method of preparation: dry (fusion) method, wet method o Determination of the required quantity of effervescent base in the formulation	1	2
3	**Solid dosage forms: (3) Tablets**	a1, a2, a3, a4, a5, a6, b1, b2, b3	□ Advantages and disadvantages. □ Types and Ideal properties of tablets □ Tablet excipients □ Tableting methods Steps, advantages and disadvantages (Direct compression, Dry granulation, Wet granulation) □ Tablet press machines □ Problems encountered during tablet formulation. □ Tablet coating Sugar coating , Film coating, Enteric coating, extended release coating : advantages, disadvantages, coating materials, process of coatings □ Quality evaluation	5	10

	Mid-term exam			1	2
4	**Solid dosage forms: (4) Capsules**	a1, a2, a3, a4, a5, a6, b1, b2, b3	**(i) Hard gelatin capsules** • Advantages and disadvantages • Composition of capsule shell • types of capsule fill • Selection of capsule size. • Excipients used in hard gelatin capsule formulation. • Capsule filling process. • Storage of hard gelatin capsules. **(ii) Soft gelatin capsules** • Advantage and disadvantages. • Capsule shell composition. • types of capsule fill • Shapes and sizes. • Soft gelatin capsule formulation. • capsule filling process • specific properties:O2 impermeability, water content	3	6
5	**Sterile pharmaceutical dosage forms** (Introduction)	a1, a2, a3, a4, a5, a6, b1, b2, b3	**Differences between sterile & non-sterile dosage forms :** • Definition : sterility, sterilization, preservation, pyrogenicity, pyrogen-free • Review of sterilization methods and preservation of dosage forms • Aseptic techniques • Sources of contamination and methods of prevention • Design of aseptic area , Laminar flow benches services and maintenance) • Isotonicity of sterile preparations and methods of adjustment	1	2

6	**Sterile pharmaceutical dosage forms** (Parenteral preparations)	a1, a2, a3, a4, a5, a6, b1, b2, b3	• Preformulation factors
			  ○ Route of administration of injection
			  ○ Water for injection
			  ○ Non-aqueous vehicles
			• Formulation consideration
			  ○ Formulation of Infusion fluids
			• Prefilling , filling and package (small and large sacle)
				2	4

			○ Quality evaluation		
7	**Sterile pharmaceutical dosage forms** (Ophthalmic preparations)	a1, a2, a3, a4, a5, a6, b1, b2, b3	• Anatomical features of the eye • Types of ophthalmic preparations • Formulation considerations • Sterilization and preservation. • Package • Quality evaluation	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	**Preparation of tablets using wet granulation method : paracetamol tablets**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
2	**Preparation of tablets using wet granulation method : mefenamic acid tablets**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
3	**Preparation of tablets using direct compression method : aspirin tablets**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
4	**film-coating of tablets mefenamic acid**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
5	**Preparation of hard gelatin capsules (Manual): aspirin**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
6	**Preparation of hard gelatin capsules (Manual): paracetamol**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
7	**Preparation of I.V. admixtures : DNS + vitamin C + vitamin B complex**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
8	**Preparation of parenteral solutions from parenteral**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**

	powders : reconstitution of cefuroxime sodium vial			
9	**Preparation of Glycerin suppositories.**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
10	**Preparation of sterile NaCl eye wash.**	**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b3, c1,c2, c3, d1, d2, d3**
Total		**11**	**22**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied dosage forms	c4, c5, d2	7	
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of studies dosage forms.	c4, c5, d1, d2, d3	12	

Schedule of Assessment Tasks for Students During the Semester

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, a4, a5, a6, b1, b2, b3
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
	Total			30	30 %	

Learning Resources
1- Required Textbook(s) (maximum two).
Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
2- Essential References.
Rawlins. Bentley s of text book of pharmaceutics Kasture pharmaceutics Raje. pharmaceutics Raph. practical pharmaceutics
3- Electronic Materials and Web Sites *etc*.
1- https://www.jpharmsci.org 2- Journal of Pharmaceutical Sciences | ScienceDirect.com by Elsevier 3- Journal of Pharmaceutical Sciences - Wiley Online Library 4- Journal of Pharmaceutical Sciences: List of Issues - Wiley Online Library

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOLOGY I

Course Identification and General Information:							
1	**Course Title:**	**PHARMACOLOGY I**					
2	**Course Code &Number:**	**PHL312**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(3RD) Year – (FIRST) semester*					
5	**Pre –requisite (if any):**	• **General biology** • **Anatomy and histology** • **Physiology I, II**					
6	**Co –requisite (if any):**	**----**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/Shwaqi Alawdai**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course provides the students with knowledge of mechanisms of drugs on the body including drug-receptors interaction and effect of body on drugs. The course also deals with the study of pharmacodynamic and pharmacokinetics of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A5**	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions.
2	**A8**	**a2.** Describe the pharmacokinetics of drugs.
3	**A10**	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.

4	**B2**	**b1 .**Classify drugs used for disorders of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
5		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6	**C7**	**c1 .** Advise the patient and healthcare professional to optimize medicine use
7	**D2**	**d1.** Demonstrate time management and decision making skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	Lecture	Written exams
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture**	**Written exams**
b2	Lecture, feed-back learning	Written exam , quizzes, assignments
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1	feed-back learning	Assignment
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	Feed-back learning	Assignments

I. Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

1	**Introduction to pharmacology** **(General pharmacology)**	a1, a2, a3, b1	• Definition, brief history • Divisions of pharmacology (pharmacokinetics, pharmacodynamics : definitions, field of concern) • Dose-Response curve • Types of dose (effective, lethal), therapeutic index • Drug efficacy and drug potency • Mechanisms of drug action : drug targets (receptors, enzymes, ion channels, etc). • receptor theory , types of receptors, affinity, specificity, selectivity, agonist, antagonist, competitive and non-competitive , reversible and irreversible. • Enzymes as drug targets : types, examples, mechanisms • Ion channels as drug target : types, examples, mechanisms • Neurotransmitters and autacoids: physiopathologic roles • Types of drug adverse effects with examples • Types of drug interactions effects with examples • Pharmacokinetics (in brief) : drug absorption, distribution, metabolism, excretion	3	6
2	**Drugs acting on the autonomics nervous system**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Indirectly sympathomimetics • Direct symapthomimetics: adrenergic agonists • Indirectly sympatholytic drugs • Directly sympatholytic drugs : adrenergic blocking agents	2	4

	Drugs acting on the autonomics nervous system	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Indirectly parasympathomimetics • Direct parasympathomimetics : cholinergic agonists • Indirectly parasympatholytic drugs • Directly sympatholytic drugs : cholinergic blocking agents • **Drugs affecting autonomic ganglia:** ganglia stimulants , ganglia blockers	2	4
	MID-TERM EXAM			1	2
3	**Drugs affecting skeletal muscles**	a2, a3, a4, b1, b2, b3, b4, b5, c1, d2	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Neuromuscular blocking agents • Central muscles relaxants	1	2

4	**Eye pharmacology**	a2, a3, a4, b1, b2, b3, b4, b5, c1, d2	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Parasympathomimetic and parasympatholytics agents used for eye disorders. • Adrenergic agonists and antagonists used for eye disorders • Carbonic anhyrdase inhibitors • Prostaglandin analogues • Osmotic agents " ***Topics of Anti-inflammatory, antihistamins, antibiotics used for eye disorders will be discussed in next pharmacology courses"***	2	4

5	**Drugs for alimentary system disorders**	a1, a2, a3, b1	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Antacids and Drugs for Peptic Ulcer • Anti- emetics • Laxatives • Anti-diarrheal • Antispasmodics • Drugs for irritable colon • Hepatic protectives • Drugs for gall bladder disorders	3	6
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and	b1, c1, d1	6-12	

	risks for specific patients e.g. CVS patients, renal failure patients, etc.			

VII. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	b1, c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, b1
	TOTAL			100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1. Katzung –Basic and Clinical Pharmacology, (2007), McGraw-Hill
2. Rang, Dale and Ritter. Pharmacology, (2007), Churchill Livingstone.

2- Essential References.

1. Richard A. Harvey. Lippincott's pharmacology, 2000, Lippincott William and Wilkins.
2. Udaykumar. Text book of medical pharmacology

3- Electronic Materials and Web Sites *etc*.

1.E-journals A–Z: Pharmacology | HSLS (pitt.edu)
2.Journal of Pharmacy and Pharmacology - Wiley Online Library
3. British Journal of Pharmacology - Wiley Online Library
4. Home | Journal of Pharmacology and Experimental Therapeutics (aspetjournals.org)

Course Policies:

1)	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.
2)	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3)	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4)	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work.
5)	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course.

6)	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICAL MICROBIOLOGY

I. Course Identification and General Information:							
1	**Course Title:**	**MEDICAL MICROBIOLOGY**					
2	**Course Code &Number:**	**FOP 313**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (1ST) semester*					
5	**Pre –requisite (if any):**	• **General biology**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Abdulrahman Humaid					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of basic microbiology including types, microscopical features, identification and common infectious diseases caused by pathogenic microorganisms including bacteria, fungi, rickettsia and viruses. The course also concerns with applications of microbiology in pharmacy including sterilization, preservation, pharmacopeial microbial content, sampling, culturing and antimicrobial sensitivity test.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1)	**A1**	**a1.** Identify the microscopical features of common pathogenic microorganisms including bacteria, fungi, rickettsia and others.
2)		**a2.** Describe pathogenicity and management common pathogenic microorganisms including bacteria, fungi, rickettsia and others.
3)	**A4**	**a3**. Discuss the principles and technologies applied in investigations of pathogenic microbes.
4)	**A10**	**a4.** Describe the pharmacist role in identification of pathogenic microbes

5)	**B1**	**b1.** Interpret the microscopical features of pathogenic microorganisms
6)		**b2.** Differentiate between similar microorganisms such as streptococci and staphylococci using microscopical methods
7)	**B2**	**b3 .**Classify bacteria, fungi , rickettsia and viruses
8)	**B4**	**b4.** Select standard operation procedures to culture, isolate , identify pathogenic microorganism.
9)	**C1**	**c1.** Handle efficiently and safely the chemical materials , human biological samples, microbial samples and tools used in the laboratory
10)		**c2.** Operate the instruments and perform experiments successfully in the laboratory
11)	**C2**	**c3 .**Search efficiently for information using documented and electronic sources of information.
12)	**C3**	**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
13)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
14)	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
15)	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**laboratory practice**	**lab. term work, practical final exam**
b3	**Lecture, feed-back learning**	**Written exams, quizzes**
B4	**Lecture, lab. Practice**	**Written exams, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning,**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice,**	**Lab. term works, final practical exam, Assignments**
d2	**Lab. practice, , feed-back learning**	**Lab. term works, final practical exam, Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to Microbiology**	a1, a2, a3, a4	• Definition, brief history, role in medical sciences • Classification of microorganisms: based on motility • Classification of microorganisms: based on cell structures: Prokaryotes and Eukaryotes • Beneficial and pathogenic microorganisms : Role of microorganisms in life	2	4
2	**Medical bacteriology Medical**	a1, a2, a3, a4, b3, b4	• Nomenclature , biological process : (growth, reproduction , nutrition, metabolism) • Classification • General measures to Control of bacterial infections. • Classification. • Study of characteristics , name of infectious disease, life-cycle, and infection mode, culturing ,	3	6

			identification and list of appropriate drugs to treat **G+ve bacteria**		
			Study of characteristics , name of infectious disease, life-cycle, and infection mode, culturing , identification and list of appropriate drugs to treat **G-ve pathogenic bacteria**	2	4
Mid-term exam				1	2
2	**Medical bacterilogy**		Study of the microscopical features , Study of characteristics , name of infectious disease, life-cycle, and infection mode, culturing , identification and list of appropriate drugs to treat **acid-fast bacteria**	1	2
3	**Medical mycology (Fugi)**	a1, a2, a3, a4, b3, b4	• General Classification. • Study of characteristics , name of infectious disease, clinical features of disease, life-cycle, and infection mode, culturing , identification and list of appropriate drugs (Antifungals) • General measures to Control of fungi infections.	2	4
4	**Medical virology**		• General Classification. • Study of characteristics , name of infectious disease, clinical features of disease, life-cycle, and infection mode, culturing , identification and list of appropriate drugs (antivirals) • General measures to Control of viral infections.	3	6
5	**Other pathogenic microoganisms**		**Rickettsia** • Study of characteristics , name of infectious disease, clinical features of disease, life-cycle, and infection mode, culturing , identification and list of appropriate drugs • General measures to Control of infections.	1	2

FINAL – EXAM	1	2
TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	5 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
38.	**introduction to the Lab.: safety requirements, list of experiments, How to report, source of errors, etc.**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
39.	**Preparation of culture media: e.g. Muller Hinton agar and others**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
40.	**Sampling and inoculum**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
41.	**Microscopical characteristics and differentiation of G+ve bacteria: streptococci, staphylococci**	**2**	**6**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
42.	**Microscopical characteristics and differentiation of G-ve bacteria: E.coli, Klebsilla, pseudomonas, others**	**4**	**8**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
43.	**Microscopical differentiation of M. TB.**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
44.	**Microscopical characteristics and differentiation of Fungi Candida albicans.**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
Total		**12**	**24**	
Number of Weeks			**12**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a web-search (including youtube) report on one of the studied microbes.	c3, c4, d2	4-13	5

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b3, b4
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
2		Accomplishments		5	5	

	Final exam (practical)	12	20	20	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
		Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Chandrakanty pharmaceutical microbiology
2- Essential References.
1. W. B. Hugo: pharmaceutical microbiology, 1998, Black well science LTD. 2. Aulton, pharmaceutics the science of dosage form design, 2002, Churchill Livingston 3. Kar. Pharmaceutical microbiology
3- Electronic Materials and Web Sites *etc*.
1. Home | Journal of Pharmacology and Experimental Therapeutics (aspetjournals.org) 2. Frontiers in Pharmacology 3. Pharmacology - Home - Karger Publishers 4. Journal of Pharmacology and Pharmacotherapeutics: SAGE Journals (sagepub.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICAL BIOCHEMISTRY II

I. Course Identification and General Information:								
1	**Course Title:**	**MEDICAL BIOCHEMISTRY II**						
2	**Course Code &Number:**	**FOP 314**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (first) semester*						
5	**Pre –requisite (if any):**	• **Medical biochemistry I**						
6	**Co –requisite (if any):**	----------						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared By:**	Dr./ Mohammed A. Alsonwi						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is complementary to (Medical biochemistry I). It concerns with study of types, regulation, chemical structure, biosynthesis, metabolic pathways and physiological/pathological roles of biochemical compounds including enzymes, nucleic acids and hormones. Moreover, the course provides essential knowledge in types, chemical properties, functions and fate in the body as well as pathological conditions resulted from disturbance of extraneous supplements including vitamins and minerals.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
2. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Identify the roles of biochemical compounds, vitamins and minerals in human body.
2		**a2.** Explicit the physiological/pathological involvement of enzymes, nucleic acids and hormones, vitamins and minerals.

3	A3	**a3**. Explain the physicochemical properties of carbohydrates, proteins and lipids..
4	B1	**b1.** Interpret body diseases resulted from disturbances in levels of enzymes, nucleic acids and hormones, vitamins and minerals.
5		**b2.** Predict the outcomes of biochemical reactions involving enzymes, nucleic acids and hormones, vitamins and minerals.
6	B2	**B3 .** Classify enzymes, nucleic acids and hormones, vitamins and minerals..
7		**b3.** Compare between metabolic reactions of enzymes, nucleic acids and hormones, vitamins and minerals.
8	B4	**b4.** Select standard operation procedure for isolation of enzymes, nucleic acids and hormones, vitamins and minerals from blood.
9		**b5.** Choose a method for identification of enzymes, nucleic acids and hormones, vitamins and minerals.
10	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory.
12	C3	**c3 .** Bioassay enzymes, nucleic acids and hormones, vitamins and minerals in blood.
13	C7	**c4 .**Search efficiently for information using documented and electronic sources of information.
14		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
15	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
16	D2	**d2.** Demonstrate the skills of time management and self-learning.
17	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture, laboratory practice**	**written exams , Lab. term work, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**

b1, b2, b3	**lecture, feed-back learning**	**Written exam, quizzes**
b4, b5	**Lecture, , feed-back learning, Lab. Practice**	**written exam , quizzes, Lab. term work, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**Lab. Practice**	**Lab. term work, final practical exam**
c4, c5	**Group-project, feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**Group-project , Lab. Practice**	**Assignment s, Lab. term work, final practical exam**
d2	**Feed-back learning , Lab. Practice**	**Assignment s, Lab. term work, final practical exam**

II. Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Nucleic acids**	a1, a2, a3, b1, b2, b3, b4,b5	• Basic structures • Types (DNA, RNA), roles , biosynthesis and catabolism • DNA replication and mutation • DNA repair mechanism	2	4
2	**Enzymes**	a1, a2, a3, b1, b2, b3, b4,b5	• Classifications and physiological roles • Nomenclature • Factors affecting enzyme action • Enzyme kinetics • Cytochrome P450 enzymes : classification, roles, stimulation and inhibition	4	8

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

			• Pathological conditions related to enzymes.		
MID-TERM EXAM				1	2
3	**Hormones and related factors**	a1, a2, a3, b1, b2, b3, b4,b5	Classification, chemical structures, biosynthesis , catabolism and Pathological conditions related to : • Anterior Pituitary gland hormones • Posterior pituitary gland hormones • Corticosteroids • Thyroxin • Insulin • Sex hormones • Others	5	10
4	**Vitamins & minerals & trace elements**	a1, a2, a3, b1, b2, b3, b4,b5	• Vitamins : Classifications , physiological/pathological roles. Sources , chemical structures, absorption, distribution , metabolic pathways . elimination, daily requirements • Minerals and trace elements: physiological/pathological roles. Sources , salts, absorption, distribution , metabolic pathways . elimination, daily requirements	3	6
Course Review		a1, a2, a3, b1, b2, b3, b4,b5	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	Isolation of DNA from saliva human sample	**1**	2	b4, b5, c1, c2, c3, d1, d2, d3
2.	Identification, isolation and bioassay of liver-related enzymes in blood	**2**	**4**	b4, b5, c1, c2, c3, d1, d2, d3
3.	Identification, isolation and bioassay of Myocardial infarction-related enzymes in blood	**1**	4	b4, b5, c1, c2, c3, d1, d2, d3
4.	bioassay of thyroid hormones	**1**	2	b4, b5, c1, c2, c3, d1, d2, d3
5.	bioassay of sex hormones : testosterone, estrogen in blood	**2**	4	b4, b5, c1, c2, c3, d1, d2, d3
6.	Identification, isolation and bioassay of minerals in urine	**1**	2	b4, b5, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b4, b5, c1, c2, c3, d1, d2, d3
Total		**9**	**18**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: the teacher provide the students with biochemical problems related to the studied topics. Every student is assigned to solve some of those problems individually.	d2, c4, c5	4-13	3
2	**Group** : each group of students will be assigned to present a search report on one pathological condition related to disturbances in biochemical levels in the body.	d1, d2, d3, c4, c5	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1, b2, b3, b4, b5
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4, b5
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term	Attitude	1-12	5	5	b4, b5, c1, c2,c3, d1, d2, d3
2		Accomplishments		5	5	

	works					
	Final exam (practical)		12	20	20	b4, b5, c1, c2,c3, d1, d2, d3
				Total	30	30 %

Learning Resources:
1- Required Textbook(s) (maximum two).
Pamela C. Champe, Lippincott's illustrated review in Biochemistry, 2010, Lippincott William & Wilkins
2- Essential References.
1. Hiram f. Gilbert , Basic concepts in biochemistry ; a student's survival guide, 2000, McGraw-Hill 2. Vyas . Pharmaceutical biochemistry
3- Electronic Materials and Web Sites *etc*.
1. E-journals A–Z: Biochemistry | HSLS (pitt.edu) 2. The Open Biochemistry Journal - Home Page 3. World Open Journal of Metabolic Biochemistry (scitecpub.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

" PATHOLOGY"

I. Course Identification and General Information:							
1	**Course Title:**	**PATHOLOGY**					
2	**Course Code &Number:**	**FOP315**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(3RD) Year –(1st) semester*					
5	**Pre –requisite (if any):**	• **Anatomy & histology** • **Physiology I & II**					
6	**Co –requisite (if any):**	**Pharmacology I**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Ammar Omer					
11	**Date of Approval**	**8/2019**					

Course Description:

This course provide knowledge in general topics of "Pathology" which is a significant field in modern medical diagnosis and medical research, concerned mainly with the causal study of disease. The course also provides specific sections of pathology including: immunopathology, genetic pathology and tumor pathology. The course is preceded by (Physiology) courses in order to make the students able to compare pathological changes of diseases with normal physiological status of body cells and tissues.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

9. Alignment CILOs to PILOs

No.	PILOs	CILOs
1	**A1**	**a1.** Identify the mechanisms by which diseases occur.
2		**a2.** Determine the pathological changes in normal body systems that occur during diseases.
3	**B1**	**b1.** Interpret pathological features of diseases

4	C7	**c1 .**Search efficiently for information using documented and electronic sources of information.
5		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
6	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
7	D2	**d2.** Demonstrate the skills of time management and self-learning.
8	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion** **Feed-back learning**	**Written exams, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**group-project**	**Assignments**
d2	**feed-back learning**	**Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
Order	**Units/Topics List**	**Sub Topics List**	**No. of Weeks**	**Contact hours**	**Course Learning Outcomes**
1	**Introduction**	▪ Importance of the study of pathology ▪ Definition of terms ▪ Methods and techniques ▪ Cellular and Tissue changes : cell resposne to injury: injury repair, failure of repair, cell death; apoptosis	2	4	a1, a2, b1
	Inflammation and tissure repair	▪ Definition ▪ Acute inflammation ▪ Chronic inflamation ▪ Hemodynamic disorders ▪ Thermodynamic disorders ▪ Histopathologic changes	3	6	a1, a2, b1
2	**Alteration in body fluids , electrolytes and acid-base**	Types, mechanisms, prognosis, disease	2	4	a1, a2, b1
Mid-term exam			1	2	
3	**Immunopathology**	Pathogenesis and types of • Immunodeficiencies • immune-complex diseases • autoimmne diseases, • allergy/parasite immunity • T cells mediated-immunity diseases • Immunohematology • Immunogenetics, Tumor immunlogy	4	8	a1, a2, b1
4	**Genetic pathology**	• Diseases caused by single – gene defects • -Disorders with multifactor polygenic inheritance • Cytogenetic disorders • Down s syndrome • sex chromosome disorders • kline felters syndrome XYY	2	4	a1, a2, b1
5	**Tumor pathology**	etiology, carcinogenic agents, cellular ad histological changes, types of cancers	2	4	a1, a2, b1
Course Review			1	2	a1, a2, b1
Final exam			1		a1, a2, b1
Number of Weeks /and Units Per Semester			**16**	**32**	**7 units**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a search-based report on one pathological features such as inflammation, lesion, allergy, etc.	c1, c2, d2	6	
2	**Group** : each group of students will be assigned to provide a search-based report on a correlation of one disease to its pathological features.	c1, c2, d1, d2, d3	10	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	7, 12	10	10	c1, c2, d1, d2, d3
2	Mid-semester exam (written exam)		7	20	20	a1, a2, b1
3	Final exam of (written exam)		16	60	60	a1, a2, b1

TOTAL	100	100 %	

Learning Resources:

1- Required Textbook(s)

1. James OD Oxford Textbook of Pathology, Oxford press, 2012.

2- Essential References.

1. John H. Bircky , Essentials of Anatomic and Clinical Pathology , 2nd ed. (2001). Health Professions Institute.

2. Stephen HG, Richared DP: Principles and Practice of clinical parasitology, Jhon Wiely & Sons Ltd; New York 2001.

3.Ursus-Nikolaus Riede, Martin Werner: Color Atlas of Pathology: Pathologic Principles· Associated Diseases; Thieme Stuttgart· New York 2004

4.Stephen HG, Richared DP: Principles and Practice of clinical parasitology, Jhon Wiely & Sons Ltd; New York 2001

3- Electronic Materials and Web Sites *etc*.

1- The Journal of Pathology - Wiley Online Library
2-Electronic Journal of Pathology and Histology - Volume 8, issue 1-4 - Journals - IOS Press
3-Pathology Journals | Online Journals in Pathology (mdlinx.com)
4-E-Journals & E-Books - Laboratory & Pathology - LibGuides at Vassar Brothers Medical Center
5-International Journal of Pathology and Clinical Research | Clinmed International Library (clinmedjournals.org)

	Course Policies:
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** Any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course. Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

COSMETIC PREPARATIONS

Course Identification and General Information:							
1	**Course Title:**	**COSMETIC PREPARATIONS**					
2	**Course Code &Number:**	**PHT 316**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (first) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I. II & III**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr/ Anes A. M. Thabit					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is one of the newer disciplines in pharmacy education since the role of pharmacists in cosmetic industry has been established. Therefore, this course is designed to provide knowledge and skills necessary for preparation of cosmetics used in cleaning , perfuming, making-up and other purposes and also cosmeceuticals preparations used as antiaging, treatment of skin-pigmentation and other purposes. The course is preceded by (pharmaceutics I ,II) courses since the design of most cosmetic products depends on principles similar to that of liquid and semisolid pharmaceutical dosage forms.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Explicit the general properties, advantages , disadvantages and requirements of cosmetics and cosmeceuticals,
2		**a2.** Discuss the principles, methods of preparation of various types of cosmetic preparations

3	A10	**A3.** Describe the role of pharmacist in formulation of cosmetic preparations. .
4	A11	**a4**. Identify the types of cosmetic preparations
5	B2	**b1.** Classify cosmetic preparations according to their use and physical form.
6		**b2 .** Compare between various types of cosmetic preparations. .
7	B3	**b3.** Design cosmetic preparations
8		**b4.** Evaluate the quality of the prepared cosmetic preparations.
9	B4	**b5.**. Select appropriate standard operation procedures for preparation and analysis of cosmetic products.
10	B9	**b6 .** Calculate the amount of ingredient required to prepare an enlarged or reduced amount of a cosmetic preparation. ..
11	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
12	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
13	C3	**c3.** Employ the relevant way to prepare cosmetic preparations
14	C7	**c4 .**Search efficiently for information using documented and electronic sources of information.
15		**c5** Present and report his/her works correctly using appropriate writing rules and technologies media.
16	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
17	D2	**d2.** Demonstrate the skills of time management and self-learning.
18	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2	**Lecture**	**Written exams**
b3	**Feed-back learning**	**Quizzes**

B4, b5	**laboratory practice**	**Lab, term works, final practical exam**
b6	**Lecture, Lab. Practice**	**Written exams , Lab, term works, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**laboratory practice**	**Lab, term works, final practical exam**
c4, c5	**Feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3	**laboratory practice, Feed-back learning, group project**	**Lab, term works, final practical exam, Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a2, a3, a4, b2, b3, b6	• definitions (cosmetic preparations, cosmeceuticals) • requirements cosmetics preparations registration, • Pharmaceutical classification of cosmetic preparations ○ cosmetic solutions and oils ○ cosmetic suspensions and foams ○ Cosmetic emulsions ○ Cosmetics solids and semisolids	1	2
2	**Skin-care cosmetic products**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations, examples of :	3	

			a) Anti-wrinkle or anti-aging products including face-masks b) Demulcents and moisturizing products c) Anti-acne products d) Skin- tanning products e) Skin-whitening products f) Hygienic and baby care products		6
3	**Make-up and removing make-up products:**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Lipsticks b) pencils c) Make up powder d) Make up removing products	2	4
Mid-term exam				1	2
4	**Bath and cleansing products**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Shampoos **b)** Soaps	1	2
5	• **Hair care products**	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) hair tints (coloring) and bleaches (discoloring), b) conditioning products for waving, straightening and fixing, c) Depilatories (hair removals). d) hair cleansing products (lotions, powders, shampoo) **e)** Shaving products (creams, foams, lotions, etc.).	2	4
	Pleasantly Odorants	a1, a2, a3, a4, b2, b3, b6	agents, formulations, method of preparations**:** a) Perfumes b) toilet waters c) eau de Colog.	2	4
	Oral and dental hygiene products	a1, a2, a3, a4,	agents, formulations, method of preparations**:** a) Toothpaste	2	4

		b2, b3, b6	b) Mouthwashes **c)** Dental gels		
Course Review		a1, a2, a3, a4, b2, b3, b6	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	**Introduction to lab: list of experiments, how to report, etc**	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
2	**preparation of anti-aging skin creams, ant-acne dermatological form.**	**2**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
3	**preparation of** lipsticks	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
4	**preparation of** antiseptic soap	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
5	**preparation of** antidandruff shampoo	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
6	**preparation of** hair nutrient oil	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
7	**preparation of after-shaving product**	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
8	**preparation of** perfumes	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
9	**preparation of** toothpaste	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
10	**preparation of** dental gel	**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b4, b5, b6, c1, c2, c3, d1, d2, d3**
Total		**11**	**22s**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to present a search report supported with images on 5 trade names (commercial preparations) of the studied cosmetic preparations.	c4, c5, d2	4-13	3
2	**Group** :every group is assigned to present an illustrating videos on lab. And industrial preparation of 3 types of cosmetic preparations.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b3

	Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam (written exam)	7	10	10	a1, a2, a3, a4, a5, b1, b2, b3, b6
3	Final exam (written exam)	16	50	50	a1, a2, a3, a4, a5, b1, b2, b3, b6
	TOTAL		70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term Works	Attitude	1-12	5	5	b4, b5, b6, c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b4, b5, b6, c1, c2, c3, d1, d2, d3
		Total		30	30 %	

Learning Resources

1- Required Textbook(s) (maximum two).

1. Hans Mollet, Arnold Grubenmann. Formulation Technology: Emulsions, Suspensions, Solid Forms, 2001 Wiley-VCH Verlag, Wells.
2. Ernest W. Flick. Cosmetic and toiletry formulations, 1996, Noyes Publications

2- Essential References.

1. Saraf. Cosmetics
2. Aulton M.E., Pharmaceutics: the science of dosage form design, 2002, Churchill Livingstone, UK

3- Electronic Materials and Web Sites *etc*.

Journals and E-journals - Pharmacy - LibGuides at University College London, Global (ucl.ac.uk)
Electronic Resources - Pharmacy & Science Library (nirmauni.ac.in)
Databases/e-resources/articles/journals - Pharmacy - LibGuides at Rhodes University Library

Course Policies:

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:**

	any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHYTOCHEMISTRY I

I. Course Identification and General Information:							
1	**Course Title:**	**PHYTOCHEMISTRY I**					
2	**Course Code &Number:**	**PHG 317**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (1ST) semester*					
5	**Pre –requisite (if any):**	• **Pharmacognosy I , II**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/ Gmal Abdulkarim Naser**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
Phytochemistry courses are collaborative to (pharmacognosy I, II) as all deal with plants as sources of drug and all are basis of complementary and alternative medicines . However, in contrast to pharmacognosy courses, phytochemistry courses deal with extraction, isolation and identification of active chemical constituents (phytochemicals) present in the medicinal plants. This course concerns with 2 essential groups of phytochemicals : alkaloids, terpenoids while other phytochemicals will be covered in the next semester in (Phytochemistry II) course.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1)	**A3**	**a1.** Explain the physicochemical properties of alkaloids and terpenoids phytochemicals.
2)	**A4**	**a2**. Discuss the methods and techniques used to extract and isolate phytochemicals
3)	**A6**	**a3.** Define the botanical sources and therapeutic uses of alkaloids and terpenoids phytochemicals.

4)	**A10**	**a4.** Describe the role of pharmacist in extraction, isolation and identification of phytochemicals.
5)	**B1**	**b1.** Express the chemical structure of phytochemicals using drawings.
6)		**b2.** Differentiate between various types of alkaloids and terpenoids.
7)	**B2**	**b3 .** Classify alkaloids and terpenoids.
8)		**b4.** Compare between different types of alkaloids and terpenoids
9)	**B4**	**b5.** Select standard operation procedure to extract, isolate and identify alkaloids and terpenoids in a plant sample
10)	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11)		**c2.** Operate the instruments and perform experiments successfully in the laboratory
12)	**C3**	**c3.** Screen for alkalaoid and terpenoid drugs from plant sources.
13)	**C7**	**c4 .** Search efficiently for information using documented and electronic sources of information.
14)		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
15)	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
16)	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
17)	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture, Feed-back learning**	**Written exams, quizzes**
b3	**Lecture**	**Written exam s**
b2, b4, b5	**Lecture, lab. Practice**	**Written exam s, lab. term works, final practical exam**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments,**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group project**	**lab. term works, final practical exam, assignments**
d2	**Feed-back learning, lab. Practice**	**Assignments, lab. term works, final practical exam,**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to phytochemistry**	a1, a2, a3, a4	Definition, brief history, types (conventional, medicinal) Scope of medicinal phytochemistry Phytochemicals : Definition , evolution process, clarification, chemical classification , physicochemical properties	1	2
2	**Extraction of phytochemicals**	a1, a2, a3, a4	**Extraction techniques** Maceration, percolation, soxhlet extractor: principle, apparatus, applications Spouted bed extraction Superficial fluid extraction Solid-phase microextraction	2	4
3	**Separation and isolation of phytochemicals**	a1, a2, a3, a4	**Sublimation , Distillation , Fractional liberation , Fractional crystallization :** principle, apparatus, applications **Chromatography** principle, brief history, types and selection of stationary phase and mobile phase, general factors affecting separation **adsorption chromatography**: **Thin layer chromatography**	3	6

			principle and procedures applications preparative TLC illustrative examples of phytochemicals isolated by TLC **partition chromatography: Paper chromatography**: principle , procedures and application **Simple Column chromatography**: Introduction and principle, components, procedures.		
			MID-TERM EXAM	1	2
4	**Alkaloids**	a1, a2, a3, a4, b1, b2, b3, b4, b5	Introduction:definition,history,occurrence,classification,nomenclature,physical and chemical properties, isolation, purification and detection. Phenylalkylamine alkaloids (ephedrine, cathinone and capsaicinoide) Isochinolin alkaloids(papaverine, morphine,codeine and emetine) Tropolon alkaloids(colchicines and demecolcine) Amaryllidaceen alkaloids(lycorine and galanthamin) Alkaloids derived from tryptophan Indol-alkaloids(physostigmine,carboline,ergoline,ajmalicine,yohimbine, ajmaline and strychnine type) Chinoline alkaloids(cinchona alkaloids) Alkaloids derived from histidine: (pilocarpine,isopilocarpine and pilosine) Alkaloids derived from asparagic acid :(ricinine and nicotine alkaloids) Alkaloids derived from lysine piperidine alkaloids(piper,lobelia and pomergranate alkaloids) chinolizidine alkaloids(lupinine,sparteine and cytosine) Alkaloids derived from ornithine:tropan alkaloids(atropine, hyoscyamine , scopolamine and cocaine)chinazoline alkaloids(tetradoxine) Alkaloids derived from glycine:purine alkaloids (caffeine,theophylline and theobromine)terpen alkaloids(monoterpen,sesquiterpen and diterpen alkaloids)	4	8
5	**Terpenoids**	a1, a2, a3, a4, b1, b2,	Introduction (definition,classification,biosynthesis and distribution) Monoterpens (regular and irregular monoterpenoids,iridoids,structures,chemical and physical properties and drugs containing monoterpenoids)	3	

		b3, b4, b5	Sequiterpens and sequiterpens lactones(structures,chemical and biological properties and drug containing sequiterpens and sequiterpens lactones) Diterpenes(structures,chemical and biological properties and drug containing diterpenes) Triterpenes(classification,structures and drug containing triterpenes) Tetraterpenes(chemical and biological properties,vitamin A and drug containing tetraterpenes).		6
Course Review		a1, a2, a3, a4, b1, b2, b3, b4, b5	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
physicochemical properties , extraction (maceration or percolation or soxhlet extraction) , concentration (if necessary " rotary evaporation', isolation (Thin layer chromatography) and identification of the phytochemicals from crude drugs or parts of medicinal plants				
1	**alkaloids (Caffeine)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
2	**alkaloids (Theophylline)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
3	**alkaloids (cathinone)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
4	**alkaloids (Trigonelline)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3

5	**alkaloids (vincristine)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
6	**alkaloids (Capsaicin)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
7	**Terpenoids : (Prenol)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
8	**Terpenoids : (Eucalytol)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
9	**Terpenoids : (Retinol)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
10	**Terpenoids : (squalane)**	**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
11	**Review**		**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: each student will be assigned solve the problems	c4, c5, d2	4-13	3

	provided by the teacher. The problems involve nomenclature, isolation , chemical reaction, etc.			
2	**Group** : each group of students will be assigned to present 2-3 videos or simulations of one of the studied extraction , isolation techniques.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b1, b2, b3, b4, b5
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b1, b2, b3, b4, b5
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	b2, b4, b5, c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b2, b4, b5, c1, c2, c3, d1, d2, d3
		Total		30	30 %	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Learning Resources:
1- Required Textbook(s) (maximum two).
W.C. Evans, Trease and Evans pharmacognosy, W.B.Saunders Amritpal Singh Saroya, Herbalism, Phytochemistry and Ethnopharmacology, CRC press Jarald.
2- Essential References.
Bhandari. Textbook of pharmacognosy
3- Electronic Materials and Web Sites *etc*.
Phytochemistry | Journal | ScienceDirect.com by Elsevier Guide for authors - Phytochemistry - ISSN 0031-9422 | ScienceDirect.com by Elsevier Phytochemical Analysis - Wiley Online Library

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICINAL CHEMISTRY I

I. Course Identification and General Information:								
1	**Course Title:**	**MEDICINAL CHEMISTRY I**						
2	**Course Code &Number:**	**PHC 318**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (first) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutical organic chemistry I, II** • **Analytical chemistry I, II**						
6	**Co –requisite (if any):**	**Pharmacology I**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr/ Galal Al-Qadsi**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the first among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). The first part of the course deals with an introduction to drug design, stereochemistry and chemistry of drug metabolism while the second part deals with the physicochemical properties, chemical synthesis, structure activity relationship (SAR), pharmacophore molecules and metabolism of drugs affecting autonomic nervous system, skeletal muscles and alimentary system. The course is co-requisite with (Pharmacology I) as both deals with the medicinal agents.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	**A3**	**a1.** Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.
2.	**A4**	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.

3.	**A10**	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
4.	**B1**	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
5.		**b2.** Express molecular structure, synthesis and reactions of drugs with hand-drawing
6.	**B2**	**b3.** Classify, chemically, the drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
7.		**b4 .** Compare between chemically related drugs based on their chemical structure
8.	**B3**	**b5.** Design newer drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders using structure activity relationship rules.
9.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
10.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
11.	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
12.		**c4** Present and report his/her works correctly using appropriate writing rules and technologies media.
13.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
14.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
15.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture-discussion , feed-back learning**	**Written exams , quizzes**
b2, b3, b4	**Lecture-discussion**	**Written exams**

b5	**Group-project**	**Assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Lab. term works, assignment**
d2	**laboratory practice**	**Lab. term works, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
Part I: Introduction to medicinal chemistry					
1	**Medicinal chemistry roles and concepts**	a1, a2, a3	• definitions, brief history, roles in pharmacy • Basics of combinatorial chemistry and drug design : patent burst, synthesis of fragments, etc. • Pharmacophore and Physicochemical properties in relation to biological activity (structure-activity relationship "SAR").	2	4
2	**Drug-receptor interaction &Stereochemistry of drugs**	a1, a2, a3	• binding and drug-receptor interaction : chemical bonding and biological activity • stereochemical aspects of drug action • isosterism and bioisosterism	2	4

3	**chemistry of Drug metabolism**	a1, a2, a3	• phase I reactions • phase II reactions • Metabolites: inactive, active , more active	2	5
	Mid-term exam			1	2
Part II: Chemistry of drugs affecting autonomic systems and skeletal muscles					
4	**Drugs acting on the autonomics nervous system**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, purification, structure-activity relationship, metabolism of drugs acting on sympathetic system** • Indirectly sympatholytic drugs • Directly sympatholytic drugs : adrenergic blocking agents • Indirectly sympatholytic drugs • Directly sympatholytic drugs : adrenergic blocking agents	3	6
		a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs acting on parasympathetic system** • Indirectly parasympathomimetics • Direct parasympathomimetics : cholinergic agonists • Indirectly parasympatholytic drugs • Directly sympatholytic drugs : cholinergic blocking agents • **Drugs acting on autonomic ganglia:** Ganglionic stimulants, ganglionic	2	4
5	**Drugs affecting skeletal muscles**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs acting on parasympathetic system** • Neuromuscular blocking agents • Central muscles relaxants	1	2

6	**Drugs for alimentary system disorders**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • H2 blockers & Proton pump inhibitors • Anti- emetics	2	4
FINAL – EXAM				1	3
TOTAL				16	47
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Pharmacopeial physicochemical properties , identification of: adrenergic agonist : **adrenaline**	**1**	**2**	c1, c2, d1, d2, d3
2	Pharmacopeial physicochemical properties , identification of : adrenergic blockers : **atenolol**	1	2	c1, c2, d1, d2, d3
3	Pharmacopeial physicochemical properties , identification of : parasympathomimetics : **neostigmine**	1	2	c1, c2, d1, d2, d3
4	Pharmacopeial physicochemical properties , identification of : cholinergic blockers : **atropine**	**1**	**2**	c1, c2, d1, d2, d3
5	Pharmacopeial physicochemical properties , identification of : skeletal muscle relaxants **suxamethonium**	**1**	**2**	c1, c2, d1, d2, d3
6	Pharmacopeial physicochemical properties , identification of : drugs used for eye disorders : **pilocarpineeye drops.**	**1**	**2**	c1, c2, d1, d2, d3
7	Pharmacopeial physicochemical properties , identification of : antipeptic ulcer : **omeprazole**	**1**	**2**	c1, c2, d1, d2, d3
8	Pharmacopeial physicochemical properties , identification of : antispasmodics : mebeverine	**1**	**2**	c1, c2, d1, d2, d3
9	Synthesis of drugs	**1**	**2**	c1, c2, d1, d2, d3

10	Purification of drugs.	**1**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	c1, c2, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homeworks, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
2	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles	b5, c3, c4, d1, d3	8	

VII. Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3

2	Mid-semester exam (written exam)	7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)	16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL			70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
		Total		30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

Gareth Thomas, Medicinal chemistry: an introduction , John Wiley & Sons Ltd,
Siddique. A textbook of medicinal chemistry
V Alagarsamy. (2009). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.

V Alagarsamy. (2013). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.

2- Essential References.

1. AshutochKar. Medicinal chemistry, New age international publisher
2. Rajie. Pharmaceutical chemistry
3. Wermuth. The practice of medicinal chemistry
4. John, M. Beale, Jr. & John H. Block. (2020). *Wilson and Gisvoldd's Textbok of Organic Medicinal Chemistry and Pharmaceutical Chemistry (12th ed.).* New York: Lippincott.
5. Munendra Mohan Varshney & Asif Husain. (2015). *A textbook of medicinal chemistry*. I.K. International Publishing House Pvt. Limited.

3- Electronic Materials and Web Sites *etc*.

1- e-Resources - Medicinal Chemistry - LibGuides at United States International University.
2- Talks and Lectures - Medicinal Chemistry - LibGuides at United States International University.
3- Medicinal Chemistry Resources for Students | PharmaFactz.
4- Medicinal chemistry [electronic resource] (nyp.edu.sg).
5- Oxford University Press | Online Resource Centre | Patrick: An Introduction to Medicinal Chemistry 6e (oup.com) (Bank of Questions)
6- https://pubs.acs.org/journal/jmcmar.

7- https://benthamscience.com/journals/medicinal-chemistry/.
8- https://www.slideserve.com/richard_edik/introduction-to-medicinal-chemistry.
9- Current medicinal chemistry [electronic resource]. in SearchWorks catalog (stanford.edu).
10- P K Kelkar Library | IIT Kanpur.
11- RSC Medicinal Chemistry journal.

- Important Journals:-

• Journal of the American Chemical Society
• Angewandte Chemie-International Edition
• Journal of Medicinal Chemistry
• Nature Reviews Drug Discovery

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

TOXICOLOGY

Course Identification and General Information:							
1	**Course Title:**	**TOXICOLOGY**					
2	**Course Code &Number:**	**PHL 321**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (2nd) semester*					
5	**Pre –requisite (if any):**	• **Pharmacology I** • **Pathology**					
6	**Co –requisite (if any):**	---------					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Shawki Hussien Al-awdi					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of sources, mode of action, toxic pathophysiological effects, detection, diagnosis and management of poisonous materials including acids, alkalies, metals, metaloids, pesticides. The course also involves management of poisoning with some medicinal agents.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A7	**a1.** Identify the mechanism of toxicity with poisonous materials.
2.		**a2.** Identify the types of poisonous materials that can threaten human life.
3.		**a3.** Describe the clinical features associated with poisoning
4.		**a4.** Discuss the methods of poisons detection, diagnosis and management.
5.	A10	**a5.** Describe the role of pharmacist in detection, preventing and management of poisoning.

6.	**B2**	**b1 .** Classify poisonous materials.
7.	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate the skills of time management and self-learning.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a5	**Lecture**	**Written exams**
a4	**Lecture, feed-back learning**	**Written exams , quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 , c2	**feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to toxicology**	a1, a2, a3, a4, a5, b1	• Definitions • fundamentals and scope of toxicology. • Classification of poisons • Causes of toxicity : accidental, commit suicidal, criminal • General harmful effects of poisons • Approaches to manage poisoning • Mode of actions of poisons	1	2

			• Diagnosis and detection of poisoning • General procedure of management of poisoning		
Sources, mode of action, toxic pathophysiological effects, detection, diagnosis and management of the following types of toxicity					
2	**Poisoning with acids and alkalis**	a1, a2, a3, a4, a5, b1	• Acids toxicity • Alkalis toxicity • Salts toxicity	1	2
3	**Poisoning with metals and metalloids**	a1, a2, a3, a4, a5, b1	• Toxicity of copper, selenium, Molybdenum, phosphorus • Iron toxicity	2	4
4	**Poisoning with heavy metals**	a1, a2, a3, a4, a5, b1	Toxicity of Lead, Mercury and Arsenic	2	4
			MID-TERM EXAM	1	2
5	**Poisoning with specific chemicals**	a1, a2, a3, a4, a5, b1	• Cynide • Hydrogen sulfide • Carbon monoxide	2	4
6	**Poisoning with simple organic compounds**	a1, a2, a3, a4, a5, b1	• Methanol and Isopropyl Alcohols • hydrocarbons • fuel materials : petroleum , gasoline, etc	2	4
7	**Poisoning with materials killing harmful Living organisms**	a1, a2, a3, a4, a5, b1	• Rodenticides, • insecticdes • herbicides • Fungicides	2	4
8	**Poisoning with some medicinal agents**	a1, a2, a3, a4, a5, b1	• Poisoning with opiates, benzodiazepines • Poisoning with paracetamol and aspirin	1	2
Course Review		a1, a2, a3, a4, a5, b1	Review	1	2

FINAL – EXAM	1	2
TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	8 Units

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homeworks, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a search-based report on toxicity and management of one poison not included in the study topics.	c1, c2, d1	7	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	a4
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester (written exam)		7	20	20	a1, a2, a3, a4, a5, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, a4, a5, b1

TOTAL	100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. kokate, text book of forensic pharmacy 2. Peter Viccellio, Handbook of Medical Toxicology
2- Essential References.
1. Casarett & Doull's , Essentials of Toxicology 2. Frank A. Barile, Principles o f toxicology Testing R.S. Gaud G.T. Gupta practical physical
3- Electronic Materials and Web Sites *etc*.
1. Relevance of Toxicology to Public Health—Society of Toxicology 2. Analytical Study of the Penetration of Long Rod Projectiles with Conical and Blunt Nose in Normal and Oblique Ceramic Targets | Technium: Romanian Journal of Applied Sciences and Technology (techniumscience.com) 3. PubsOnLine (informs.org)

	Course Policies:
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOLOGY II

Course Identification and General Information:							
1	**Course Title:**	**PHARMACOLOGY II**					
2	**Course Code &Number:**	**PHL 322**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		3	-	-	-	-	**3**
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (2nd) semester*					
4	**Pre –requisite (if any):**	• **Pharmacology I**					
5	**Co –requisite (if any):**	---					
6	**Program (s) in which the course is offered:**	**Pharmacy**					
7	**Language of teaching the course:**	**ENGLISH**					
8	**Location of teaching the course:**	**IN THE UNIVERSITY**					
9	**Prepared by**	Dr/ Shawki Hussien Al-awdi					
10	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course also deals with the study of pharmacodynamic and pharmacokinetics of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders. This course also as the previous course (pharmacology I) deals with the study of pharmacodynamics (mechanism of action, therapeutic effect, adverse effects) and pharmacokinetics (absorption, distribution, metabolism, execration) of drugs that used for treatment of Cardiovascular System, endocrine disorders, and drugs acting on respiratory tract, and autocoids.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

10. Alignment CILOs to PILOs

No.	PILOs	CILOs
1	**A5**	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions
2	**A8**	**a2.** Describe the pharmacokinetics of drugs.

3	A10	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.
4	B2	**b1 .**Classify drugs used for disorders of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
5		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6	C7	**c1 .** Advise the patient and healthcare professional to optimize medicine use
7	D2	**d1.** Demonstrate time management and decision making skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exam , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**feed-back learning**	**assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	Drugs affecting smooth muscles		**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of drugs affecting:** • Histamine • Serotonin • Vasoactive peptides • Eicosanoids • Prostaglandins • Leucotrienes • Nitric acids	4	8
1	**Drugs acting on respiratory system**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Drugs for common cold : nasal decongestant • Drugs for cough • Drugs for bronchial asthma	2	4
2	**Cardiovascular system drugs (1)**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Diuretics and Antihypertensive • Hypertensives	2	4
Mid term exam				1	2
2	**Cardiovascular system drugs**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Antianginal and drugs for myocardial infarction • Drugs for congestive heart failure • Antiarrythmics	2	9
3	**Drugs for blood disorders**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :**	3	6

			• Haematinics (antianaemic drugs) • Antihemmorrhagic drugs • Anticoagulants		
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	3
FINAL – EXAM				1	3
TOTAL				16	47
Number of Weeks /and Units Per Semester				16 weeks	5 Units

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and risks for specific patients e.g. CVS patients, renal failure patients, etc.	b1, c1, d1	6-12	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method	Week Due	Mark	Proportion of Total	Aligned Course Learning Outcomes (CILOs)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

					course Assessment	
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	b1, c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Katzung –Basic and Clinical Pharmacology, McGraw-Hill 2. Rang, Dale and Ritter. Pharmacology, Churchill Livingstone.
2- Essential References.
3. Richard A. Harvey. Lippincott's pharmacology, Lippincott William and Wilkins. 4. Udaykumar. Text book of medical pharmacology
3- Electronic Materials and Web Sites *etc*.

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work.
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course.
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICAL PARASITOLOGY

Course Identification and General Information:								
1	**Course Title:**	**MEDICAL PARASITOLOGY**						
2	**Course Code &Number:**	**FOP 323**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (2nd) semester*						
5	**Pre –requisite (if any):**	----------						
6	**Co –requisite (if any):**	**Pharmaceutical microbiology**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr./ Abdulrahman Humaid						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of pathogenic parasites commonly infecting humans including: protozoa, helminths and anthropodes. The study concerns with mode of infections, general characters, morphology, life cycle, pathogenesis, diagnosis, prevention and control of those parasites

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Describe the general features and life cycle of pathogenic parasites including: protozoa, helminths and anthropodes
2		**a2.** Describe pathogenicity and management common pathogenic parasites including: protozoa, helminths and anthropodes.
3	**A4**	**a3.** Discuss the principles and technologies of pathogenic parasites identification
4	**B1**	**b1.** Interpret the data of parasites investigations.
5		**b2.** Differentiate between similar pathogenic parasites e.g. protozoa

6	**B2**	**b3 .**Classify pathogenic parasites including: protozoa, helminths and anthropodes
7	**B4**	**b4.** Select standard operation procedures to investigate pathogenic parasites
8	**C1**	**c1.** Handle efficiently and safely the chemical materials , parasites samples biological samples and tools used in the laboratory
9		**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	**C2**	**c3 .**Search efficiently for information using documented and electronic sources of information.
11	**C3**	**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
13	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
14	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3,	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**laboratory practice**	**lab. term work, practical final exam**
b3	**Lecture, feed-back learning**	**Written exams, quizzes**
B4	**Lecture, lab. Practice**	**Written exams, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Lab. term works, final practical exam, Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Lab. term works, final practical exam, Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to medical parasitology**	a1, a2, a3	Definition of parasitology Types of parasite (Ecto, endo ,obligate ,facultative) Types of host(Mechanical and biological) and Host parasites relationship Effect of parasite on the host (Mechanical effect, effect on cell ,invasion and destruction ,inflammatory reaction to the parasite or production ,competition for host nutrient and toxic effect) Types of vector (obligate ,facultative) Source of infection (food& drink, soil and water, vector ,direct contact and congenial) Mode of infection Classification of parasites (protozoa, helminthes , arthropods) classes and example for all class	4	8
2	**Techniques for sampling and**	a1, a2, a3	Type of specimens (urine, stool, blood, etc.)	1	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	detection of parasites -		Collection, transport and preservation of samples. Microscopic examination Direct Smear Method		2
3	**Protozoa** (introduction + Amoeba)	a1, a2, a3, b3, b4	General characteristic of protozoa(morphology, biological feature, multiplication ,nutrient, and locomotion) Classification (amoebae ,ciliate, flagellate, sporozoa) Amoebae o Entamobeahistolytica (Morphology ,life cycle, pathogenesis, Diagnosis, prevention and control) o Difference between Entamobeahistolytica and Entamobea. Coli	1	2
MID-TERM EXAM				1	2 2
3	**Protozoa (**Ciliate)		• Bantium coli (Morphology ,life cycle, pathogenesis Diagnosis, prevention and control)	1	2
	Protozoa (intestinal and genital Flagellates)	a1, a2, a3, a4, b3, b4	• Intestinal flagellates: Giardia lamblia (Morphology ,life cycle, pathogenesis ,Diagnosis, prevention and control • Genital : Trichomnasvaginalis Morphology ,life cycle, pathogenesis ,Diagnosis, prevention and control	1	2
	Protozoa (blood Flagellates)	a1, a2, a3, a4, b3, b4	• Leishmanias (Visceral and cutanouse) Morphology ,life cycle, pathogenesis ,Diagnosis, prevention and control) • Trypanosoma (all types Morphology ,life cycle, pathogenesis ,diagnosis, prevention and control	1	2
	Protozoa (Sporozoa)	a1, a2, a3, b3, b4	• Malaria parasites (Plasmodium falciparum, vivax, ovali , malareae) Morphology ,life cycle, pathogenesis ,Diagnosis, prevention and control	1	2

4	**Helminthes**	a1, a2, a3, b1, b2, b3, d2	• Classification of helminthes (common worms (Nematodes), schistosoma, tape worms (Trematodes), filariasis. • Morphology ,life cycle, pathogenesis, Diagnosis, prevention and control of helminthes from each class.	2	4
5	**Arthropods**	a1, a2, a3, b3, b4	• classification, morphology, life cycle, pathogenicity, prevention and treatment	1	2
Course Review		a1, a2, a3, b3, b4	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	**investigation of Enatamopea histolytica & Enatamopea coli**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
2	**investigation of Giardia**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
3	**investigation of Trichomonas**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
4	**investigation of Leishmania**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
5	**investigation of Malaria spp (with preparation of blood smear)**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
6	**investigation of Ascaris&Anchylostoma**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
7	**investigation of Teaniaspp**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
8	**investigation of H. nana**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**

9	**investigation of schistosoma**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
10	**investigation of Arthropodes**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a summary report on one of the studied pathogenic parasite.	c3, c4, d2	4-13	3
2	**Group** : each group of students will be assigned to make a letter of education to community about infection of one of the studied parasite.	c3, c4, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2, a3, b3, b4
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
	Total			30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

Kayser, Medical Microbiology & parasitology, 2005 Thieme

2- Essential References.

1. Michael j. Cuomo. Diagnosing medical parasites: a public health officers guide to assisting laboratory and medical officers, USAF
2. Chatterjee. Parastology
3. Parija. Text book of medical parastologyW. B. Hugo: pharmaceutical microbiology, 1998, Black well science LTD.

3- Electronic Materials and Web Sites *etc*.

IOSI Journals – My WordPress Blog
Journal of Medical Microbiology | Microbiology Society (microbiologyresearch.org)
e-Resources - Microbiology - LibGuides at United States International University

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

BIOSTATISTICS

	Course Identification and General Information:						
1	**Course Title:**	**BIOSTATISTICS**					
2	**Course Code &Number:**	**FOP 324**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(3rd) Year – (2nd) semester*					
5	**Pre –requisite (if any):**	• **Mathematics**					
6	**Co –requisite (if any):**	**NONE**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Prof./ Shubair Al-Harazi					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course deals with study of statistical methods used to categorize, test hypothesis and analysis of nominal and parametric data. This course introduces pharmacy students to the principles of applied biostatistics and clinical research methods. The goal of this course is for students to develop the ability to critically appraise health and drug literature in order to make evidence-based decisions in their practice.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

Alignment CILOs to PILOs

No.	PILOs	CILOs
1	**A12**	**a1.** Discuss the basic statistical principles and methods for data analysis.
2	**B1**	**b1.** Interpret the graphical and numerical statistical parameters.
3	**C6**	**c1.** Apply rules of statistics to analyze biomedical/pharmaceutical data
4	**D1**	**d1.** Develop decision making skills using outcomes of statistical analysis.

Alignment CILOs to teaching strategies and assessment strategies

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1	**Lecture-discussion.**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion, feed-back learning**	**Written exams, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
C1	**Feed-back learning, Lecture-discussion**	**quizzes , assignments, written exams**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1	**Feed-back learning**	**Assignments**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, b1, c1	definition and significant of statistics, types of data: data, parametric data, nominal data , categorization of data, presentation of data	1	2
2	**Descriptive statistics**	a1, b1, c1	Mean, mode, median, standard deviation, variance, standard error, coefficient of variation.	4	8
3	**Distribution of data**	a1, b1, c1	Types: normal, abnormal; interpretation, solving problems	1	2

4	**Sampling**	a1, b1, c1	definition of population, samples, methods of sampling, with solving problems	1	2
			MID-TERM EXAM	1	2
5	**95 % confidence Interval**	a1, b1, c1	Definition, significance, applications, solving problems	1	2
6	**Correlation statistics**	a1, b1, c1	• Types of correlation • Linear regression • Pearson correlation • Spearman rank correlation • Other methods • solving problems	1	2
7	**Comparative statistics: testing of variations**	a1, b1, c1	• Hypothesis • F-test : P-value , significance of differences in variances between two sets of data, , with solving problems • Student-t test : P-value, significance of differences in means between two sets of data , one-sided test, two-sided test, assuming equal variance, assuming unequal variance, with solving problems • ANOVA : P-value, significance of differences in variances between more than two sets of data , single-factor test, two-factors with replication test, two-factors without replication test • Chi-square test : compare the differences in categorized data. • solving problems	4	8
7	**Introduction to Computer programs in statistics**	a1, b1, c1	• SPSS • Microsoft excel • Others	1	4
Course Review		a1, b2, b3, b4, c1,c2	Review of the course topics by discussion session.	1	2
			FINAL – EXAM	1	2

TOTAL	16	32
Number of Weeks /and Units Per Semester	16 weeks	3 Units

Teaching strategies of the course:
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to solve statistical problems during Tutorial at the class .	b1, c1, d1	7	

Schedule of Assessment Tasks for Students During the Semester

(All assessments done by the teacher)

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
2	Term Works	Quizzes	4-13, 14	10	10	c1
		Assignments	7, 12	10	10	b1, c1, d1
3	Mid-semester exam (written exam)		7	20	20	a1, b1, c1
4	Final exam (written exam)		16	60	60	a1, b1, c1
TOTAL				100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

3. Philip Rowe. Essential statistics for the pharmaceutical sciences, John Wiley & Sons Ltd.

2- Essential References.

1. Arun Bhadra Khanal. Methods in Biostatistics For Medical students and Research workers
2. Singh. Biostatistics and introductory calculus

3- Electronic Materials and Web Sites *etc*.
www.en.wikipedia.org/

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICINAL CHEMISTRY II

I. Course Identification and General Information:							
1	**Course Title:**	**MEDICINAL CHEMISTRY II**					
2	**Course Code &Number:**	**PHC 325**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		3	-	-	1	-	**4**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (2nd) semester*					
5	**Pre –requisite (if any):**	• **Medicinal chemistry I**					
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Galal Hamood Al-Qadasi					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the second among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). It deals with the physicochemical properties, chemical synthesis, structure activity relationship (SAR), pharmacophore molecules and metabolism of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders. The course is co-requisite with (Pharmacology II) as both deal with the same medicinal agents.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

2. Alignment CILOs to PILOs

No.	PILOs	CILOs
1	**A3**	**a1.** Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.
2	**A4**	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
3	**A10**	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.

4	B1	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
5		**b2.** Express molecular structure, synthesis and reactions of drugs with hand-drawing
6	B2	**b3.** Classify, chemically, the drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
7		**b4 .** Compare between chemically related drugs based on their chemical structure
8	B3	**b5.** Design newer drugs affecting smooth muscles and drug used to treat respiratory, cardiovascular systems and blood disorders.
9	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
10	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
11	C7	**c3 .**Search efficiently for information using documented and electronic sources of information.
12		**c4** Present and report his/her works correctly using appropriate writing rules and technologies media.
13	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
14	D2	**d2.** Demonstrate the skills of time management and self-learning.
15	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture-discussion , feed-back learning**	**Written exams , quizzes**
b2, b3, b4	**Lecture-discussion**	**Written exams**
b5	**Group-project**	**Assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c2	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d3	**laboratory practice, group-project**	**Lab. term works, assignment**
d2	**laboratory practice**	**Lab. term works, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Drugs for blood disorders**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Haematinics (antianemic drugs) • Antihemmorrhagic drugs • Anticoagulants	2	4
2	**Drugs affecting smooth muscles**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Antihistamine 1 • Serotonin agonists and antagonists • Inhibitors of prostaglandins • Leukotriene inhibitors	4	8
3	**Drugs acting on respiratory system**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Drugs for common cold and cough • Drugs for bronchial asthma	2	4

Mid-term exam				1	2
4	**Cardiovascular system drugs**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Diuretics Antihypertensive • Hypertensives • Antianginal and drugs for myocardial infarction • Drugs for congestive heart failure • Antiarrythmics	5	10
	Course review	a1, a2,a3 , b1, b2, b3, b4	Review of course topics	1	2
FINAL – EXAM				1	3
TOTAL				16	47

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	AlignedCourse Intended Learning Outcomes CILOs
1.	**Pharmacopeial physicochemical properties , identification of: antihemorrhagics: Tranexmic acid**			
2.	**Pharmacopeial physicochemical properties , identification of: anticoagualsnt warfarin**			
3.	**Pharmacopeial physicochemical properties , identification of: bronchiodilators : aminophylline**	**1**	**2**	**c1, c2, d1, d2, d3**
4.	**Pharmacopeial physicochemical properties , identification: Diuretics : Furosemide**	**1**	**2**	**c1, c2, d1, d2, d3**
5.	**Pharmacopeial physicochemical properties , identification of : Antihypertensives : amlodipine**	**1**	**2**	**c1, c2, d1, d2, d3**
6.	**Pharmacopeial physicochemical properties , identification of : Antihypertensives : candesartan**	**1**	**2**	**c1, c2, d1, d2, d3**

7.	**pharmacopeial physicochemical properties , identification of : cardiac stimulant : digoxin**	**1**	**2**	**c1, c2, d1, d2, d3**
8.	**Synthesis of drugs**	**2**	**4**	**c1, c2, d1, d2, d3**
9.	**Purification of drugs.**	**2**	**4**	**c1, c2, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**c1, c2, d1, d2, d3**
Total		**12**	**24**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles.	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method	Week Due	Mark	Proportion to Total	Aligned Course Learning Outcomes (CILOs)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

					course Assessment	
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	**c1, c2, d1, d2, d3**
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	**c1, c2, d2**
		Total		30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Gareth Thomas, Medicinal chemistry: an introduction , John Wiley & Sons Ltd, 2. Siddique. A textbook of medicinal chemistry
2- Essential References.
1. AshutochKar. Medicinal chemistry, New age international publisher 2. Rajie. Pharmaceutical chemistry 3. Wermuth. The practice of medicinal chemistry
3- Electronic Materials and Web Sites *etc*.
e-Resources - Medicinal Chemistry - LibGuides at United States International University Journal of Medicinal Chemistry - ACS Publications

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:**

	any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course.
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHYTOCHEMISTRY II

Course Identification and General Information:							
1	**Course Title:**	**PHYTOCHEMISTRY II**					
2	**Course Code &Number:**	**PHG 326**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(Third) Year – (2nd) semester*					
5	**Pre –requisite (if any):**	• **Pharmacognosy I , II** • **Phytochemistry I**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/ Gmal Abdulkarim Naser**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to (phytochemistry I) course and both courses together with pharmacognosy courses comprise the basis of complementary and alternative medicines . This course concerns with study of chemical structures extraction , isolation and identifications of phytochemicals present in medicinal plants including : phenyl propane derivatives, volatile oils, glycosides , tannins and others e.g. bitter principles .

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
11. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Explain the physicochemical properties of phenyl propane derivatives, volatile oils, glycosides , tannins and present in medicinal plant.
2	**A4**	**a2**. Discuss the methods and techniques used to extract and isolate phenyl propane derivatives, volatile oils, glycosides tannins and bitter constituents present from medicinal plant.
3	**A6**	**a3.** Define the botanical sources and therapeutic uses of phenyl propane derivatives, volatile oils, glycosides , tannins present in medicinal plant.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

4	A10	**a4.** Describe the role of pharmacist in extraction, isolation and identification of phytochemicals.
5	B1	**b1.** Express the chemical structure of phytochemicals using drawings.
6		**b2.** Differentiate between various types of phenyl propane derivatives, volatile oils, glycosides , tannins and others e.g. bitter principles .
7	B2	**b3 .** Classify phenyl propane derivatives, volatile oils, glycosides , tannins and others e.g. bitter principles
8		**b4.** Compare between different types of phenyl propane derivatives, volatile oils, glycosides , tannins and others e.g. bitter principles .
9	B4	**b5.** Select standard operation procedure to extract, isolate and identify phenyl propane derivatives, volatile oils, glycosides , tannins and others e.g. bitter principles from a plant sample
10	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
11		**c2.** Operate the instruments and perform experiments successfully in the laboratory
12	C3	**c3.** Screen for alkalaoid and terpenoid drugs from plant sources.
13	C7	**c4 .** Search efficiently for information using documented and electronic sources of information.
14		**c5.** Present and report his/her works correctly using appropriate writing rules and technologies media.
15	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
16	D2	**d2.** Demonstrate the skills of time management and self-learning.
17	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3, a4	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1	**Lecture, Feed-back learning**	**Written exams, quizzes**

b3	**Lecture**	**Written exam s**
b2, b4, b5	**Lecture, lab. Practice**	**Written exam s, lab. term works, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam**
c4, c5	**feed-back learning, Group-project**	**Assignments,**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group project**	**lab. term works, final practical exam, assignments**
d2	**Feed-back learning, lab. Practice**	**Assignments, lab. term works, final practical exam,**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Phenyl propane derivatives**	a1, a2, a3, a4, b1, b2, b3, b4, b5	Introduction(definition, classification, biogenesis) **Hydroxycinnamic acids (** Definition, classification, biosynthesis, chemical structure, physic-chemical properties, extraction , pharmacological properties and uses **Cinnamic aldhydes and monlignols (** Definition, classification, biosynthesis, chemical structure, physic-chemical properties, extraction , pharmacological properties and uses **Coumarins (** Definition, classification, biosynthesis, chemical structure, physic-chemical properties, extraction , pharmacological properties and uses	3	6

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

			Stilbenoids (Definition, classification, biosynthesis, chemical structure, physic-chemical properties, extraction , pharmacological properties and uses		
2	**Volatile oils**	a1, a2, a3, a4, b1, b2, b3, b4, b5	Definition, classification, distribution and occurrence; Extraction : distillation methods and solvent extraction ; Chemical , physical and pharmacological properties examples of crude drugs containing volatile oils	3	6
Midterm exam				1	2
3	**Glycosides**	a1, a2, a3, a4, b1, b2, b3, b4, b5	Introduction (definition, classification, distribution, extraction, isolation and pharmacological properties) **Cardioactive glycosides (**cardinolides, bufadienolides, sugars, structure activity relationship, distribution, extraction, chemical and physical properties, hydrolysis of cardiac glycosides, biogenesis, pharmacological properties , mechanism of action, chemical tests. Chief drugs containing cardiac glycosides (Digitalis, strophanthus, Adonis, Convalaria and squill). **Saponin glycosides** (definition, classification, distribution, structures,biogenesis,chemical , physical properties , characterization, biological and pharmacological properties. Drugs as expectorant ,antitusive, antiexudative, adaptogens and diuretic) **Anthracen glycosides** (classification, distribution, structures, biosynthesis, extraction , chemical, physical properties, characterization, pharmacological properties, Senna, Rhabarub and Aloe) **Flavonoid glycosides(** classification, biosynthesis, chemical structure, physic-chemical properties, rutin, hesperidin and flavonoid containing drugs) **Cynogentic glycosides** (cynogenesis, distribution, structures, biogenesis, detection,	3	6 6

			extraction, pharmacological activities and cynogenetic drugs) **Glucosinolates(Thioglycosides):** definition, distribution, structures, biogenesis , hydrolysis, toxicity and drugs containing glucosinolates.		
4	**Tannins**	a1, a2, a3, a4, b1, b2, b3, b4, b5	definition, classification, structure, distribution, biosynthesis, physic-chemical properties, extraction, biological properties , examples of crude drugs containing tannins	1	2
5	**Steroids**	a1, a2, a3, a4, b1, b2, b3, b4, b5	Definition, classification, structures , biogenesis, chemical and physical properties and characterization.	1	2
6	**Miscellaneous e.g. bitter principles**	a1, a2, a3, a4, b1, b2, b3, b4, b5	Definition, classification, structures , biogenesis, chemical and physical properties and characterization.	1	2
Course Review		a1, a2, a3, a4, b1, b2, b3, b4, b5	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
physicochemical properties , extraction (maceration or percolation or soxhlet extraction) , concentration (if necessary " rotary evaporation', isolation (Thin layer chromatography) and identification of the phytochemicals from crude drugs or parts of medicinal plants				

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

1	Phenyl propane derivatives : (cinnamic aldehyde)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
2	Volatile oils (peppermint oil)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
3	Volatile oils (clove oil)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
4	Saponins (Glycyrrhizin)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
5	Flavonoids (Hesperetin**)**	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
6	Flavonoids (apigenin **)**	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
7	Anthracin Glycoside (sennosides)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
8	Cardiac Glycoside (digoxin)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
9	Tannins in Tea	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
10	Miscellaneous: bitter principles (Khellin)	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
11	Review	1	2	b2, b4, b5, c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b2, b4, b5, c1, c2, c3, d1, d2, d3
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: each student will be assigned solve the problems provided by the teacher. The problems involve nomenclature, isolation , chemical reaction, etc.	c4, c5, d2	4-13	3
2	**Group** : each group of students will be assigned to present 2-3 videos or simulations of one of the studied extraction , isolation techniques.	c4, c5, d1, d2, d3	14	2

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	c4, c5, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b1, b2, b3, b4, b5
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b1, b2, b3, b4, b5
TOTAL				70	70 %	70

Practical part assessment

No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b2, b4, b5, c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	

	Final exam (practical)	12	20	20	b2, b4, b5, c1, c2, c3, d1, d2, d3
		Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
4. W.C. Evans, Trease and Evans pharmacognosy, W.B.Saunders 5. Amritpal Singh Saroya, Herbalism, Phytochemistry and Ethnopharmacology, CRC press Jarald.
2- Essential References.
6. Bhandari. Textbook of pharmacognosy
3- Electronic Materials and Web Sites *etc*.

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL MICROBIOLOGY

I. Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL MICROBILOGY**						
2	**Course Code &Number:**	**FOP 327**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(THIRD) Year – (2nd) semester*						
5	**Pre –requisite (if any):**	• **Medical microbiology**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr/ Abdulrahman Humaid						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the students with knowledge and skills necessary to accomplish different applications of microbiology in pharmacy including sterilization, preservation, study of microbial content, and antimicrobial activity testing of drugs or extracts. The aim of this course is to teach students to know how to prevent pharmaceutical product from microbial contamination during the knowledge of the sterilization and disinfection, antimicrobial agents including types, uses, properties, mode of action in addition to the bacterial resistance. The course covers pharmaceutical products, contamination, preserving, quality control, and production of therapeutically useful substances by recombinant DNA technologies, which have been studied by student's previously general microbiology.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	A1	**a1.** Identify of the microbes commonly resistant to antimicrobials.
2		**a2.** Describe the biological characters and mechanism of microbial resistance
3	A4	**a3**. Discuss the principles and technologies applied in pharmacy for microbial investigations, product preservation, sterilization and assessment of antimicrobial activity.
4	A10	**a4.** Describe the pharmacist role in applying microbiology knowledge and skills in pharmacy.
5	B1	**b1.** Interpret the data of inhibition zone obtained from antimicrobial activity test.
6		**b2.** Differentiate between resistant and susceptible microbes
7	B2	**b3 .**Classify preservatives.
8	B4	**b4.** Select standard operation procedures to test microbial content and antimicrobial activity.
9	C1	**c1.** Handle efficiently and safely the chemical materials , human biological samples, microbial samples and tools used in the laboratory
10		**c2.** Operate the instruments and perform experiments successfully in the laboratory
11	C2	**c3 .**Search efficiently for information using documented and electronic sources of information.
12	C3	**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
13	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
14	D2	**d2.** Demonstrate the skills of time management and self-learning.
15	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

b1, b2	**laboratory practice**	**lab. term work, practical final exam**
b3	**Lecture, feed-back learning**	**Written exams, quizzes**
B4	**Lecture, lab. Practice**	**Written exams, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Lab. term works, final practical exam, Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Lab. term works, final practical exam, Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Microbiology relation to pharmacy**	a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	• Missions of Microbiology lab. as a part of quality control in drug factories • Research : Types of microbiological investigations in relation to pharmaceutical studies (e.g. antimicrobial activity)	1	2
2	**Microbial content**	a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	• Methods of bacterial investigations counting in a sample of : raw material, air and environment and pharmaceutical product.	2	4

3	**Measurement of antimicrobial activity**	a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	• Factors to be controlled in the measurement of antimicrobial activity: origin of organism, composition and pH of culture media, exposure and incubation conditions, inoculum concentration and physiological state • Antibiotic biological assay techniques: agar diffusion, disc diffusion , well method, etc.; common control antibiotics for different bacteria and fungi; measurement of inhibition zone, MIC	3	6
Mid-term exam				1	2
4	**Microbiological quality of pharmaceutical materials.**	a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	➢ Pharmacopeial specifications and tests of **Non-sterile products** o Environmental monitoring o Detection of specific hazardous organisms ➢ Pharmacopeial specifications and tests of **sterile products** o Sterilization methods o Sterility tests	4	8
5	**Preservation Of pharmaceutical products**	a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	• Preservative: definition, classification; common concentration used • Preservative efficacy test: choice of organism and inoculum; reason that deactivate preservatives	2	4
6	**Evaluation of disinfectant**	a1, a2, a3, a4, b1, b2, b3, b4, b5, b6 , d2	• Common types of disinfectant and their activity against microbes • Testing of disinfectant efficacy	1	2
7	**Microbial resistance**		• Biological and other reasons of microbial resistance to antimicrobial • Common examples of microbial resistance • General measure to reduce microbial resistance	1	2
Course Review		a1, a2, a3, a4, b1, b2, b3,	Review of the course topics by discussion session.	1	2

	b4, b5, b6 , d2			
FINAL – EXAM			1	2
TOTAL			16	32
Number of Weeks /and Units Per Semester			16 weeks	7 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Preparation of a sample and inoculum for investigation of microbial content of staphylococcus aureus . Samples are (1. raw pharmaceutical material e.g. vitamin c) , 2. air sample	2	4	b1, b2,b4, ,c1, c2, c4, d1, d2, d3
2	Preparation of a sample and inoculum for investigation of microbial content of E.coli Samples is Sterile product: Voltaren ampoule	1		b1, b2,b4, ,c1, c2, c4, d1, d2, d3
3	Antimicrobial activity test test against any available bacteria Test : standard antibiotic vs. ceftriaxone 1 g vial (Disc method)	1	2	b1, b2,b4, ,c1, c2, c4, d1, d2, d3
4	Antimicrobial activity test against any available bacteria test: standard antibiotic vs. tetracycline ointment(Well method)	1	2	b1, b2,b4, ,c1, c2, c4, d1, d2, d3
5	Antimicrobial activity test : standard vs. procaine penicillin vial powder (dilution method)	1	2	b1, b2,b4, ,c1, c2, c4, d1, d2, d3
6	Determination of MIC of antimicrobial	1	2	b1, b2,b4, ,c1, c2, c4, d1, d2, d3
7	Preservative (e.g. benzoic acid) efficacy test	1	2	b1, b2,b4, ,c1, c2, c4, d1, d2, d3

8	**Review**	**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
PRACTICAL EXAM		**1**	**2**	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
Total		**10**	**20**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to do a search report on the pharmacopeial specification of microbial content and sensitivity inhibition zone of one of the studied microbial pathogen.	c3, c4, d2	4-13	3
2	**Group** : each group of students will be assigned to provide a search-based report on natural substances (e.g. plant, minerals) that have antimicrobial activity against one of the studied microbial pathogen.	c3, c4, d1, d2, d3	14	2

VII. Schedule of Assessment Tasks for Students During the Semester

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b3
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b3, b4
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	**b1, b2,b4, ,c1, c2, c4, d1, d2, d3**
	Total			30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1. Chandrakanty pharmaceutical microbiology
2. Pharmaceutical Microbiology by Anthony Cundell. Publisher: Interpharm

2- Essential References.

1. W. B. Hugo: pharmaceutical microbiology, 1998, Black well science LTD.
2. Aulton, pharmaceutics the science of dosage form design, 2002, Churchill Livingston
3. Kar. Pharmaceutical microbiology
4. Pharmaceutical Microbiology by A.D. Russell, W.B Hugo (editor) publisher: Blackwell Science 3rd edition (December 1983)
5. Medical Microbiology by Patrick Murray, Ken Rosenthal, G. Kobayashi, M, pfaller. Publisher: Mosby 4th edition (January 15 ,2002)

3- Electronic Materials and Web Sites *etc*.

http://www.pubmed.com
http://www.botanical .com
http://www.herbmed.com

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Level IV

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

COMMUNITY PHARMACY I

I. Course Identification and General Information:							
1	**Course Title:**	**COMMUNITY PHARMACY I**					
2	**Course Code &Number:**	**PHPP 411**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(4th) Year – (first) semester*					
5	**Pre –requisite (if any):**	• **pharmacology I, II**					
6	**Co –requisite (if any):**	------					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr/ Anes A. M. Thabit					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the role of pharmacist in the "community pharmacy" as providers of pharmaceutical care services, including dispensing of medication and counseling , to patients and as administrators of the pharmacy. The course also provides students the essential knowledge and skills in order to properly recommend safe and effective over the counter (OTC) medications to patients based on benefit: risk evaluation and also to promote drug safety in the community and avoid drug abuse/misuse. The course follows completion of (pharmacology I, II) courses in which the student attain knowledge in actions of drugs covered in this course. Owing to great diversity of OTC medications, OTC medications that are not covered in this course will be covered in the course (Community pharmacy II) in the next semester.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
12. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1.** Explain the impact of good behavior of pharmacists on their communication and relationship to patients and healthcare professionals.
2	**A5**	**a2.** Identify the actions of OTC medications on patients and abuse/misuse of different types of those and other medications.
3	**A9**	**a3**. Define the basis of effective pharmacy administration.

4	**A10**	**a4.** Describe the pharmacist role in community pharmacists to dispense and recommend safe and effective OTC medications to patients.
5	**B5**	**b1.** Plan a modern system to effectively administer the "community pharmacy"
6	**B7**	**b2.** Formulate and evaluate a plan of patient need and rational use of OTC medications to improve patient safety and efficacy
7	**C4**	**c1.** Advise the patient to optimize medicine use.
8	**C6**	**c2.** Apply rules for effective" pharmacy administration"
9	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
10	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
11	**D3**	**d3.** Participate efficiently with his colleagues in a team work.
12	**D4**	**d4.** Take responsibility for adaption to change needs in pharmacy practice
13	**D5**	**d5.** Use essential references of evidence-based practice to achieve maximum safety and efficacy of medicines.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a4	**Lecture**	**Written exams**
a3	**Virtual lab. Practice**	**Lab. term works, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**lab. Practice**	**Lab. term works, final practical exam**
b2	**Lecture, feed-back learning**	**Written exams , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 , c2	**lab. Practice**	**Lab. term works, final practical exam**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3, d5	**lab. Practice**	**Lab. term works, final practical exam**
d4	**Feed-back learning**	**Quizzes**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to community pharmacy**	a1, a4, b2	• Brief history • Pharmaceutical care Services offered to patients in community pharmacies • Patient counseling: general rules, response to patients,	2	4
2	**Drug benefit: risk and selection of drugs to specific group of patients**	a1, a4, b2	• Drug benefit: risk ratio • dealing with specific groups of patients: general rules • Selection of medication to pregnant women • Selection of medications for breastfeeding women • Safe drugs and dose for children • Misleading of herbal medications	4	8
3	**Drug information sources**	a1, a4, b2	• Reliable foundations and references drug information sources	1	2
	MID-TERM EXAM			1	2
4	**Introduction to OTC medications**	a1, a2, a4, b2	• Definition • Hoe approve OTC medications • Types of medications (OTC) dispensed without a prescription. • referral to physician	1	2

5	**OTC medications for pain and fever**	a1, a2, a4, b2	• Types of pain • Types of OTC analgesics/antipyretics • Risks • Selection for specific groups of patients • Selection for toothache, headache, musculoskeletal pain, migraine, dysmenorrhea • Selection for fever • List of trade names	2	4
6	**OTC for oral healthcare**	a1, a2, a4, b2	• Definition and types of mouth ulcers • OTC for different types of mouth ulcer • OTC for bad breath	1	2
7	**OTC products for alimentary system: part 1**	a1, a2, a4, b2	Types of OTC, community cases, selection for specific groups of patients and list of trade names for the following cases: • Hyperacidity • Nausea and vomiting • Colic	3	6
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

B - Practical Aspect: The practical sections are carried out in the " Virtual pharmacy Lab"

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	Drug product specification	**1**	**2**	b1, c1, c2, d1, d2, d3, d5
2	Arrangement and classification of medications in community pharmacy	**2**	**4**	b1, c1, c2, d1, d2, d3, d5
3	Using " Medscape" application and other reliable sources to search about drug safety and efficacy	**1**	**2**	b1, c1, c2, d1, d2, d3, d5

4	Patient`s counseling: OTC and community cases for pain fever, mouth ulcer, hyperacidity, vomiting and colic	**2**	**4**	b1, c1, c2, d1, d2, d3, d5
5	Patient counseling: (role play) How to use specific dosage forms ? eye drops, ear drops, inhalers, effervescent, dermal preparations,	**1**	**2**	b1, c1, c2, d1, d2, d3, d5
6	Skills of Dispensing of prescriptions : example of written prescriptions	**2**	**4**	b1, c1, c2, d1, d2, d3, d5
7	Pharmacy administration skills : Documentation & indexing, requisition of medications, ordering and receiving products pharmaceutical agents manufacturers in Yemen	**3**	**6**	b1, c1, c2, d1, d2, d3, d5
PRACTICAL EXAM		**1**	**2**	b1, c1, c2, d1, d2, d3, d5
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to search using Medscape on risj and benefit of a type OTC medication for one specific case	b2	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b2, d4
		Assignments	7, 12	5	5	b2
2	Mid-semester exam (written exam)		7	10	10	a1, a4, b2
3	Final exam (written exam)		16	50	50	a1, a2, a4, b2
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, c1, c2, d1, d2, d3, d5
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, c1, c2, d1, d2, d3, d5
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
6. Lillian M Azzopardi. Lecture notes on pharmacy practice, 2010, Pharmaceutical press.Christopher

7. A Langley, Dawn Belcher. Applied pharmaceutical skills, 2009, Pharmaceutical press.

2- Essential References.

1. Agarwal. Dispensing and community pharmacy
2. Jain. A text book of professional pharmacy

3- Electronic Materials and Web Sites *etc*.

Community pharmacy | List of High Impact Articles | PPts | Journals | Videos (longdom.org)
Journal of Pharmacy Practice and Community Medicine | (jppcm.org)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOLOGY III

I. Course Identification and General Information:								
1	**Course Title:**	**PHARMACOLOGY III**						
2	**Course Code &Number:**	**PHL 412**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		3	-	-	-	-		**3**
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (FIRST) semester*						
5	**Pre –requisite (if any):**	• **Pharmacology I & II**						
6	**Co –requisite (if any):**							
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr./ Shawki Hussien Al-Awdi						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course also deals with the study of pharmacodynamic and pharmacokinetics of drugs used for GIT , endocrine systems disorders as well as analgesic drugs. This course deals with the study of pharmacodynamic (mechanism of drug action & their biological effects on different body organs and drug-protein binding) and dosage form of drugs (advantages & disadvantages) and pharmacokinetics (absorption, distribution, metabolism and excretion) of drugs acting on central nervous system and chemotherapeutic drugs.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A5	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions
2.	A8	**a2.** Describe the pharmacokinetics of drugs.
3.	A10	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.

4.	**B2**	**b1 .**Classify drugs used for disorders of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.
5.		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6.	**C7**	**c1 .** Advise the patient and healthcare professional to optimize medicine use
7.	**D2**	**d1.** Demonstrate time management and decision making skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exam , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**feed-back learning**	**assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
A – Theoretical Aspect:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**GIT drugs**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of drugs used for :** • Hyperacidity, gastritis and peptic ulcer • Nausea and vomiting • Colic • Diarrhoea • Constipation • Haemorrhoids	4	8
2	**Drugs for endocrine systems disorders**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Anterior and posterior pituitary hormones • Drugs for thyroid gland disorders • Antidiabetic drugs: insulin, oral hypoglycemics	4	8
Mid-term exam				1	2
2	**Drugs for endocrine systems disorders**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Corticoteroids	2	4

			• Estrogens, progesterons, hormonal contraceptives and antiestrogens • Androgens and antiandrogens		
3	**Analgesics**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Narcotic analgesics • Non-narcotic analgesic antipyretic drugs with weak or no anti-inflammatory effect : paracetamol • Non-narcotic Analgesic and antipyretic with anti-inflammatory effect " Non-steroidal anti-inflammatory drugs (NSAIDs): salicylates, fenamates, propionic acid derivatives, acetic acid derivatives, oxicams, newer NSAIDs (ketoprolac, etc) • AntiCOX II NSAIDs (etodalac, meloxicam, coxibs, etc)	4	8
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and risks for specific patients e.g. CVS patients, renal failure patients, etc.	b1, c1, d1	6-12	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	b1, c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, b1
3	Final exam (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

1. Katzung –Basic and Clinical Pharmacology, McGraw-Hill
2. Rang, Dale and Ritter. Pharmacology, Churchill Livingstone.

2- Essential References.

5. Richard A. Harvey. Lippincott's pharmacology, Lippincott William and Wilkins.
6. Udaykumar. Text book of medical pharmacology

3- Electronic Materials and Web Sites *etc*.

Course Policies:

1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICINAL CHEMISTRY III

Course Identification and General Information:							
1	**Course Title:**	**MEDICINAL CHEMISTRY III**					
2	**Course Code &Number:**	**PHC 413**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		3	-	-	1	-	**4**
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (FIRST) semester*					
5	**Pre –requisite (if any):**	• **Medicinal chemistry I, II**					
6	**Co –requisite (if any):**	• **Pharmacology III**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	**Dr/ Galal Al-QADSI**					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the third one among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). It deals with the physicochemical properties, chemical synthesis, quantitative structure activity relationship (SAR), qualitative structure activity relationship (QSAR), pharmacophore molecules, mechanism of action, and metabolism of drugs used for cardiovascular system, blood and endocrine system disorders. Also there are practical part concerns with Pharmacopeial physicochemical properties , chemical , chromatographic or spectroscopy identification of some CVS drugs.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
3. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.

2	**A4**	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs used for GIT , endocrine systems disorders as well as analgesic drugs
3	**A10**	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
4	**B1**	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs used for GIT , endocrine systems disorders as well as analgesic drugs
5		**b2.** Express molecular structure, synthesis and reactions of drugs with hand-drawing
6	**B2**	**b3.** Classify, chemically, drugs affecting drugs used for GIT , endocrine systems disorders as well as analgesic drugs
7		**b4 .** Compare between chemically related drugs based on their chemical structure
8	**B3**	**b5.** Design newer drugs used for GIT , endocrine systems disorders as well as analgesic drugs.
9	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
10	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
11	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
12		**c4** Present and report his/her works correctly using appropriate writing rules and technologies media.
13	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
14	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
15	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture-discussion , feed-back learning**	**Written exams , quizzes**

b2, b3, b4	**Lecture-discussion**	**Written exams**
b5	**Group-project**	**Assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Lab. term works, assignment**
d2	**laboratory practice**	**Lab. term works, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**GIT drugs**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs used for** • Colic • Hyperacidity, gastritis and peptic ulcer • Nausea and vomiting • Diarrhoea • Constipation • Haemorrhoids	4	8
2	**Drugs for endocrine systems disorders**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Anterior and posterior pituitary hormones • Drugs for thyroid gland disorders	4	8

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

			• Antidiabetic drugs: insulin, oral hypoglycemics		
Mid-term exam				1	2
2	**Drugs for endocrine systems disorders**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of drugs used for** • Corticoteroids • Estrogens, progesterons, hormonal contraceptives and antiestrogens • Androgens and antiandrogens	2	4
3	**Analgesics**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Narcotic analgesics • Non-narcotic analgesic antipyretic drugs with weak or no anti-inflammatory effect : paracetamol • Non-narcotic Analgesic and antipyretic with anti-inflammatory effect " Non-steroidal anti-inflammatory drugs (NSAIDs): salicylates, fenamates, propionic acid derivatives, acetic acid derivatives, oxicams, newer NSAIDs (ketoprolac, etc) • AntiCOX II NSAIDs (etodalac, meloxicam, coxibs, etc)	4	8
Course Review		a1, a2,a3 , b1, b2, b3, b4	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	3 Units

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	AlignedCourse Intended Learning Outcomes CILOs
1)	Pharmacopeial physicochemical properties , identification of: atropine	**1**	**2**	c1, c2, d1, d2, d3
2)	Pharmacopeial physicochemical properties , identification: of omeprazole	**1**	**2**	c1, c2, d1, d2, d3
3)	Pharmacopeial physicochemical properties , identification of : ranitidine	**1**	**2**	c1, c2, d1, d2, d3
4)	Pharmacopeial physicochemical properties , identification of : synthetic dexamethasone	**1**	**2**	c1, c2, d1, d2, d3
5)	pharmacopeial physicochemical properties , identification of : antifungal : glibenclamide	**1**	**2**	c1, c2, d1, d2, d3
6)	pharmacopeial physicochemical properties , identification of : paracetamol	**1**	**2**	c1, c2, d1, d2, d3
7)	pharmacopeial physicochemical properties , identification of : ibuprofen	**1**	**2**	c1, c2, d1, d2, d3
8)	pharmacopeial physicochemical properties , identification of : tramadol	**1**	**2**	c1, c2, d1, d2, d3
9)	Synthesis of drugs	**2**	**4**	c1, c2, d1, d2, d3
10)	Purification of drugs.	**1**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.

The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	

	works					
	Final exam (practical)		12	20	20	c1, c2, d2
			Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Gareth Thomas, Medicinal chemistry: an introduction , John Wiley & Sons Ltd, 2. Siddique. A textbook of medicinal chemistry 3. V Alagarsamy. (2009). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier. 4. V Alagarsamy. (2013). *Textbook of Medicinal Chemistry,(* volume I & II) . India: Elsevier.
2- Essential References.
1. AshutochKar. Medicinal chemistry, New age international publisher 2. Rajie. Pharmaceutical chemistry 3. Wermuth. The practice of medicinal chemistry 4. Munendra Mohan Varshney & Asif Husain . A textbook of medicinal chemistry. 2015, I.K. International Publishing House Pvt. Limited. 5. John, M. Beale, Jr. & John H. Block. (2020). *Wilson and Gisvoldd's Textbook of Organic Medicinal Chemistry and Pharmaceutical Chemistry (12th ed.).* New York: Lippincott.
3- Electronic Materials and Web Sites *etc*.
1- https://pubs.acs.org/journal/jmcmar 2- https://benthamscience.com/journals/medicinal-chemistry/ 3- https://www.slideshare.net/akkimipadama/medicinal-chemistry-1257073004-

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam.
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work.
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course.
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

INDUSTRIAL PHARMACY

Course Identification and General Information:								
1	**Course Title:**	**INDUSTRIAL PHARMACY**						
2	**Course Code &Number:**	**PHT 414**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(4th) Year – (First) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutics I , II & III**						
6	**Co –requisite (if any):**	---------						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr/Abdulkarim Alzomer						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course deals with the study of criteria of good practices relevant to manufacturing of medications in drug plants . These criteria include current good manufacturing practice (cGMP) , good storage practice (cGSP) and good laboratory practice (cGLP) that are based on global guidelines such as ICH, WHO and ISO. The course also concerns with and the substantial unit operations utilized during manufacturing of these products including those involved in transfer of materials, those applied prior and after mixing of ingredients and those employed in filling and packaging of finished products.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

13. Alignment CILOs to PILOs

No.	PILOs	CILOs
1	A4	**a1.** Identify criteria for good practice of pharmaceutical manufacturing including cGMP, cGSP, cGLP based on ICH, WHO and ISO guidelines.

2		**a2**. Describe the different types unit-operation methods used for pharmaceutical manufacturing and their advantages/disadvantages
3	**A10**	**a3.** Describe the role of pharmacist in employment GMP criteria and to operate unit operations for manufacturing of drug products.
4	**B3**	**b1.** Select standard operation procedure to obtain in-process and finished products with specific criteria
5	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
6	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
7	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
8		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
10	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
11	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**lecture, feed-back learning**	**Written exam, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Lab. Practice**	**Lab. term works, final practical exam**
c3, c4	**Lab. Practice, group-project**	**Lab. term works, final practical exam , assgnment**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3	**Lab. Practice, group-project**	**Lab. term works, final practical exam , assgnment**

Course Content:

A. Theoretical aspect

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to industrial pharmacy and criteria of good practices**	a1, a2, a3, b1	• The need and Significance for large-scale production of drugs • history of large scale manufacturing of drug products. • Criteria of current good practices : good manufacturing practice (cGMP), good storage practice(cGSP)and good laboratory practice (cGLP) to be emplyed in drug plants based on specific guidelines such as WHO, ICH and ISO	3	6
2	**General principles of flow and transfer**	a1, a2, a3, b1	Design, types, advantages, disadvantage, selection of machines used for: a. mass transfer b. fluid flow c. heat transfer	2	4
3	**Fundamental premixing unit operations (applied to fluids)**	a1, a2, a3, b1	Design, types, advantages, disadvantage, selection of machines used for: a. fluid clarification ○ Filtration ○ Centrifugation b. Solvent Extraction c. Evaporation d. Distillation	2	4
			• MID-TERM EXAM	1	2
4	**Fundamental premixing unit operations**	a1, a2, a3, b1	Types, advantages, disadvantage, machine design and operation used for: a. crystallization b. drying	3	6

	(applied to solids)		c. particle size reduction (milling) d. particle size enlargement (granulation)		
5	**Mixing unit operation**	a1, a2, a3, b1	Types, advantages, disadvantage, machine design and operation used for: a. Solid-solid mixing b. Solid-fluid and fluid-fluid mixing c. Semisolid mixing	2	4
6	**Filling and packaging Processes**	a1, a2, a3, b1	Types, advantages, disadvantage, machine design and operation used for: a. Filling of finished product b. packaging.(including types of packaging materials)	2	4
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:

Practice will be done using virtual instruments which mimics those applied in drug plant

Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1.	Working in drug plants: requirements and GMP criteria	**1**	2	b1, c1, c2, d1, d2, d3
2.	Powder flow and determination of flowability	**1**	2	b1, c1, c2, d1, d2, d3
3.	Drying of solids using different models of dryers such as oven , spray drier + evaluation of drying efficiency by determination of moist content	**2**	4	b1, c1, c2, d1, d2, d3
4.	particle size reduction (milling) using different models of millers such as hammer-mill, ball-mill + evaluation of milling efficiency by determination of particle size of powder	**2**	4	b1, c1, c2, d1, d2, d3

5.	Mixing of solids using different models of mixer such as V-mixer, Y-mixer + evaluation of mixing efficiency.	**1**	2	b1, c1, c2, d1, d2, d3
6.	Mixing of liquids and semisolids + evaluation of mixing efficiency.	**1**	2	b1, c1, c2, d1, d2, d3
7.	Filling of liquids	**1**	2	b1, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, c1, c2, d1, d2, d3
Total		**10**	**20**	
Number of Weeks			**12**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group :** The teacher will provide the students with a number of problems related to operation and production studied in this course. The student group is assigned to provide a search-based technical solutions of one of those problems	c3, c4, d1, d2, d3	5-12	

Schedule of Assessment Tasks for Students During the Semester

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	c3, c4, d1
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, c1, c2, d1, d2, d3
	Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
Aulton M.E., Pharmaceutics: the science of dosage form design, 2012, Churchill Livingstone Lachman, Theory and Practice of Industrial Pharmacy
2- Essential References.
1. Vidya. pharmaceutical industrial management Chandrasekhar. Pharmaceutical engineering 2. Jyothi. pharmaceutical engineering
3.Electronic Materials and Web Sites *etc*. https://www.slideshare.net/AswaNasir/industrial-pharmacy-ppt https://www.slideshare.net/WilliamDube1/industrial-pharmacy

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

BIOPHARMACEUTICS & PHARMACOKINETICS I

I. Course Identification and General Information:							
1	**Course Title:**	**BIOPHARMACEUTICS & PHARMACOKINETICS I**					
2	**Course Code &Number:**	**PHT 415**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(4th) Year – (first) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I , II, III**					
6	**Co –requisite (if any):**	**NONE**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr/Abdulkarim Alzomer					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of the factors that affect drug pharmacokinetics and bioavailability which in turn can dramatically influence the therapeutic efficacy of the drug. These factors include the biological factors, such anatomical/physiological , pathological , the pharmaceutical factors of the drug product such as physicochemical properties of the drug , roles of excipients included and the type of dosage form and also the impact of genetic variation and concurrent use of other drugs and food. The course also deals with essential knowledge of biopharmaceutical studies including In vitro, ex vivo and In vitro in vitro correlation studies.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
14. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A1**	**a1.** Show understanding of the influence of human body structure including physiological/anatomical, pathological and genetic characters on drug pharmacokinetics and bioavailability.

2	A3	**a2.** Explain the physicochemical properties of the drug, excipients , dosage forms, co-administered drugs and food that affect drug pharmacokinetics and bioavailability.
3	A8	**a3.** Describe the principles of biopharmaceutics and pharmacokinetics.
4		**a4.** Explain the relationship of drug absorption, distribution and elimination to its bioavailability.
5		**a5**. Define biopharmaceutics , bioavailability and bioequivalence.
6		**a6**. Describe the biopharmaceutical classification system (BCS) of drugs.
7	A10	**a7.** Describe the pharmacist role in assessment and improvement of drug bioavailability.
8	B1	**b1.** Interpret figures and graphs of biopharmaceutical studies.
9	B2	**b2 .** Classify drugs biopharmaceutically.
10	C7	**c1 .**Search efficiently for information using documented and electronic sources of information.
11		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	D2	**d1.** Demonstrate the skills of time management and self-learning.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, , a2, a3, a5, a6, a7	**Lecture**	**Written exams**
a4	**Lecture, feed-back learning**	**Written exams, quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture**	**Written exams**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1 , c2	**feed-back leaning**	**assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to biopharmaceutics**	a1, a2, a3, a4, a5, a6, a7, b1, b2	Definition and significance of biopharmaceutics and bioavailability. relation of biopharmaceutics to other pharmaceutical sciences correlation between bioavailability & dug efficacy Expressions of drug bioavailability factors affecting bioavailability Introduction to steps for drug bioavailability	1	2
2	**Steps and pharmacokinetic processes involved in drug bioavailability**	a1, a2, a3, a4, a5, a6, a7, b1, b2	**1. Pre-absorption steps (For Non-I.V route)** **Drug Release** Definition, significance , Expression parameters (cumulative % release, drug release rate) Mechanisms and governing equations : Fick`s law, Higuchi equation, Peppas equation (matrix diffusion, membrane diffusion, Fickian, Non-Fickian, controlled) **Drug dissolution** Definition, significance , Expression parameters (cumulative % dissolved, dissolution rate), Mechanisms and governing equations : Noyes-Whitney equation	1	2
		a1, a2, a3, a4, a5, a6, a7, b1, b2	**2. Pharmacokinetics processes** **Drug absorption** Definition, significance Expression parameters (cumulative % absorbed, absorption rate, absorption rate constant) Mechanisms and governing equations , properties and examples of drugs absorbed by each mechanism. Passive diffusion (transcellular) : Fick`s law.	2	4

			o Carrier-mediated : Active transport, facilitated diffusion, o Convective (paracellular) transport, ion-pair transport, endocytosis		
		a1, a2, a3, a4, a5, a6, a7, b1, b2	**metabolism (biotransformation)** Definition, significance of , Expression parameters: volume of distribution and related equations (related to blood flow, dose and plasma concentration, Mechanisms (passive diffusion, active transport), steps and sites of distribution □ Definition, significance of drug biotransformation, Outcomes (products: active, inactive metabolite) with examples of drugs □ Sites of metabolism: resystemic (first-pass effect), hepatic with examples of drugs highly influenced by presystemic metabolism. □ Mechanisms (phases Reaction): phase I and phase II: types of reactions, examples of drugs , Affecting factors : Biological Factors , pharmaceutical factors and Exogenous factors **drug excretion** □ Definition, significance □ Renal excretion : the nephron anatomy □ Properties of drugs excreted by the kidneys, Mechanisms: glomerular filtration, active tubular secretion, Tubular reabsorption, Factors affecting each excretion mechanism: biological, pharmaceutical and exogenous factors □ Excretion from the liver and other organs and the enterhepatic circulation	2	4
mid-term exam				1	2
3	**Biological factors affecting drug pharmacokinetics and bioavailability**	a1, a2, a3, a4, a5, a6,	• Anatomical/Physiological factors affecting drug absorption, distribution	3	6

		a7, b1, b2	metabolism, excretion and bioavailability. • Pathological (Disease) factors affecting drug absorption, distribution metabolism, excretion and bioavailability.biological factors affecting drug metabolism " • Genetic factors affecting drug absorption, distribution metabolism, excretion and bioavailability.		
4	**Pharmaceutical factors affecting drug pharmacokinetics and bioavailability**	a1, a2, a3, a4, a5, a6, a7, b1, b2	• factors affecting related to drug physicochemical properties • factors related to excipients • factors related to formulation (dosage forms) • factors related to manufacturing method.	2	4
5	**Influence of food and co-administered drugs on a drug pharmacokinetics and bioavailability**		• Food drug-interactions & Drug-drug interactions	1	2
6	**Biopharmaceutical studies**	a1, a2, a3, a4, a5, a6, a7, b1, b2	• Biopharmaceutical classification scheme • In vivo studies: Pharmacokinetic and pharmacodynamics Bioavailability study (For a new drug): absolute bioavailability, definition, equation, • Bioequivalence study : relative bioavailability, definition, equation • In vitro studies : Drug release and dissolution studies (in fasted and feed state) in fluid simulant to that the g.i.t fluid, In vitro Stability of drug in fluid simulant to those of g.i.t, Permeability studies (partition coefficient determination, Ex vivo permeation studies • IVIVC : in vivo in vitro correlation studies	2	

FINAL – EXAM	1	2
TOTAL	16	32

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a electronic-based report on research articles related to biopharmaceutical studies of one drug	c1, c2, d1	4-13	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	a4
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, a5, a6, a7, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, a5, a6, a7, b1, b2
TOTAL				100	100 %	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Learning Resources:
1- Required Textbook(s) (maximum two).
1.Shargel. Biopharmaceutics and pharmacokinetics, . 2.. Handbook of Basic Pharmacokinetics-Ritschel, W.A.,Drug Intelligence Publication, 3. Fundamentals of Clinical Pharmacokinetics-Wagner,J.C.,Drug Intelligence Publication
2- Essential References.
1. Gibaldi. Biopharmaceutics and clinical pharmacokinetics 2. Harle. Pharmacokinetics and biopharmaceutics 3. Wagner. Pharmacokinetics for the pharmaceutical scientist 4. Venkaeswarlu. Biopharmaceutics and pharmacokinetics 5. Remington's Pharmaceutical Sciences - Gennaro A.R., ed., 19th Edition, Mack Publishing Co., Easton, PA. 1995. Clinical Pharmacokinetics - Rowland, M. & Tozer,N., 2nd,edi 6. Pharmacokinetics-Gibaldi M. & Perrier, D., 2nd ed., Marcel Dekker, New York, 1982. Pharmacokinetics for the Pharmaceutical Scientist-Wagner, J.C., Technomic Publishing
3- Electronic Materials and Web Sites *etc*.

	I. Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL INSTRUMENTAL ANALYSIS I

I. Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICAL INSTRUMENTAL ANALYSIS I**					
2	**Course Code &Number:**	**PHC 416**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (first) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutical Analytical chemistry I & II**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Galal Hamood Al-qadasi					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

II. Course Description:

The course deals with the study of principles, instrumentation and applications of advanced analytical techniques including atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques. The practical part provides the student with skills to effectively operate equipment of those techniques and to perform analysis of compounds using such instrumentation.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1	**A3**	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis
2	**A4**	**a2**. Describe the principles of atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.

3	A10	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.
4	B1	**b1.** Interpret data obtained by atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
5	B2	**b2.** Design a suitable atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniqus based on the substance physicochemical properties.
6	B3	**b3.** Select appropriate standard operating procedure for atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
7	B9	**b4.** Calculate the content % and identify substances in a sample using atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
8	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	C7	**c3 .**Search efficiently for information using documented and electronic sources of information.
11		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
13	D2	**d2.** Demonstrate the skills of time management and self-learning.
14	D3	**d3.** Participate efficiently with his colleagues in a team work.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

b1, b2, b3, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

III. Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours

1	**Advanced spectroscopic techniques**	a1,a2, a3, b1, b2, b3, b4	**Theoretical principle and components , components interactions , types, instrumentation, factors affecting, output data, applications in quantitative/qualitative analysis, , data interpretation :** **:** o Atomic absorption spectrophotometer o Atomic emission spectrophotommeter o Infrared spectroscopy o Mass spectroscopy (MS)	8	16
	mid-term exam			1	2
2	**Advanced chromatographic techniques**	a1,a2, a3, b1, b2, b3, b4	**Theoretical principle and components , components interactions , types, instrumentation, factors affecting, output data, applications in quantitative/qualitative analysis, data interpretation :** • High performance liquid chromatography (HPLC) • Ultra High performance liquid chromatography (UHPLC)	6	12
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Course Intended Learning Outcomes CILOs**
1	Simulation and Determination of drugs in different dosage forms using HPLC :	**7**	**14**	b1, b2, b3, b4, c1, c2, d1, d2, d3

	• Amikacin injections • Amlodipine tablets • Cephradine capsules • Paracetamol + caffeine tablets • Pseudoephedrine + cetrizine capsules • Drotaverine + codeine tablets • Miconazole + hydrocortisone oral gel			
2	Simulation and data interpretation of Infrared spectroscopy analysis of • Carbamezapine • Bisoprolol • Amoxicillin • Unknown drug	**3**	**6**	b1, b2, b3, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	

1	**Individual**: every student is assigned to solve the problems provided by the teacher at the end of each unit.	b2, c5, c6, d4	4-13	
2	**Group** : each group of students will be assigned to provide a video of simulation of one of the analytical technique studied. The students of each group must explain the simulation for other students.	c5, c6, d1, d2, d4	14	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	

	Final exam (practical)	12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
		Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. David Harvey, modern analytical chemistry, 2000, McGraw-Hill 2. British pharmacopeia 2013 3. Satinder Ahuja and Stephen Scypinski. Handbook of Modern Pharmaceutical Analysis, 2010, Elsevier
2- Essential References.
1. Hadkar. Instrumental methods in pharmaceutical analysis 2. Purcell. Pharmaceutical analysis 3. David G. Watson, RuAngelie Edrada-Ebel Pharmaceutical Analysis A Textbook for Pharmacy Students and Pharmaceutical Chemists, 2012, Elsevier Churchill Livingstone 4. USP 41-NF36, United states pharmacopeia, 2018
3- Electronic Materials and Web Sites *etc*.
1- https://www.slideserve.com/burian/interpreting-ir-and-nmr-spectra 2- https://www.slideshare.net/durgasairelangi/uvvisnmrmassir 3- https://www.slideserve.com/caridadp/identification-of-organic-compounds-by-gc-ms-ir-amp-nmr-powerpoint-ppt-presentation

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

NOVEL DRUG DELIVERY SYSTEMS

Course Identification and General Information:							
1	**Course Title:**	**NOVEL DRUG DELIVERY SYSTEMS**					
2	**Course Code &Number:**	**PHT 417**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(FOURTH) Year – (1ST) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I , II, III**					
6	**Co –requisite (if any):**	**Biopharmaceutics & pharmacokinetics I**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Abdulkarim Alzomer					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is complementary to (Pharmaceutics) courses studied in the previous semesters and all these courses concern with study of designs of dosage forms capable to deliver the drug to human body. In contrast to pharmaceutics courses which deal with conventional dosage forms, this course concerns with study of newer, unique and advanced systems , including targeted delivery systems. The course, therefore, is designed in order to provide students with the last and updated knowledge in the field of dosage forms design . The course is co-requisite with (Biopharmaceutics & pharmacokinetic I) course in order to link between dosage forms and kinetics of drug in human body.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
15. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Explain techniques and approaches applied in novel drug delivery systems
2		**a2.** Explain the principles of designing targeted drug delivery systems
3	**A10**	

4		**a3**. Describe the role of pharmacist in designing novel drug delivery systems
5	**A11**	**a4.** Identify the properties and objectives of novel drug delivery systems
6		**a5.** Describe the advantages and disadvantage of novel drug delivery systems.
7	**B2**	**b1 .** Classify Novel and novel drug delivery systems.
8		**b2.** Compare between conventional and novel drug delivery systems
9	**B3**	**b3 .** Design a novel drug delivery system.
10		**b4.** Evaluate a novel drug delivery systems from its advantage/disadvantage.
11	**C7**	**c1 .** Search efficiently for information using documented and electronic sources of information.
12		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
13	**D2**	**d1.** Demonstrate the skills of time management and self-learning.
14	**D3**	**d2.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4, a5	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Feed-back learning**	**Quizzes**
b3, b4	**Group project**	**assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**Group project**	**assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2	**Group project**	**assignments**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**introduction to Novel drug delivery systems**	a1, a3, a4, a5, b1	• The need for Novel and novel drug delivery systems o Factors related to patients convenience o New diseases : new challenges o Diseases resistant to classical systems o Other factors o Comparison between Novel and classical delivery systems	1	2
2	**Extended release systems**	a1, a3, a4, a5, b1	• Definition and purposes • Concepts of extended-release, sustained-release • Advantages and limitations, • Biological features affecting extended-delivery system. • Technology of Microencapsulation • multiple units coating (pellets) • floating tablets • bilayer and multiple layer- tablets	3	6
3	**Transdermal delivery systems**	a1, a3, a4, a5, b1	• Biological features affecting transdemal delivery system. • Principle, components, formulation, advantages, disadvantages types and applications of : o Patches o Phonophoresis o Inotophoresis o Electroporation o Needle array and needleless injection systems o Percutaneous enhancers	3	6

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	mid-term exam			1	2
4	**Novel parenteral systems**	a1, a3, a4, a5, b1	Principle, components, formulation, advantages, disadvantages types and applications of : : ○ Implants ○ Ocuserts	1	2
5	**Novel inhalation delivery systems**	a1, a3, a4, a5, b1	• Biological features affecting inhalation delivery system. • Principle, components, formulation, advantages, disadvantages types and applications of : ○ Dry solid inhaler systems	1	2
6	**Novel intravaginal delivery systems**	a1, a3, a4, a5, b1	• Biological features affecting newer intravaginal delivery system. • Principle, components, formulation, advantages, disadvantages and types of intravaginal systems	1	2
7	**Targeted delivery systems**	a1, a2, a3, a4, a5, b1	• Definition • Purposes • Biological features affecting targeted delivery system. • Principle, components, formulation, advantages, disadvantages types and applications of : ❖ cellular Types of targeted delivery systems ○ T-lymphocytes ○ Lysosome ❖ Particle Types of targeted delivery systems ○ Liposomes ○ Monoclonal antibodies ○ Plasma proteins ○ Polymeric micelles ❖ Prodrug Types of targeted delivery systems ○ Conjugation with peptides	3	6

			○ Gene (or antibodies)-directed enzyme system ○ Drug-linkage-ligand system		
Course Review		a1, a2, a3, a4, a5, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.
The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Group** : each group of students will be assigned to provide a theoretical design and evaluation of new novel drug delivery system	b3, b4, c1, c2, d1, d2	14	4

Schedule of Assessment Tasks for Students During the Semester

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	B2
		Assignments	7, 12	10	10	b3, b4, c1, c2, d1, d2
2	Mid-semester exam (written exam)		7	20	20	a1, a3, a4, a5, b1
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, a5, b1
	TOTAL			100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
4. Ansel`s Pharmaceutical dosage forms and drug delivery system, 5. Kewal k. Jain. drug delivery systems
2- Essential References.
1. Ottenbrite. Polymeric drugs & drug delivery system 7. Aulton M.E., Pharmaceutics: the science of dosage form design..
3- Electronic Materials and Web Sites *etc*.

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

COMMUNITY PHARMACY II

Course Identification and General Information:							
1	**Course Title:**	**COMMUNITY PHARMACY II**					
2	**Course Code &Number:**	**PHPP 421**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	1	-	**3**
4	**Study level/ semester at which this course is offered:**	*(4th) Year – (SECOND) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I, II , III** • **pharmacology I, II,III** • **Community pharmacy I**					
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr/ Anes A. M. Thabit					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is a complement to (Community Pharmacy 1) course. Similar to the previous course, this course also deals with the role of the pharmacist in community pharmacy in selection of safe and effective (over-the-counter OTC) medication for patients. The course focuses on the rest of OTC medication that were not covered in the previous course. These include medications for respiratory disorders, topical preparations, nutritional supplements, baby products and others. The practical part in the virtual pharmacy provides students with the skill of determining drug properties (e.g. brand names, manufacturing and expiration dates, manufacturers and storage requirements) and selecting OTC medications based on an assessment of the patient's case and evaluating the benefits and risks of the drug.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
16. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	A2	**a1.** Explain the impact of good behavior of pharmacists on their communication and relationship to patients and healthcare professionals.
2	A5	**a2.** Identify the actions of OTC medications on patients and abuse/misuse of different types of those and other medications.
3	A10	**a3.** Describe the pharmacist role in community pharmacists to dispense and recommend safe and effective OTC medications to patients.
4	B5	**b1.** Plan a modern system to effectively administer the "community pharmacy"
5	B7	**b2.** Formulate and evaluate a plan of patient need and rational use of OTC medications to improve patient safety and efficacy
6	C4	**c1.** Advise the patient to optimize medicine use.
7	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
8	D2	**d2.** Demonstrate the skills of time management and self-learning.
9	D3	**d3.** Participate efficiently with his colleagues in a team work.
10	D4	**d4.** Take responsibility for adaption to change needs in pharmacy practice
11	D5	**d5.** Use essential references of evidence-based practice to achieve maximum safety and efficacy of medicines.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2	**Lecture**	**Written exams**
a3	**Virtual lab. Practice**	**Lab. term works, final practical exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**lab. Practice**	**Lab. term works, final practical exam**
b2	**Lecture, feed-back learning**	**Written exams , quizzes, assignments**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**lab. Practice**	**Lab. term works, final practical exam**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3, d5	**lab. Practice**	**Lab. term works, final practical exam**
d4	**Feed-back learning**	**Quizzes**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**OTC products for alimentary system**	a1, a2, b2	○ Diarrhea ○ Constipation ○ Hemorrhoids	3	6
2	**OTC products for respiratory system**	a1, a2, b2	○ Sore throat ○ Cold, flu, rhinitis, sinusitis ○ Dry and Cough preparations	3	6
	MID-TERM EXAM			1	2
3	**Topical OTC products**	a1, a2, b2	○ Nasal drops ○ Eye drops ○ Ear drops ○ Dermatological OTC	4	8
4	**Nutrients OTC products**	a1, a2, b2	○ Vitamins : alone and in combination ○ Minerals alone and in combination ○ Vitamins + minerals combinations	2	4
5	**Baby care products**	a1, a2, b2	○ Baby Diapers ○ Milk-bottles ○ Baby milk ○ Baby nutrients	1	2

6	**Emergency-Contraceptives**	a1, a2, b2	○ Types ○ Components ○ Use and precautions	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect: The practical sections are carried out in the " Virtual pharmacy Lab"

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1	**OTC for alimentary system:; diarrhea, constipation, hemorrhoids**	**2**	**4**	b1, c1, d1, d2, d3, d5
2	**OTC for respiratory system**	**3**	**6**	b1, c1, d1, d2, d3, d5
3	**Topical OTC**	**3**	**6**	b1, c1, d1, d2, d3, d5
4	**Nutrient OTC**	**1**	**2**	b1, c1, d1, d2, d3, d5
5	**baby care OTC products**	**1**	**2**	b1, c1, d1, d2, d3, d5
6	**OTC Emergency contraceptive**	**1**	**2**	b1, c1, d1, d2, d3, d5
PRACTICAL EXAM		**1**	**2**	b1, c1, d1, d2, d3, d5
Total		**12**	**24**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to search using Medscape on risj and benefit of of a type OTC medication for one specific case	b2	8	

Schedule of Assessment Tasks for Students During the Semester						
Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b2, d4
		Assignments	7, 12	5	5	b2
2	Mid-semester exam (written exam)		7	10	10	a1, b2
3	Final exam (written exam)		16	50	50	a1, a2, b2
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, c1, d1, d2, d3, d5
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, c1, d1, d2, d3, d5
Total				30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

1. Lillian M Azzopardi. Lecture notes on pharmacy practice. 2. A Langley, Dawn Belcher. Applied pharmaceutical skills. 3. Community pharmacy (Symptoms, Diagnosis and Treatment) 5th Edition - May 27, 2020
2- Essential References.
1. Agarwal. Dispensing and community pharmacy 2.Jain. A text book of professional pharmacy 3. Lillian M Azzopardi. Lecture notes on pharmacy practice, 2010, Pharmaceutical press.
3- Electronic Materials and Web Sites *etc*.
1. https://www.slideshare.net/iamkarthika/community-pharmacy-78949878 2. https://www.slideshare.net/sonushanno/community-pharmacy-64829089

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL INSTRUMENTAL ANALYSIS II

I. Course Identification and General Information:								
1	**Course Title:**	**PHARMACEUTICAL INSTRUMENTAL ANALYSIS II**						
2	**Course Code &Number:**	**PHC 422**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (SECOND) semester*						
5	**Pre –requisite (if any):**	• **Pharmaceutical Analytical chemistry I & II**						
6	**Co –requisite (if any):**	**None**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr./ Galal Hamood Al-qadasi						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:

The course is complementary to (Phar. instrumental analysis I) and both deal with the study of principles, instrumentation and applications of advanced analytical techniques. The techniques studied in this course include gas liquid and capillary-column gas chromatography, gel filtration chromatography, electrochromatography, Nuclear magnetic resonance and coupled-techniques such as HPLC-MS, HPLC-CD and GC/MS

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

Alignment CILOs to PILOs

No.	PILOs	CILOs
1	A3	**a1**. Explain the physicochemical properties of substances that can be utilized for their qualitative and quantitative analysis

2	A4	**a2**. Describe the principles of gas liquid and capillary-column gas chromatography, gel filtration chromatography, electrochromatography, Nuclear magnetic resonance and coupled-techniques such as HPLC-MS, HPLC-CD and GC/MS techniques.
3	A10	**a3.** Describe the role of pharmacist to perform accurate and precise quantitative and qualitative analysis.
4	B1	**b1.** Interpret data obtained by gas liquid and capillary-column gas chromatography, gel filtration chromatography, electrochromatography, Nuclear magnetic resonance and coupled-techniques such as HPLC-MS, HPLC-CD and GC/MS techniques.
5	B2	**b2.** Design a suitable gas liquid and capillary-column gas chromatography, gel filtration chromatography, electrochromatography, Nuclear magnetic resonance and coupled-techniques such as HPLC-MS, HPLC-CD and GC/MS technique based on the substance physicochemical properties.
6	B3	**b3.** Select appropriate standard operating procedure for gas liquid and capillary-column gas chromatography, gel filtration chromatography, electrochromatography, Nuclear magnetic resonance and coupled-techniques such as HPLC-MS, HPLC-CD and GC/MS techniques.
7	B9	**b4.** Calculate the content % and identify substances in a sample using atomic absorption/emission, infrared and mass spectrophotometric/spectroscopic as well as HPLC and UHPLC chromatographic techniques.
8	C1	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9	C2	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10	C7	**c3 .**Search efficiently for information using documented and electronic sources of information.
11		**c4.** Present and report his/her works correctly using appropriate writing rules and technologies media.
12	D1	**d1.** Communicate effectively and behave in discipline with colleagues.
13	D2	**d2.** Demonstrate the skills of time management and self-learning.
14	D3	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2, b3, b4	**Lecture-discussion laboratory practice, Feed-back learning**	**Written exams, quizzes, lab. term work, practical final exam**

(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2,	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**feed-back learning, Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**
d2	**Lab. practice, group-project, feed-back learning**	**Practical assessment (Lab. attendance, attitude, practical exam), Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Advanced chromatographic techniques (2)**	a1,a2, a3, b1, b2, b3, b4	**Theoretical principle and components , components interactions , types, instrumentation, factors affecting, output data, applications in quantitative/qualitative analysis, , data interpretation :** **:** o gas liquid chromatography o capillary-column gas chromatography o gel filtration chromatography o Electrochromatography	5	16

	NMR		**Theoretical principle and components , components interactions , types, instrumentation, factors affecting, output data, applications in quantitative/qualitative analysis, , data interpretation of** Nuclear magnetic resonance technique .	4	8
	mid-term exam			1	2
2	**Advanced Coupled techniques**	a1,a2, a3, b1, b2, b3, b4	**Theoretical principle and components , components interactions , types, instrumentation, factors affecting, output data, applications in quantitative/qualitative analysis, data interpretation :** o HPLC-MS: HPLC coupled with mass spectroscopy o GC/MS techniques. Gas chromatography coupled with mass spectroscopy o HPLC-CD : HPLC coupled with dichroism detector	4	8
FINAL – EXAM				1	2
TOTAL				16	32

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Course Intended Learning Outcomes CILOs
1	Simulation and data interpretation of ^{1}H and ^{13}C-NMR analysis of (dimethylsulphoxide) , (Naphthalene)	**2**	**4**	b1, b2, b3, b4, c1, c2, d1, d2, d3
2	Simulation and data interpretation of gas chromatography/MS analysis of different drugs e.g. morphine, heroin, valsartan	**2**	**4**	b1, b2, b3, b4, c1, c2, d1, d2, d3

3	Review	**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	b1, b2, b3, b4, c1, c2, d1, d2, d3
Total		**5**	**10**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Laboratory practice: students doing experiments in labs individually or in small groups

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to solve the problems provided by the teacher at the end of each unit.	b2, c5, c6, d4	4-13	
2	**Group** : each group of students will be assigned to provide a video of simulation of one of the analytical technique studied. The students of each group must explain the simulation for other students.	c5, c6, d1, d2, d4	14	

Schedule of Assessment Tasks for Students During the Semester

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Theoretical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3, b4, b5, b6, b7
		Assignments	7, 12	5	5	c3, c4, d1, d2, d3
2	Mid-semester exam of theoretical part (written exam		7	10	10	a1, a2, a3, b1, b2, b3, b4
3	Final exam of theoretical part (written exam)		16	50	50	a1, a2, a3, b1, b2, b3, b4
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	b1, b2, b3, b4, c1, c2, d1, d2,d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b1, b2, b3, b4, c1, c2, d1, d2,d3
	Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
2. David Harvey, modern analytical chemistry, McGraw-Hill 3. British pharmacopeia 2013
2- Essential References.
5. Hadkar. Instrumental methods in pharmaceutical analysis 6. Purcell. Pharmaceutical analysis
3- Electronic Materials and Web Sites *etc*.
Analytical Chemistry - ACS Publications Holdings: Analytical chemistry [electronic resource]. :: Library Catalog (msu.edu)

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

MEDICINAL CHEMSITRY IV

Course Identification and General Information:								
1	**Course Title:**	**MEDICINAL CHEMSITRY IV**						
2	**Course Code &Number:**	**PHC 423**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		3	-	-	1	-	**4**	
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (second) semester*						
5	**Pre –requisite (if any):**	• **Medicinal chemistry I, II, III**						
6	**Co –requisite (if any):**	• **Pharmacology IV**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr/ Galal Hamood Al-qadasi						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
This course is the last among (Medicinal chemistry) courses which are designed to provide knowledge and skills in chemistry of medicinal agents (drugs). It deals with the physicochemical properties, chemical synthesis, structure activity relationship (SAR), pharmacophore molecules and metabolism drugs affecting CNS and chemotherapeutics that are used for infections and cancer.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
5. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A3**	**a1.** Explain the correlation between the chemical and therapeutic properties of drugs to their molecular structure.
2	**A4**	**a2.** Explain the principles of synthesis, purification and metabolic reactions of drugs affecting CNS and chemotherapeutic drugs.
3	**A10**	**a3.** Describe the role of pharmacist in chemical synthesis of drugs.
4	**B1**	**b1.** Interpret the rules of structure-activity relationship to construct pharmacophore of drugs affecting CNS and chemotherapeutic drugs.

5		**b2.** Express molecular structure, synthesis and reactions of drugs with hand-drawing
6	**B2**	**b3.** Classify, chemically, drugs affecting CNS and chemotherapeutic drugs.
7		**b4 .** Compare between chemically related drugs based on their chemical structure
8	**B3**	**b5.** Design newer analgesicss and drugs used for drugs affecting CNS and chemotherapeutic drugs.
9	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
10	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
11	**C7**	**c3 .**Search efficiently for information using documented and electronic sources of information.
12		**c4** Present and report his/her works correctly using appropriate writing rules and technologies media.
13	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
14	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
15	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture-discussion , feed-back learning**	**Written exams , quizzes**
b2, b3, b4	**Lecture-discussion**	**Written exams**
b5	**Group-project**	**Assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

c1, c2	**laboratory practice**	**Lab. term works, final practical exam**
c3, c4	**Group-project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice, group-project**	**Lab. term works, assignment**
d2	**laboratory practice**	**Lab. term works, final practical exam**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**CNS drugs**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • General anaesthetics • Sedatives, hypnotics and anticonvulsants. • Antiepileptics • Antipsychotics and antidepressants • Others note : narcotic analgesics was discussed in the previous semester in " Pharmacology II" course	4	12
2	**Chemotherapeutic drugs for bacterial infections** (Antibacterials)	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** **Antibacterials** • antibiotics : (β-lactams: penicillins, cephalosporins, penems, others), macrolides, aminoglycosides, tetracyclines, chloramphenicols, lincosamides, others • Synthetic Antibacterials : sulphonamides, fluroquinolones, nitrothiazoles (e.g. metronidazole) • Antituberculars and antileprotics • Antiseptcs and disinfectants	3	9
mid-term exam				1	2

3	**Chemotherapeutic drugs for fungi and viruses infections** (Antifungals& antivirals)	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** **Antifungals (antimycotics)** • Polyene antibiotics : nystatin, amphotericin B, griseofulvin • antimetabolites : flucytosine azoles : clotrimazole, miconazoles, etc **Antivirals** • anti-herpes simplex • anti-influenza • anti-AIDS • immunomodulators e.g. interferone	2	6
4	**Chemotherapeutic drugs for parasitic infections**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** **Antiprotozoals** • Antamoebics and antigiardials • Anti-leishmanials and anti-toxoplasmosis • Antimalarials **Anthelmintics** • For common worms infection • For tape worm : trematodes (taenia, H. nana) infections • For schistosoma (Bilharzia)infections • For filarisis	1	3
5	**Chemotherapeutic drugs for cancer (Anticancers ; antineoplastic)**	a1, a2,a3 , b1, b2, b3, b4	**Physicochemical properties, synthesis, chemical & common names, structure-activity relationship, metabolism of** • Antimetabolites : methotrexate, 5-flurouracil. 6-mercaptopurine • Alkylating agents: nitrogen mustards, alkyl sulphonates, nitrosurea • Natural products: antibiotics, plant alkaloids, enzymes, interferons • Hormones and hormones anatgonists • Radioactive isotopes • Miscellaneous: cisplatin, mitotane , etc	3	9
Course Review		a1, a2,a3 , b1, b2, b3, b4, b9,d2	Review of the course topics by discussion session.	1	3

FINAL – EXAM	1	3
TOTAL	16	47
Number of Weeks /and Units Per Semester	16 weeks	5 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	AlignedCourse Intended Learning Outcomes CILOs
1	Pharmacopeial physicochemical properties , identification of: sedatives : diazepam	**1**	**2**	c1, c2, d1, d2, d3
2	Pharmacopeial physicochemical properties , identification: antiepileptics : carbamazepine	**1**	**2**	c1, c2, d1, d2, d3
3	Pharmacopeial physicochemical properties , identification of : antibiotic antibacterial : amoxicillin	**1**	**2**	c1, c2, d1, d2, d3
4	Pharmacopeial physicochemical properties , identification of : synthetic antibacterial : ciprofloxacin	**1**	**2**	c1, c2, d1, d2, d3
5	pharmacopeial physicochemical properties , identification of : antifungal : miconazole	**1**	**2**	c1, c2, d1, d2, d3
6	pharmacopeial physicochemical properties , identification of : antiviral : zidovudine	**1**	**2**	c1, c2, d1, d2, d3
7	pharmacopeial physicochemical properties , identification of : antiprotozoal antameobic: metronidazole	**1**	**2**	c1, c2, d1, d2, d3
8	pharmacopeial physicochemical properties , identification of : antiprotozoal antimalarial : chloroquine	**1**	**2**	c1, c2, d1, d2, d3
9	Synthesis of drugs	**1**	**2**	c1, c2, d1, d2, d3
10	Purification of drugs.	**2**	**2**	c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24 equivalent to 12 credit hours**	
Number of Weeks			**12**	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group** : each group of students will be assigned to hypothetically design newer drugs form a studied patent drug using SAR principles	b5, c3, c4, d1, d3	8	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1
		Assignments	7, 12	5	5	b5, c3, c4, d1, d3
2	Mid-semester exam (written exam)		7	10	10	a1, a2,a3 , b1, b2, b3, b4
3	Final exam (written exam)		16	50	50	a1, a2,a3 , b1, b2, b3, b4
TOTAL				70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, d2
		Total		30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
4. Gareth Thomas, Medicinal chemistry: an introduction , John Wiley & Sons Ltd, 5. Siddique. A textbook of medicinal chemistry
2- Essential References.
6. AshutochKar. Medicinal chemistry, New age international publisher 7. Rajie. Pharmaceutical chemistry 8. Wermuth. The practice of medicinal chemistry
3- Electronic Materials and Web Sites *etc*.
e-Resources - Medicinal Chemistry - LibGuides at United States International University Journal of Medicinal Chemistry - ACS Publications

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

CLINICAL PHARMACY I

Course Identification and General Information:							
1	**Course Title:**	**CLINICAL PHARMACY I**					
2	**Course Code &Number:**	**PHPP 424**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	-	1	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(Fourth) Year – (2nd) semester*					
5	**Pre –requisite (if any):**	• **Pharmacology I , II, III**					
6	**Co –requisite (if any):**	**None**					
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Shawki Hussien Al-awdi					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the student with essential knowledge and skills necessary to provide pharmaceutical clinical patient-oriented services to patients, in general, and in particular to specific populations of patients including pregnant , pediatric , lactating and geriatric patients. The course is preceded by courses necessary to help the student to evaluate patient case and select safe and effective drugs for them. These course are (pharmacology I, II and III) and (Biopharmaceutics and pharmacokinetics I) which concern with pharmacodynamic and pharmacokinetics of drugs, respectively.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A2**	**a1**. Explain the impact of good behavior and communication of al clinical pharmacists on their relationship with patients and other healthcare professionals
2	**A5**	**a2**. Identify the therapeutic uses of medicines, their adverse effects and non-pharmacotherapy measures to aid cure of diseases.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3	A10	**a3.** Describe the role of clinical pharmacists in rational medications use and designing therapeutic regimens for patients
4	B1	**b1.** Interpret clinical features and other disease data to properly recommend safe and effective medications for patients
5	B7	**b2.** Formulate and evaluate patient care plan about ration medication use to improve patient safety and drug efficacy
6	C4	**c1.** Advise patient and healthcare professionals to optimize medicinal uses.
7	C7	**c2 .** Search efficiently for information using evidence-based sources.
8		**c3.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9	D2	**d1.** Demonstrate the skills of time management, decision -making and self-learning.
10	D3	**d2.** Participate effectively with his/her colleagues in a team work
11	D4	**d3.** Take responsibility for adaption to change needs in clinical pharmacy practice
12	D5	**d4.** Retrieve essential references of evidence-based practice to achieve maximum clinical effectiveness.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2	**Lecture, feed-back learning, seminar**	**Written exams , quizzes, seminar assessment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c3	**Seminar**	**seminar assessment**
c2	**Seminar**	**seminar assessment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

d1, d2, d3, d4	**Seminar**	**seminar assessment**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to clinical pharmacy**	a1, a2, a3, b1, b2	• Definition • Patients-oriented services: clinical, hospital, community pharmacy; inter-relations and differences • Pharmacy from dispensing service to caregiving • Duties of clinical pharmacist • Clinical pharmacists as drug information center: source of information, types of drug information demanded (indications, contraindications, precautions, drug interactions, etc.) • basic requirements (knowledge and skills) of clinical pharmacist	1	2
2	**Clinical pharmacist as a member of the health care team**	a1, a2, a3, b1, b2	○ sharing in morning rotation and discussion , cooperation with other members ○ patient`s medical record (PMR): components, examples ○ Skills of communication with patients	1	2
3	**Clinical skills of diagnosis and data interpretation**	a1, a4, b1, b2, b3, b5, d4	• Clinical features • Physical (clinical) examinations: methods and interpretation • Vital signs evaluation and interpretation • Clinical lab. Data interpretation: blood analysis (CBC, serology, biochemistry, tumor markers), stool analysis, urine analysis. • Clinical instrumental diagnosis: techniques and data interpretation: Radiography, ultrasonography,	**3**	6

			Computed Tomography Scan (CT scan), Magnetic Resonance Imaging		
4	**Seminar 1**	c1, c2 c3, d1, d2, d3, d4	Interpretation of clinical features, lab. diagnosis and instrumental diagnosis of clinical cases provided by the teacher at the end of previous lecture	**1**	2
Mid-term exam				1	2
4	**Non-pharmacotherapy measures**	a1, a2, a3, a4, c1	• Definition, types • Physiotherapy : role, advantages • Psychotherapy : role, advantages • Life-style changes • Diet control • Other methods	1	2
5	**Benefit: Risk ratio**	a1, a2, a3, a4, c1	• Benefits of medications • Risks of medications • Methods for Assessment benefit: risk ratio **with clinical case`s examples**	1	2
6	**Seminar 2**	c1, c2 c3, d1, d2, d3, d4	Seminar on assessment of benefit: risk ratio for clinical cases provided by the teacher at the end of previous lecture	1	2
7	**Pharmacotherapy for specialized population (1)**	a1, a2, a3, b1, b2	**Pharmacotherapy accompanied with clinical cases for:** 1. **Pregnant women**: Harmful effects on the fetus, Recognition of teratogenic drugs, pharmacokinetics in pregnancy, drugs prescribed in pregnancy (Pregnancy A, B, C, X categories), drugs prescribed for [pain, GIT disorders, diabetes, gestational diabetes, asthma, cough, allergy, urinary tract infection, hypertension, thyroid abnormalities, thromboembolism, inflectional vaginosis, Epilepsy, mental health disorders] 2. **lactating women:** factors influence the amount of drug an infant will receive through breast-feeding, drugs avoided during lactation, treatment of mastitis,	**2**	4

			postpartum depression, cessation of lactation)		
8	**Seminar 3**	c1, c2 c3, d1, d2, d3, d4	Seminar to solve clinical cases of pregnant and lactating women	**1**	2
9	**Pharmacotherapy for specialized population (2)**	a1, a2, a3, b1, b2	3. **Pediatrics:** classification of pediatrics (newborn, infant, child), differences of pharmacodynamics and pharmacokinetics and admiration sites of drugs in children, drug efficacy and toxicity, factors affecting pediatric therapy, drugs prescribed for [pain, fever, infections, GIT disorders]. 4. **Geriatrics:** relation of aging to diseases, common physiological changes in aging, alteration of pharmacokinetics and pharmacodynamics of drugs, drugs risks in elderly, drugs avoided in geriatric patients	**2**	4
10	**Seminar 4**	c1, c2 c3, d1, d2, d3, d4	Seminar to solve clinical cases of pregnant and lactating women	**1**	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Seminar : Each group of students will be assigned to solve a number of case studies prepared by the teacher

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Seminar

At the specified time due , group(s) of students will be assigned by the teacher to present a seminar about one topic. The seminar include power point presentation followed by discussion and questions from the teacher and other students

No	Topic	Aligned CILOs	Week Due
1	Interpretation of clinical data	c1, c2 c3, d1, d2, d3, d4	6
2	Benefit: risk ratio	c1, c2 c3, d1, d2, d3, d4	10
3	Seminar to solve clinical cases of pregnant and lactating women	c1, c2 c3, d1, d2, d3, d4	13
4	Seminar to solve clinical cases of pediatric and geriatric	c1, c2 c3, d1, d2, d3, d4	15

Schedule of Assessment Tasks for Students During the Semester

Assessment Method			Mark	Proportion to Total course Assessment %	Aligned CILOs
Term Works	Quizzes		5	5	b1
	Seminar assessment	Presentation	15	15	c1, c2 c3, d1, d2, d3, d4
		Seminar discussion			
Mid-semester exam (written exam)			20	20	
Final exam (written exam)			60	60	a1, a2, a3, b1, b2
Total			100	100	a1, a2, a3, b1, b2

Learning Resources:

1- Required Textbook(s) (ma3imum two).

1.Karen J. Tietze. Clinical skills for pharmacists : A Patient-Focused Approach, Elsevier Inc.
2.James M. Ritter , A text book of clinical pharmacology and therapeutics, HodderArn

2- Essential References.

1. Joseph T. Diprio, Encyclopaedia of clinical pharmacy, Marcel Dekker.
2. Widmann. Good clinical interpretation of laboratory tests

3- Electronic Materials and Web Sites *etc*.

https://www.slideshare.net/SohanPatel8/clinical-pharmacy-57774896
Clinical Pharmacy - an overview | ScienceDirect Topics

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

BIOPHARMACEUTICS & PHARMACOKINETICS II

Course Identification and General Information:								
1	**Course Title:**	**BIOPHARMACEUTICS & PHARMACOKINETICS II**						
2	**Course Code &Number:**	**PHT 425**						
3	**Credit hours:**	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-		**3**
4	**Study level/ semester at which this course is offered:**	*(FOURTH) Year – (2^{ND}) semester*						
5	**Pre –requisite (if any):**	**Biopharmaceutics & PHARMACOKINETICS I**						
6	**Co –requisite (if any):**	**NONE**						
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	Dr./ Abdelkarim Alzomer						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to (Biopharmaceutics and Pharmacokinetics I) course and both provide knowledge in drug pharmacokinetics and bioavailability. However, this course provides the student with the knowledge and skills required to use data, obtained from pharmacokinetic/biopharmaceutical studies, for mathematical calculations of drug concentrations in body and the rate and extent of drug absorption, distribution, elimination and bioavailability. In addition, this course has a practical part in order to provide students with skills required to carry out pharmacokinetic and biopharmaceutical experiments

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A4**	**a1.** Explain the procedures employed during pharmacokinetic/biopharmaceutical studies.
2	**A10**	**a2.** Describe the role of pharmacist in determination of pharmacokinetic/biopharmaceutical parameters.
3	**A12**	**a3.**Explain the basic mathematical principles of pharmacokinetic/biopharmaceutical calculations

4		**a4.** Identify the order of changing drug amount in the body and the models of drug distribution
5	**B1**	**b1.** Interpret the numerical and graphical data relevant to drug pharmacokinetic/biopharmaceutical
6	**B9**	**b2 .** Apply calculations to graphically & mathematical solve pharmacokinetic/biopharmaceutical problems.
7	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
8	**C2**	**c2.** Operate the instruments successfully in the laboratory
9	**C3**	**c3 .** Carry out pharmacokinetic/biopharmaceutical experiment
10	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11	**D2**	**d2.** Demonstrate the skills of time management , self-learning and problems solving
12	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1 , a2, a3, a4	**Active lecture**	**Written exam s**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2	**Active-lecture, problem-based learning, feed-back learning**	**Written exams , assignments , quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**Lab. Practice**	**Lab. accomplishments and attitude**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Lab. Practice**	**Lab. attitude**
d2	**Lab. practice, feed-back learning**	**Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:

a. Theoretical aspects

Each topic, when applicable, is supported by Solved and homework problems.

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction and Mathematical fundamentals**	a1, a2, a3, a4, b1, b2	• Definition and Objectives of pharmacokinetic and biopharmaceutical studies • Common logarithm (log) , natural logarithm (ln), base exponent (e-x) • XY data demonstration: tabular form, graphical form (semilog paper, rectangular coordinate paper), Straight line : general equation, determination of slope and rate constant graphically on, semilog paper, rectangular coordinate paper.	2	4
2	**Clinical aspects of Pharmacokinetic and biopharmaceutical studies**	a1, a2, a3, a4, b1, b2	• **Subjects :** Volunteers specifications: number, gender, weight, height, body surface area, race • **Drug Dosing :** drug administration, water intake, fed/fasting states. • **Post-dosing:** 1- Sampling: blood, urine , others (advantages, disadvantage), interval of sampling, considerations of sampling. 2- Analysis of sample	1	2
3	**Determination of cumulative drug eliminated in urine**	a1, a2, a3, a4, b1, b2	**Analysis of urine samples: urine data:** time of sampling virus Amount excreted at a time (D_t), cumulative amount of drug excreted at a time (Du), excretion rate (D_t /Δt), total cumulative amount of drug excreted 0- ∞ (Du∞), Graphical methods	2	4

4	**Order of kinetics and Pharmacokinetics Models**	a1, a2, a3, a4, b1, b2	**The order of kinetic :** definition of kinetic order, significance and types (first order, zero order), mathematical and graphical determination. **Pharmacokinetic models of distribution** Definition of model, significance, types (one-compartment, two compartments, three compartment) and principle of each model, graphical and mathematical determination.	3	6
Mid-term exam				1	2
5	**Pharmacokinetics of drugs given by intravenous (bolus) administration**	a1, a2, a3, a4, b1, b2	**I.V. Bolus** **From Blood data (Cp vs time)** 1- Determine model and order of kinetic 2- General equations of Cp and Cp^0 for one-compartment model, two compartment model and three compartment model 3- Determine other parameters: elimination rate constant , half-life ($t_{1/2}$), clearance (Cl) distribution rate constant, AUC^{∞} **, Distribution:** volume of distribution (VD)	2	4
6	**Pharmacokinetics of drugs given by intravenous infusion**	a1, a2, a3, a4, b1, b2	**I.V. multiple bolus dosing :** One-compartment assuming first order elimination , general equation of Cp, Determine Cp^0 , determine distribution and elimination parameters, determine specific data (Cmax, Cmin, Cmax∞, Cmin∞, CP∞, Css) **I.V. infusion: one-compartment model at constant infusion rate:** General equation of Cp, specific data (rate of infusion(R), steady state concentration Css, maintenance dose Dm, loading dose D_L) , determine distribution and elimination parameters.	2	4

			I.V. infusion: one-compartment model at changing infusion rate: General equation of Cp, specific data (rate of infusion(R), steady state concentration Css, maintenance dose Dm, loading dose D_L), determine distribution and elimination parameters. **I .V. bolus followed by IV. infusion:** General equation of Cp, specific data (rate of infusion(R), steady state concentration Css, maintenance dose Dm, loading dose D_L), determine distribution and elimination parameters.:		
7	**Pharmacokinetics of single dose of given by extravascular (oral, I.M., rectal , etc.)**	a1, a2, a3, a4, b1, b2	**Blood data** • Cp versus time curve • General equation of Cp • **Absorption parameters:** Ka, F, Cmax, Tmax Dab, Dab∞, *f*ab (fraction absorbed) , *f*ua (fraction unabsorbed), • **Elimination parameters:** k, half-life , Cl **Urine data** • One-compartment : first-order elimination, zero order elimination, ARE versus time	2	4
8	**Pharmacokinetics of multiple dosing of drug given by extravascular (oral, I.M., rectal , etc.)**	a1, a2, a3, a4, b1, b2	• One-compartment assuming first order elimination: (Cmax, Cmin, Cmax∞, Cmin∞, CP∞, CSS,)	1	2

9	**Specific Pharmacokinetics calculations**	a1, a2, a3, a4, b1, b2	**Calculations of :** • Loading and maintenance doses • Doses and dosage interval at change from I.V. infusion to oral administration. • Changes in plasma concentration with change in route of administration. • Dose in the elderly	1	2
10	**Calculation of bioavailability and bioequivalence**		• Absolute bioavailability • Relative bioavailability • Determination of Bioequivalence • IVIV correlation calculations	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	10 Units

b - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	AlignedCourse Intended Learning Outcomes CILOs
1	In vitro analysis of drugs from (blood sample mixed with drug)	**1**	**1**	c1, c2, c3, d1, 2, d3
2	In vitro analysis of drugs from (blood sample mixed with drug)	**1**	**2**	c1, c2, c3, d1, 2, d3
3	In vivo pharmacokinetic analysis (absorption, distribution, elimination) aspirin in blood of rats	**3**	**6**	c1, c2, c3, d1, 2, d3
4	In vivo pharmacokinetic analysis (absorption, distribution, elimination) paracetamol in blood of rats	**3**	**6**	c1, c2, c3, d1, 2, d3
5	Ex vivo analysis of ciprofloxacin using rat gut sac model	**2**	**4**	c1, c2, c3, d1, 2, d3

PRACTICAL EXAM	**2**	**4**	c1, c2, c3, d1, 2, d3
Total	**12**	**24 equivalent to 12 credit hours**	
Number of Weeks		**12**	

Teaching strategies of the course:
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homeworks, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

I. Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark 10
1	**Individual**: A number of problems related to the topics will be answered as homework exercises	b2, c3, d2	2-12	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b2
		Assignments	7, 12	5	5	b2, c3, d2
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, a4, b1, b2
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b1, b2
TOTAL				70	70 %	70

Practical part assessment

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, 2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, 2, d3
			Total	30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
9. Shargel. Biopharmaceutics and pharmacokinetics, 2012, McGraw Hill Inc 10. Malcolm Rowland. Clinical pharmacokinetics: concepts an applications, 1996, Lippincott's Williams & Wilkins
2- Essential References.
1. Wagner. Pharmacokinetics for the pharmaceutical scientist 2. Venkaeswarlu. Biopharmaceutics and pharmacokinetics
3- Electronic Materials and Web Sites *etc*.

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOLOGY IV

Course Identification and General Information:							
1	**Course Title:**	**PHARMACOLOGY III**					
2	**Course Code &Number:**	**PHL 426**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		3	-	-	-	-	**3**
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (second) semester*					
5	**Pre –requisite (if any):**	• **Pharmacology I , II and III**					
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10		Dr./ Shawki Hussien Al-Awdi					
11	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course also deals with the study of pharmacodynamic and pharmacokinetics of drugs affecting central nervous system (CNS) and chemotherapeutic drugs for infections and cancer.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1	**A5**	**a1.** Identify the actions of medicines in human body, their therapeutic uses, adverse effects drug interactions and interactions
2	**A8**	**a2.** Describe the pharmacokinetics of drugs.
3	**A10**	**a3.** Describe the role of pharmacist in providing correct information on rational use of medications.
4	**B2**	**b1 .**Classify drugs used for disorders of drugs affecting autonomic nervous system, skeletal muscles and drugs used for eye and alimentary system disorders.

5		**b2.** Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency)and drug limitations.
6	**C2**	**c1.** Carry out pharmacological experiments.
7	**C7**	**c2 .** Advise the patient and healthcare professional to optimize medicine use
8	**D1**	**d1.** Communicate efficiently and behave in disciplines with collagurs
9	**D2**	**d2.** Demonstrate time management and decision making skills.
19	**D3**	**d3.** Participate effectively in a team work

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exam , quizzes, assignments**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Lab. Practice**	**Lab. term works, final practical exam**
c2	**feed-back learning**	**assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Lab. Practice**	**Lab. term works, final practical exam**
d2	**Feed-back learning**	**Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
	A – Theoretical Aspect:				
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**CNS drugs**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • General anaesthetics • Sedatives, hypnotics and anticonvulsants. • Antiepileptics • Antipsychotics and antidepressants • Others note : narcotic analgesics was discussed in the previous semester in " Pharmacology II" course	4	8
2	**Chemotherapeutic drugsbacterial infections** (Antibacterials)	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** **Antibacterials** • antibiotics : (β-lactams: penicillins, cephalosporins, penems, others), macrolides, aminoglycosides, tetracyclines, chloramphenicols, lincosamides, others • Synthetic Antibacterials : sulphonamides, fluroquinolones, nitrothiazoles (e.g. metronidazole) • Antituberculars and antileprotics • Antiseptics and disinfectants	3	6
			mid-term exam	1	2
3	**Chemotherapeutic drugs for fungi and viruses infections** (Antifungals& antivirals)	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** **Antifungals (antimycotics)**	2	4

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

4			• Polyene antibiotics : nystatin, amphotericin B, griseofulvin • antimetabolites : flucytosine azoles : clotrimazole, miconazoles, etc **Antivirals** • anti-herpes simplex • anti-influenza • anti-AIDS • immunomodulators e.g. interferone		
	Chemotherapeutic drugs for parasitic infections	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** **Antiprotozoals** • Antamoebics and antigiardials • Anti-leishmanials and anti-toxoplasmosis • Antimalarials **Anthelmintics** • For common worms infection • For tape worm : trematodes (taenia, H. nana) infections • For schistosoma (Bilharzia)infections • For filarisis	2	4
5	**Chemotherapeutic drugs for cancer (Anticancers ; antineoplastic)**	a1, a2, a3, b1	**Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :** • Antimetabolites : methotrexate, 5-flurouracil. 6-mercaptopurine • Alkylating agents: nitrogen mustards, alkyl sulphonates, nitrosurea • Natural products: antibiotics, plant alkaloids, enzymes, interferons • Hormones and hormones anatgonists • Radioactive isotopes • Miscellaneous: cisplatin, mitotane , etc	2	6
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

B - Practical Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Aligned Couse Intended Learning Outcomes CILOs**
1	Introduction to pharmacology Lab.: safety requirements, list of experiments, handling animals, how to report, etc.	**1**	**2**	c1, d1, d2, d3
2	Testing of drug effects on rabbit eyes: miotics, mydriatics, normal saline	**2**	**4**	c1, d1, d2, d3
3	Testing of skin irritation of dermatological products on on animals: (ciprofloxacin cream), tetracycline ointments, ketoprofen gel	**2**	**4**	c1, d1, d2, d3
4	Testing of eye irritancy of solutions : eye washes	**1**	**2**	c1, d1, d2, d3
5	testing of LD_{50} of drugs : warfarin, digoxin	**2**	**4**	c1, d1, d2, d3
6	Pyrogen testing of parenteral injections: vitamin B complex ampoules, sterile water for injection	**2**	**4**	c1, d1, d2, d3
7	Review	**1**	**2**	c1, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve a list of problems related to advising healthcare of medicines use based comparison of drug benefits and risks for specific patients e.g. CVS patients, renal failure patients, etc.	b2, c2, d2	6-12	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b2
		Assignments	7, 12	5	5	b2, c2, d2
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	c1, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, d1, d2, d3
Total				30	30 %	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Learning Resources:
1- Required Textbook(s) (maximum two).
Katzung –Basic and Clinical Pharmacology, McGraw-Hill Rang, Dale and Ritter. Pharmacology, Churchill Livingstone.
2- Essential References.
Richard A. Harvey. Lippincott's pharmacology, Lippincott William and Wilkins. Udaykumar. Text book of medical pharmacology
3- Electronic Materials and Web Sites *etc*.
The Journal of Clinical Pharmacology - Wiley Online Library Electronic Resources - All Things Pharmacology - KCU Libraries at Kansas City University

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL BIOTECHNOLOGY

Course Identification and General Information:							
1	**Course Title:**	**PHARMACEUTICAL BIOTECHNOLOGY**					
2	**Course Code &Number:**	**PHT 427**					
3	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4	**Study level/ semester at which this course is offered:**	*(4TH) Year – (2ND) semester*					
5	**Pre –requisite (if any):**	• **Pharmaceutics I, II , III** • **General biology** • **General microbiology**					
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	**Pharmacy**					
8	**Language of teaching the course:**	**ENGLISH**					
9	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr./ Galal Hamood Al-Qadasi					
11	**Date of Approval**	**8/2019**					

Course Description:
The course deals with the study of applications of biotechnological methods such as recombinant DNA , polymerase chain reaction (PCR) and peptide technologies in pharmacy in particular the use of these techniques in analysis of genes and also the recent production of certain medicines such as monoclonal antibodies and others and their therapeutic uses.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A1	**a1.** Explain the physicochemical properties of biotechnology drug products.
2.	A3	**a2.** Explain the approaches and analytical techniques applied in biotechnology relevant to gene analysis and production of biotechnology-drug products.

3.		**a3**. Identify the actions, therapeutic uses and adverse effects of biotechnology-drug products.
4.	**A4**	**a4.** Describe the role of pharmacist in developing and employing biotechnology techniques in pharmacy practice.
5.	**B2**	**b1 .** Classify biotechnology drugs.
6.	**B4**	**b2 .** Design a suitable method to extract , isolate and purify DNA and genes from human samples
7.	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate the ability of time management and self-learning.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a3, a4	**Lecture**	**Written exams**
a2	**Lecture, feed-back learning**	**Written exams , quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Lecture, feed-back learning**	**Written exams, assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 , c2	**feed-back learning**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to Biotechnology**	a1, a2, a3, a4, b1, b2	• definition & purposes & brief history. • Relation of biotechnology to advancement in intracellular chemistry, molecular biology, rDNA technology, pharmacogenomics and immunopharmacology. • living organisms used in biotechnology	2	4
2	**Techniques of Biotechnology**	a1, a2, a3, a4, b1, b2	• Classification of biotechnology techniques • Principles, equipments, pharmaceutical applications, comparison , advantages and disadvantages of : o recombinant DNA (rDNA). o Monoclonal antibodies o Polymerase chain Reaction (PCR) o Nucleotide blockade/antisense o Peptide technology	4	8
3	**Analysis of genes**	a1, a2, a3, a4, b1, b2	• DNA isolation and purification • Genetic analysis	1	2
			• MID-TERM EXAM • Post-exam disussion	1	2
4	**biotechnology produced- Drugs**	a1, a2, a3, a4, b1, b2	• Classification of biotechnology drugs • advantage and disadvantages of biotechnology drug products as compared to classical medications • Proteins as the first biotechnology products of biotechnology • Physicochemical properties, Indication, mechanism of action, dose, route of administration, precautions, biotechnology by which is obtained for the following products, : o Anticoagulant drug: Lepirudin (Refludan) ® o Antisense drugs : Fomivirsen sodium (Vitravene), efavirenz (Sustiva)®	6	12

			○ Clotting factors : Systemic antihemophilic factors (Kogenate) ® ○ colony-stimulating factors: granulocyte colony–stimulating factor (Filgrastim)® ○ Erythropoietins : Epoetin alfa (Epogen, Procrit) ® ○ Fusion inhibitors: Enfuvirtide (Fuzeon) ® ○ Growth factor: becaplermin (Regranex) ® ○ Human growth hormone: ystemic growth hormone (Humatrope, ○ protropin) ® ○ Interferons: interferon beta-1b (betaseron), interferon beta-1a (Avonex) ® ○ Interleukins: Aldesleukin (Proleukin) ® ○ tissue plasminogen activators: recombinant Alteplase (Activase) ® ○ Vaccines: hepatitis B vaccine recombinant (Engerix-b) ®, haemophilus B conjugate vaccine (Hibtiter) ®		
Course Review		a1, a2, a3, a4, b1, b2	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a search-based report on one biotechnology method or one drug produced by biotechnology.	b2, c1, c2, d1	7	

VII. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	a2
		Assignments	7, 12	10	10	b2, c1, c2, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
TOTAL				100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

11. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA: Chapter: Biotechnolohy

2- Essential References.

12. Nagori. Foundation s in pharmaceutical biotechnology
13. R.S. pharmaceutical biotechnology

3- Electronic Materials and Web Sites *etc*.

European Journal of Pharmaceutics and Biopharmaceutics
European Journal of Pharmaceutics and Biopharmaceutics | ScienceDirect.com by Elsevier
Home Page: Journal of Pharmaceutical Sciences (jpharmsci.org)

Course Policies:

1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

Level V

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

CLINICAL PHARMACY II

I. Course Identification and General Information:							
1.	Course Title:	CLINICAL PHARMACY II					
2.	Course Code &Number:	PHPP 511					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	-	1	-	-	2
4.	Study level/ semester at which this course is offered:	*(5TH) Year – (first) semester*					
5.	Pre –requisite (if any):	• Pharmacology I , II, III and IV • Clinical pharmacy I					
6.	Co –requisite (if any):	None					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	Prepared by	Dr./ Shawki Hussien Al-awdi					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is complementary to (clinical pharmacy I) course and both are designed to provide the students with essential knowledge and skills necessary to select appropriate safe and effective medications for patient`s cases. The course concerns in particular with drug therapy monitoring and also with clinical management of patients having CVS, endocrinal disorders, respiratory, renal, infectious and oncologic disorders.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	PILOs	CILOs
1.	A2	**a1**. Explain the impact of good behavior and communication of al clinical pharmacists on their relationship with patients and other healthcare professionals
2.	A5	**a2**. Identify the therapeutic uses of medicines, their adverse effects and non-pharmacotherapy measures to aid cure of diseases.
3.	A10	**a3.** Describe the role of clinical pharmacists in rational medications use and designing therapeutic regimens for patients

4.	**B1**	**b1.** Interpret clinical features and other disease data to properly recommend safe and effective medications for patients
5.	**B7**	**b2.** Formulate and evaluate patient care plan about ration medication use to improve patient safety and drug efficacy
6.	**C4**	**c1.** Advise patient and healthcare professionals to optimize medicinal uses.
7.	**C7**	**c2 .** Search efficiently for information using evidence-based sources.
8.		**c3.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate the skills of time management, decision -making and self-learning.
10.	**D3**	**d2.** Participate effectively with his/her colleagues in a team work
11.	**D4**	**d3.** Take responsibility for adaption to change needs in clinical pharmacy practice
12.	**D5**	**d4.** Retrieve essential references of evidence-based practice to achieve maximum clinical effectiveness.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
b1, b2	**Lecture, feed-back learning, seminar**	**Written exams , quizzes, seminar assessment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1, c3	**Seminar**	**seminar assessment**
c2	**Seminar**	**seminar assessment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
d1, d2, d3, d4	**Seminar**	**seminar assessment**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**skills of Assessment of drug therapy(drug therapy monitoring DTM)**	a1, a2, a3, a4, c1	• Objectives • patients need DTM • Drugs require DTM • Steps and methods of DTM • Examples of solved case studies	1	2
2	**Clinical management and pharmacotherapy :** Definition, types, pathogenesis, diagnosis and differentiation, pharmacotherapy (types of drugs, drug selection and algorithm) , non-pharmacotherapy measures				
a.	**CVS disorders**	a1, a2, a3, a4, c1	• Hypertension • Angina & Myocardial infarction	2	4
b.	**Endocrinal disorders**	a1, a2, a3, a4, c1	• Diabetes mellitus • Thyroid disorders	2	4
c.	**Seminar**	c1, c2 c3, d1, d2, d3, d4	Seminar to discuss and solve clinical case studies.	1	
2.	mid-term exam			1	2
a.	**Respiratory disorders**	a1, a2, a3, a4, c1	• Bronchial asthma • Chronic Obstructive Pulmonary Disease (COPD)	2	6
b.	**Renal disorders**	a1, a2, a3, a4, c1	• Acute renal failure • Chronic kidney disease	2	6
c.	**Seminar**		Seminar to discuss and solve clinical case studies.	1	2
d.	**Infectious disorders**	a1, a2, a3, a4, c1	Antimicrobial regimen selection	1	2
	Oncologic disorders	a1, a2, a3, a4, c1	• Breast cancer	1	2
	Seminar	c1, c2 c3, d1, d2, d3, d4	Seminar to discuss and solve clinical case studies.	1	2

FINAL – EXAM	1	2
TOTAL	16	32

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.

Seminar : Each group of students will be assigned to solve a number of case studies prepared by the teacher.

Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing, using the results in practical manner &for promoting team work skills.

Seminar

At the specified time due , group(s) of students will be assigned by the teacher to present a seminar about one topic. The seminar include power point presentation followed by discussion and questions from the teacher and other students

No	Topic	Aligned CILOs	Week Due
1	CVS, endocrinal disorders	c1, c2 c3, d1, d2, d3, d4	6
2	Respiratory, renal disorders	c1, c2 c3, d1, d2, d3, d4	12
3	Infectious, oncologic disorders	c1, c2 c3, d1, d2, d3, d4	15

Schedule of Assessment Tasks for Students During the Semester

Assessment Method			Mark	Proportion to Total course Assessment %	**Aligned CILOs**
Term Works	Quizzes		5	5	b1
		Presentation	15	15	

	Seminar assessment	Seminar discussion			c1, c2 c3, d1, d2, d3, d4
Mid-semester exam (written exam)			20	20	
Final exam (written exam)			60	60	a1, a2, a3, b1, b2
Total			100	100	a1, a2, a3, b1, b2

Learning Resources:
1- Required Textbook(s) (ma3imum two).
1. Karen J. Tietze. Clinical skills for pharmacists : A Patient-Focused Approach, Elsevier Inc. 2. James M. Ritter , A text book of clinical pharmacology and therapeutics, HodderArn
2- Essential References.
1. Joseph T. Diprio, Encyclopaedia of clinical pharmacy, Marcel Dekker. 2. Widmann. Good clinical interpretation of laboratory tests
3- Electronic Materials and Web Sites *etc*.
www.en.*wikipedia.org/* https://www.slideshare.net/SohanPatel8/clinical-pharmacy-57774896

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Complementary and alternative Medicine

Course Identification and General Information:								
1	**Course Title:**	**APPLIED PHARMACOGNOSY**						
2	**Course Code &Number:**	**PHG 512**						
3	**Credit hours:**	C.H					TOTAL	
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	1	-	**3**	
4	**Study level/ semester at which this course is offered:**	*(5th) Year – (1st) semester*						
5	**Pre –requisite (if any):**	• **Pharmacognosy & phytochemistry I , II** • **Pharmaceutical instrumental analysis I & II**						
6	**Co –requisite (if any):**							
7	**Program (s) in which the course is offered:**	**Pharmacy**						
8	**Language of teaching the course:**	**ENGLISH**						
9	**Location of teaching the course:**	**IN THE UNIVERSITY**						
10	**Prepared by**	**Dr/Tunes Mohmmed Thabet**						
11	**Date of Approval**	**8/2019**						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course, in its first part, provide students with knowledge in the evidence-based applications of herbal medicines and other natural types as complementary and/or alternative methods for classical Medicine for treatment of human diseases. It helps the students to utilize their knowledge and skills attained from previous courses of (Pharmacognosy I, II and phytochemistry I, II) to achieve that purpose. The second part of the course deals with the techniques and approaches employed to screen active ingredients from plants and other natural sources and to evaluate the specifications of natural products.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A4	**a1.** Describe the methods employed to screen active ingredients from plants and other natural sources and to evaluate specifications of natural products.
2.	A5	**a2**. Identify the actions of products of complementary and alternative medicine on human and their misuse or abuse.
3.	A6	**a3**. Explain the basis of complementary and alternative medicine.

4.	**A10**	**a4.** Describe the pharmacists role to screen active ingredients from plants and other natural sources and to evaluate specifications of natural products.
5.	**B2**	**b1.** Classify the products and methods of complementary and alternative medicine.
6.	**B4**	**b2.** Select a suitable standard operation procedure to evaluate specifications of natural products.
7.	**B6**	**b3.** Design a suitable method to screen active ingredients from natural sources.
8.	**C1**	**c1.** Handle safely and efficiently the tools and chemicals used in the laboratory.
9.	**C2**	**c2.** Operate successfully the instruments used in the laboratory
10.	**C3**	**c3.** Screen active medicinal ingredients from plants and other natural sources
11.	**C7**	**c5 .**Search efficiently for information using documented and electronic sources of information.
12.		**c6.** Present and report his/her works correctly using appropriate writing rules and technologies media.
13.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
14.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
15.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.
16.	**D4**	**d4.** Take responsibility for adaption to change misleading and adulteration that may occur in complementary and alternative medicine.
17.	**D5**	**d5.** Retrieve the essential evidence-based references to obtain correct information relevant to complementary and alternative medicines.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	**Lecture**	**Written exams**
a2, a3, a4	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Lecture , Feed-back learning**	**Written exams , Quizzes**

b3	**Group-project**	**Assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**laboratory practice**	**Lab. term works, final practical exam.**
c5 , c6	**Group project**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2, d3	**Group project, laboratory practice**	**Assignments , Lab. term works, final practical exam.**
d4, d5	**Group project**	**Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to complementary and alternative medicines**	a2, a3, a4, b2	The complementary and alternative : definition and concept The need to complementary and alternative medicines Classification of methods of complementary and alternative medicine : medicinal-based , non-medicinal based , traditional medicine , evidence-based therapies.	1	2
2	**Non-herbal Evidence-based Complementary and alternative therapies**	a2, a3, a4, b2	Principles , applications , benefit/risks of different types of complementary and alternative medicine: 1- Physiotherapy techniques including Chinese acupuncture 2- Homeopathy and anthroposophy 3- Hydrotherapy 4- Other therapies : e.g. electrotherapy	2	4

3	**Herbal Evidence-based Complementary and alternative therapies :** Regulations, risks and specifications	a2, a3, a4, b2	• **Introduction:** Definitions: (herbal medicines, phytotherapy), global use • **Regulations and Reliable sources of information :** -International (WHO monographs), (US-FDA /Medscape), (European union regulations), (UK regulations), other international regulations. - Local (in Yemen) Regulatory • **Risks of herbal medications:** (1)Problems of unregulated herbal medications: substitutions, adulteration, adulteration with toxic substances or synthetic drugs (2) Potential adverse effects of herbal products (3) Risks of herbal medications on : pregnant and lactating women, pediatric, older patients a, cancer patients and other patients (4) Potential Herb-drug interactions • **Quality specifications :** o Pharmacopeial and other regulatory specifications o Licensing herbal medications o Licensed vs unregulated herbal medical products o Clinical-based evidences of herbal medications.	4	8
	Mid-term exam			1	2
3	**Herbal Evidence-based Complementary and alternative therapies :** Phytotherapy	a2, a3, a4, b2	• Aromatherapy • Flower remedy therapy • Phytotherapy • Evidence-based uses of these therapies for : o GIT disorders: peptic ulcer, constipation, diarrhea, vomiting, abdominal colic o CVS diseases: hypertension, CHF, angina o Respiratory diseases: Bronchial asthma o Diabetes mellitus o Renal disorders: Renal stones o Bacterial infections	4	8
4	**Phytochemical screening**	a1, a2, a3,	• definition and purposes • Techniques and approaches (from traditional-claim to experimental evidence) by schedule	4	

		a4, b2, a4	screening of specific types of medications including : o Antimicrobial o Wounds-healing drugs o Antioxidant and anticancers o Other drugs		8
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	4 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs
1.	Extraction, Phytochemical screening and antimicrobial activity of **Myrrh**	**3**	**6**	c1, c2, c3, d1, d2, d3
2.	Extraction, Phytochemical screening and antioxidant activity of **curcuma**	**3**	**6**	c1, c2, c3, d1, d2, d3
3.	Investigations of Pharmacopeial (European pharmacopeia) specifications of different types of **ginger** available in the market	**2**	**4**	c1, c2, c3, d1, d2, d3
4.	Investigations of Pharmacopeial (European pharmacopeia) specifications of different types of **clove** available in the market	**2**	**4**	c1, c2, c3, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	c1, c2, c3, d1, d2, d3
Total		**11**	**22**	

Teaching strategies of the course:

Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on

sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Laboratory practice: students doing experiments in labs individually or in small groups.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills.

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Group** : each group of students will be assigned to provide a search-based report on botanical origin, potential adulteration, potential adverse effects, contraindications , therapeutic use/dose, extraction and screen of phytochemicals for one herbal medicine (each group is assigned with different herbal medicine) using evidence-based references including One or more of the following references: • WHO monographs • FDA/Medscape • Published articles	b3, c5, c6, d1, d2, d3, d4, d5	6-10	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b2

		Assignments	6-10	5	5	b3, c5, c6, d1, d2, d3, d4, d5
2	Mid-semester exam (written exam)		7	10	10	a2, a3, a4, b2
3	Final exam (written exam)		16	50	50	a1, a2, a3, a4, b2
	TOTAL			70	70 %	70

Practical part assessment						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion to Total course Assessment**	**Aligned Course Learning Outcomes(CILOs)**
1	Lab. Term works	Attitude	1-12	5	5	c1, c2, c3, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	c1, c2, c3, d1, d2, d3
	Total			30	30 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Complementary and alternative medicine, 2. **Joanne Barnes;** Herbal medicines, 3rd Edition
2- Essential References.
1. European pharmacopeia, 2018
3- Electronic Materials and Web Sites *etc*.
Journals - Complementary & Alternative Medicine - SOM Library at University of South Carol School of Medicine (libguides.com) UCI Libraries CAM Journals - Complementary and Alternative Medicine (CAM) - Research G at University of California Irvine

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.

4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL QUALITY CONTROL

Course Identification and General Information:								
1.	Course Title:	PHARMACEUTICAL QUALITY CONTROL						
2.	Course Code &Number:	PHT 513						
3.	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		1	1	-	1	-		3
4.	Study level/ semester at which this course is offered:	*(5TH) Year – (FIRST) semester*						
5.	Pre –requisite (if any):	• Pharmaceutics I , II , III						
6.	Co –requisite (if any):							
7.	Program (s) in which the course is offered:	Pharmacy						
8.	Language of teaching the course:	ENGLISH						
9.	Location of teaching the course:	IN THE UNIVERSITY						
10.	Prepared by	Dr/ Galal Hamood Al-qadasi						
11.	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of the quality management, requirements, procedures as well as pharmacopeial tests to evaluate the quality of raw materials, in-process products and finished pharmaceutical products. This course provides an introduction to GMP. It reviews a brief history of GMP regulations and discusses the regulatory requirements for the quality management system, equipment, batch records, validation, packaging, labeling, holding, and distribution.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A3	**a1.** Identify the physicochemical properties of raw materials , in-process products and finished products that are used to evaluate their qualities.
2.	A4	**a2**. Explain the analytical methods and procedures applied to evaluate the quality of pharmaceutical raw materials , in-process products and finished products.

3.	**A10**	**a3.** Describe the role of pharmacists in implementing quality control rules and in evaluating the quality of pharmaceutical products.
4.	**B1**	**b1.** Interpret the out-coming data obtained after qualitative or quantitative analysis of raw materials , in-process products and finished pharmaceutical products
5.	**B3**	**b2.** Evaluate different types of pharmaceutical dosage forms.
6.	**B4**	**b3 .** Select suitable standard operation procedures to investigate quality of pharmaceutical raw materials , in-process products and finished products
7.	**B9**	**b4 .**Apply calculations to assess the quality of raw materials , in-process products and finished pharmaceutical products
8.	**C1**	**c1.** Handle efficiently and safely the chemical materials and tools used in the laboratory
9.	**C2**	**c2.** Operate the instruments and perform experiments successfully in the laboratory
10.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues.
11.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
12.	**D3**	**d3.** Participate efficiently with his colleagues in a team work.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b2, b4	**Lecture, feed-back learning**	**Written exams , quizzes, assignment**
b3	**Lecture, laboratory practice**	**Written exam , Lab. term works, final practical exam**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**laboratory practice**	**Lab. term works, final practical exam**

(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**laboratory practice**	**Lab. term works, final practical exam**
d2	**laboratory practice, Feed-back learning**	**Lab. term works, final practical exam, Assignments**

Course Content:

A – Theoretical Aspect:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction to Quality control**	a1, a2, a3, b1, b2	• definition of quality, quality control QC, specifications (qualitative and quantitative) , governmental and drug plant QC lab, Relation and mission of quality management system (QMS), quality assurance (QA), GMP and QC • Pharmacopeias : the References of quality control : BP, USP: contents , volumes , understanding monographs	2	4
2	**Units of QC lab**	a1, a2, a3, b1, b2	**missions of** a) Raw materials unit b) In-process unit c) Validation unit d) Microbiology unit e) Finished-product unit	1	2
3	**Procedures of QC**	a1, a2, a3, b1, b2	• sampling methods, number of samples based on batch size • Checking and calibration of equipments • Validation of results: accuracy, precision • Documenting and reporting • Quarantine, releasing and rejecting	2	4
4	**QC tests of raw materials**	a1, a2, a3, b1, b2, b4	**Tests of pharmacopeial specification of raw materials**	2	

			identification, assay, microbial content, impurities content, other tests with examples from the pharmacopeia		4
			• MID-TERM EXAM • Post-exam discussion	1	2
5	**QC tests of raw In-process products**	a1, a2, a3, b1, b2, b4	Evaluation of specification of products resulting from unit-operations : drying, evaporation, filtration, milling, granulation, mixing	2	4
6	**QC tests of raw finished products , package and labels**	a1, a2, a3, b1, b2, b4	**specific Tests (pharmacopeial specification) finished products including :** • Solutions • Suspensions & emulsions • Semisolid products • Suppositories • Powders • Granules • Tablets • Capsules • Sterile products : parenteral, ophthalmic preparations **Testing of pharmacopeial specifications of :** • Package Labels : information	4	8
Course Review		a1, a2, a3, b1, b2, b4	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

B - Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Aligned Couse Intended Learning Outcomes CILOs

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

1.	QC sampling , checking of equipments & reporting	**1**	**2**	b3, c1, c2, d1, d2, d3
2.	QC of raw materials : paracetamol BP	**1**	**2**	b3, c1, c2, d1, d2, d3
3.	QC of in-process products after : mixing	**1**	**2**	b3, c1, c2, d1, d2, d3
4.	QC of in-process finished products : solution chlorpheniramine syrup BP	**1**	**2**	b3, c1, c2, d1, d2, d3
5.	QC of in-process finished products : suspension metronidazole suspension USP	**1**	**2**	b3, c1, c2, d1, d2, d3
6.	QC of in-process finished products : creams miconazole cream BP	**1**	**2**	b3, c1, c2, d1, d2, d3
7.	QC of in-process finished products : suppositories paracetamol suppositories		**2**	b3, c1, c2, d1, d2, d3
8.	QC of in-process finished products : paracetamol tablet friability hardness	**1**	**2**	b3, c1, c2, d1, d2, d3
9.	QC of in-process finished products : paracetamol tablet (dissolution, disintegration)	**1**	**2**	b3, c1, c2, d1, d2, d3
10.	QC of in-process finished products : capsules amoxicillin capsules USP	**1**	**2**	b3, c1, c2, d1, d2, d3
11.	QC labels of labels & package	**1**	**2**	b3, c1, c2, d1, d2, d3
PRACTICAL EXAM		**1**	**2**	
Total		**12**	**24**	

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Laboratory practice: students doing experiments in labs individually or in small groups
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to solve the problems provided by the teacher at the end of each unit	b4, d2	7	

Schedule of Assessment Tasks for Students During the Semester

Theoretical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	5	5	b1, b2, b3
		Assignments	7, 12	5	5	b4, d2
2	Mid-semester exam (written exam)		7	10	10	a1, a2, a3, b1, b2, b4
3	Final exam (written exam)		16	50	50	a1, a2, a3, b1, b2, b4
TOTAL				70	70 %	70

Practical part assessment

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes(CILOs)
1	Lab. Term works	Attitude	1-12	5	5	b3, c1, c2, d1, d2, d3
2		Accomplishments		5	5	
	Final exam (practical)		12	20	20	b3, c1, c2, d1, d2, d3
Total				30	30 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

2. Marayya. Quality assurance and quality management in pharmaceutical industry
3. USP, 2018

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

2- Essential References.
1. BP, 2016 2. A. P. Kulkarni. Process instrumentation And control 3. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins, USA
3- Electronic Materials and Web Sites *etc*.
Pharmaceutical Quality Control Courses | Pharma Medical Pharmaceutical quality control laboratory digital twin – A novel governance model for resource planning and scheduling: International Journal of Production Research: Vol 58, No 21 (tandfonline.com)

	Course Policies:
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PUBLIC HEALTH

Course Identification and General Information:								
1.	Course Title:	PUBLIC HEALTH						
2.	Course Code &Number:	FOB 514						
3.	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		2
4.	Study level/ semester at which this course is offered:	*(Fifth) Year – (1st) semester*						
5.	Pre –requisite (if any):	----						
6.	Co –requisite (if any):	---						
7.	Program (s) in which the course is offered:	Pharmacy						
8.	Language of teaching the course:	ENGLISH						
9.	Location of teaching the course:	IN THE UNIVERSITY						
10.	Prepared by	Dr/Osama Al-sudani						
11.	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course deals with the study of basic issues relate to health of Yemeni community including primary health care and epidemic diseases. This course examines the concepts, methods, and practices for assessing the health of a community. Topics include measuring community health status, developing community health profiles, identifying the determinants of health, and the utilization of community health assessment in developing public health intervention.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	PILOs	CILOs
1.	A1	**a1.** Define health, epidemiology, epidemic diseases and recognize the factors affecting personal and community health
2.		**a2.** Discuss the principles of prevention of epidemic diseases in a community.
3.		**a3**. Discuss the concept of primary health care.
4.	A10	**a4.** Describe the role pharmacist to implement and participate in primary health care.
5.	B3	**b1.** Classify prinicples of healthcare survey.

6.	**C7**	**c1 .** Search efficiently for information using documented and electronic sources of information.
7.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
8.	**D2**	**d1.** Demonstrate time management and self-learning

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture-discusion**	**Written exam s**
a4	**Feed-back learning**	**Quizzes**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture-discusion**	**Written exam s**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2	**feed-back learning**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction**	a1, a2, a3, b1	• Definitions : health , public health • Concept of health ,public health • Factors affecting personal and public health : (personal hygiene, hereditary ,environment ,life style ,socioeconomic condition)	3	6

2	**Primary health care**	a1, a2, a3, b1	• Objectives • Methods • Programs	2	4
3	**Introduction to epidemiology**	a1, a2, a3, b1	• definition of Epidemiology, Epidemic diseases • Objectives of epidemiology studies and preventive programs • role of pharmacist in assisting health care team in preventive programs ○	1	2
Mid-term exam				1	2
4	**Epidemic diseases in Yemen (1)**		Study of epidemology and public preventive programs of • Malaria • TB • Dengu fever • Rabies • Leprosy • Hepatitis • AIDS and other sexual transmitted disease	8	16
Course Review		a1, a2, a3, b1	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to provide a search-based report on a an epidemic diseases in Yemen.	c1, c2, d1	4-13	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	a4
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, b1
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, b1
TOTAL				100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. David Pencheon. Oxford handbook of public health Practice
2- Essential References.
1. N. Murugesh Health Education and community pharmacy
3- Electronic Materials and Web Sites *etc*.
1- International Journal of Public Health | Home (ssph-journal.org) 2- International Journal of Public Health | Home (springer.com) 3- International Journal of Public Health – International Journal of Public Health Blog (ssphplus.ch)

Course Policies:	
1.	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2.	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

3.	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4.	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5.	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6.	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACOECONOMICS & PHARMACOEPIDEMOLOGY

Course Identification and General Information:							
1.	Course Title:	Pharmacoeconomics & Pharmacoepidemology					
2.	Course Code &Number:	FOP 515					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	-	-	2
4.	Study level/ semester at which this course is offered:	*(FIFTH) Year – (1ST) semester*					
5.	Pre –requisite (if any):	• Mathematics • Biostatistics					
6.	Co –requisite (if any):	• Pharmacy training I					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	Prepared by	Dr/ Anes A. M. Thabit					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The first part of the course provides the students with basic knowledge and skills necessary to carry out pharmacoeconomics analysis in order to select a drug product or therapy among other ones by comparing their cost and outcomes. The second part of the course deals with methodologies and concepts of (Pharmacoepidemology) which is study of the uses and effects of drugs in well-defined populations. The course also provides a link of pharmacoepidemology to Pharmacovigillance which is assessment , detection and monitoring of adverse effects of drugs in the market.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1.Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A4	**a1.** Describe the analysis methods of Pharmacoeconomics, pharmacoepidemology and Pharmacovigillance
2.	A9	**a2.** Define the basis of pharmacoeconomics, Pharmacoeconomics, pharmacoepidemology and Pharmacovigillance
3.	A10	**a3.** Describe the role of pharmacists to evaluate drug products and therapies using pharmacoeconomical and pharmacoepidemological methods

4.	**B1**	**b1.** Interpret outcome data of pharmacoeconomic and pharmacoepidemology analysis.
5.	**B8**	**b2 .** Apply pharmacoeconomic and pharmacoepidemological calculations to evaluate drug products or therapies.
6.	**C6**	**c2 .** Apply rules of pharmacoeconomics and pharmacoepidemology rules in pharmacy practice.
7.	**D2**	**d1.** Demonstrate skills of time management, problem-solving and decision making.
8.	**D4**	**d2.** Take responsibility of adaptation to changes need in pharmacy practice.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture-discussion**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture-discussion, feed-back learning**	**Written exams, quizzes**
b2	**Feed-back learning**	**Assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
c1	**Feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2	**Feed-back learning**	**Assignment**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Part I: Pharmacoeconomics					
1	**Introduction to pharmacoeconomics**	a1, a2, a3, b1, b2	• Definition and scope • Evolution of pharmacoeconomics • The need to pharmacoeconomics evaluation • Types of Outcomes. • Types of costs, Monetary units • Types of perspectives	1	2
2	**Pharmacoeconomics analysis**	a1, a2, a3, b1, b2	• Types of pharmacoeconomics analysis studies and how to select the proper study? • Steps to carry out a pharmacoeconomics study • Methodology, outcomes, cost , analysis of cost-outcome ratios and examples of case studies (Solved and exercises) of the following pharmacoeconomics methods : o COI (cost of illness) o CEA (cost-effectiveness analysis) o CBA(cost-benefit analysis) o CUA(cost-utility analysis)	5	10
Mid-term exam				1	2
Part II: Pharmacoepidemology					
3	**Introduction to pharmacoepidemology**	a1, a2, a3, b1, b2	• Definition and scope • Origin and evaluation • The need to pharmacoepidemology • Aims and applications	1	2
4	**Measurement of outcomes**	a1, a2, a3, b1, b2	Methodology and case studies examples (solved and exercises) • Outcome measure and drug use measures • Prevalence, incidence, incidence rate • Number of prescriptions and units of drugs dispensed • Daily dose • Medication adherence measurement	2	4

5	**Concept of risks**	a1, a2, a3, b1, b2	• Measurement of risk • Attributable risks • Relative risks • Time-risk relationship • Odds ratios	1	2
6	**Pharmacoepidemological methods**	a1, a2, a3, b1, b2	Methodology and examples of • Drug utilization review • Case reports • Case series • Case control studies • Case-cohort studies • Meta-analysis • Spontaneous reporting • Prescription events monitoring	2	4
7	**Pharmacovigillance relationship to pharmacoepidemology**	a1, a2, a3, b1, b2	• Definition and scope of Pharmacovigillance • Pharmacovigillance methods and systems • Relation to pharmacoepidemology	2	4
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
lecture - Discussion: a short lecture/ address followed by discussion
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homeworks, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

I. Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: Each student is assigned to solve pharmacoeconomic and	b2, c1, d1, d2	4-13	

	pharmacoepidemology problems as homework			

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	7, 12	10	10	b2, c1, d1, d2
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, b1, b2
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, b1, b2
		TOTAL		100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Brian L. Strom. Textbook of pharmacoepidemology, John Wiley & Sons Ltd
2- Essential References.
3. Diprio Pharmacotherapy pathophysiologic approaches
3- Electronic Materials and Web Sites *etc*.
Pharmacoepidemiology | An Open Access Journal from MDPI Pharmacoepidemiology | Special Issue : International Pharmacoepidemiology (mdpi.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**:

	Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

RESEARCH METHODOOLOGY

Course Identification and General Information:							
1.	Course Title:	RESEARCH METHODOOLOGY					
2.	Course Code &Number:	FOP 516					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	1	-	-	-	2
4.	Study level/ semester at which this course is offered:	*(Fifth) Year – (1ST) semester*					
5.	Pre –requisite (if any):	-					
6.	Co –requisite (if any):	Biostatistics					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	Prepared by	Dr./ Shawki Hussien Al-awdi					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the student with knowledge and skills of how to carry out , write and present research work scientifically and effectively.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	PILOs	CILOs
1,	A1	**a1**. Discuss the components of a thesis or a research including introduction, methods, results, discussion, conclusions, recommendations
2.		**a2.** Identify the procedures and methods of writing a thesis and publishing a research paper.
3.		**a3.** Determine the types of references and how to write them on a research paper or thesis.
4.	A10	**a4.** Describe the role of pharmacists to carry out , write and present research using scientific rules

5.	**B2**	**b1.** Classify different types of research and data collection tools.
6.	**B8**	**b2.** Use appropriate research method to solve problems
7.	**C7**	**c1 .**Conduct research studies using scientific methodology
8.	**D3**	**d1.** Demonstrate skill of time management and self-learning

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2 , a3, a4	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1,	**Lecture**	**Written exam**
b2	**Lecture, feed-back learning**	**Written exam, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Feed-back learning**	**Assignment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Feed-back learning**	**Assignments**

Course Content:					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to research methodology**	a1, a2, a3, a4, b1, b2	• Definition : research, search, thesis, report, abstracts • Types of research and categories of methodologies : observational, experimental • Data collection tools: experiments, questionnaire, interview, etc	1	2

2	**Research Proposal**	a3, a5, d2	• Definition, objectives • Components of a proposal • Skills of writing a proposal • Examples of proposal templates • Training on writing a proposal	2	4

3	**Components of a research or a thesis**	a1, a2, a3, a4, b1, b2	Characteristics, academic requirements and details of a thesis/ research project:
			• Titles
			• Dedication
			• Acknowledgment
			• Contents table
			• Table of Lists of Abbreviations and symbols
			• Lists of tables and figures
			• Abstract
			• Scope of the work and Objectives
			• Introduction
			• materials and methods
			  ○ Materials
			  ○ Instrumentations
			  ○ Methods
			  ○ Experimental studies
			  ○ Clinical studies (study Population/sample/Sampling technique, Sample size, Variables definition
			  ○ Data analysis
			• Results : presentation of tables and figures
			• Discussion
			• Conclusions
			• Recommendations
			• References
			• Appendices
			• Arabic abstract
				5	10

			• MID-TERM EXAM	1	2
4	**Thesis/ research paper for publishing**	a1, a2, a3, a4, b1, b2	• How to write a thesis **paper**, title, abstract, experimental, results & discussion, references,	2	4

			• Publishing of articles and preparation of reports		

5	**Preparation and skills of Presentation**	a1, a2, a3, a4, b1, b2	• Components of a presentation
			• Electronic presentation (power point slides)
			• Characteristics of font, color, background of slides
			• Presentation skills
			  ○ Voice intonation
			  ○ Standing /sitting presentation
			  ○ Commenting on slides contents
				3	6

Course Review		a1, a2, a3, a4, b1, b2	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	48

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills
Seminars: these are mainly used with small groups of students (20-30) students in which they find better chances for discussing and participating in the teaching process.

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	**Mark**
1	**Individual**: every student is assigned to prepare a scientific article on topics selected by the teacher.	c1, d1	4-13	6

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	c1, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
		TOTAL		100	100 %	

Learning Resources:
1- Required Textbook(s) (ma4imum two).
C. R. Kothari. Research methodology
2- Essential References.
3- Electronic Materials and Web Sites *etc*.
Journals and E-journals - Pharmacy - LibGuides at University College London, Global (ucl.ac.uk) Electronic Resources - Pharmacy & Science Library (nirmauni.ac.in)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecturewill not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the examwill not be allowed to attend the exam and will be considered absent.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACY TRAINING I

I. Course Identification and General Information:							
1.	**Course Title:**	**PHARMACY TRAINING I**					
2.	**Course Code &Number:**	PHPP 517					
3.	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		-	-	-	-	3	**3***
		The actual contact hours are (325 hours)					
4.	**Study level/ semester at which this course is offered:**	*(FIFTH) Year – (1ST) semester*					
5.	**Pre –requisite (if any):**	• **Pharmaceutics I, II & III** • **Pharmacology I & II & III** • **Community pharmacy I, II**					
6.	**Co –requisite (if any):**	• **Pharmacoeconomics and pharmacoepidemology**					
7.	**Program (s) in which the course is offered:**	**Pharmacy**					
8.	**Language of teaching the course:**	**ENGLISH**					
9.	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10.	**Prepared by**	Dr/ Anes A. M. Thabit					
11.	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

***: 3 credit hrs are equivalent to 325 contact hrs; 25 hrs/ week for 13 weeks**

II. Course Description:
This is course concerns with training in actual fields and is designed to make the students able to apply their knowledge and skills in a real "community pharmacy". The course is preceded by (community pharmacy I,II) courses which concerned in knowledge and patient counseling and pharmacy administration skills required for effective practicing in "community pharmacy. The course is co-requisite with the (pharmacoeconomics course) in order to link between pharmacist roles as provider of services to patients and as business men/women.

III. Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A10**	**a1.** Describe the role of pharmacist in actual life-field of community pharmacies

2.	**B7**	**b1.** Formulate and evaluate patient needs to OTC medications to improve patient safety and drug efficacy
3.	**C4**	**c1.** Advice patients to optimize medicines use.
4.	**C6**	**c2 .** Apply administrative and pharmacoeconomics rules in "community pharmacy".
5.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues, supervisor and boss,
6.	**D2**	**d2.** Demonstrate the skills of time management and self-learning.
7.	**D4**	**d3.** Take responsibility for adaption to change needs in community pharmacy practice
8.	**D5**	**d4.** Retrieve evidence-based references to obtain correct information on medications.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a)Alignment Course Intended Learning Outcomes (CILOs) of knowledge skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	**Field training**	**Committee Exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment assessment (by the supervisor of training)**
(b)Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment assessment (by the supervisor of training)**
c2	**Field training**	**Reporting & accomplishment assessment**

		(by the supervisor of training)
(d)Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Field training**	**Attitude assessment (by the supervisor of training)**
d2, d4	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**

Course Content: Field training in a community pharmacy (supervised and monitored by preceptor) & visiting a manufacturing plant					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Drug products arrangement and Storage**	a1, b1, c1, c2, d1, d2, d3, d4	• Arrangement of drug products in community pharmacy • Application the specific storage conditions for drug products • Reporting of types of dug products in the pharmacy	1- 3rd week	75
2	**Skills of dispensing**	a1, b1, c1, c2, d1, d2, d3, d4	• Application of Dispensing regulations • Medical prescriptions and interpretation • Dispensing of controlled drugs	4th – 6th week	75
Mid-term assessment week				7th week	
3	**skills of Patients counseling services & drug information**	a1, b1, c1, c2, d1, d2, d3, d4	• Skills of communication with patients • Responding to patients questions • Counseling related to Drug products use	8th –9th week	50

			• Recommendation of OTC products • Drug indexes : types, how to use		
4	**Pharmacy management**	a1, b1, c1, c2, d1, d2, d3, d4	• Employments leadership • Sale & purchasing skills • Ordering of drug products • Documentation • Financial tasks.	10th week – 11th week	50
	Drug plants	a1, b1, d1, d2, d3	**Visiting 2 local pharmaceutical plants:** Students are intended to visit 2 pharmaceutical manufacturing companies in order to accomplish the following tasks :- • **Quality control** o Identifying processes of Sampling and analysis of raw materials o Identifying processes Sampling and analysis of pharmaceutical dosage forms. o Identifying Microbiological analysis in the plant • Identifying unit-operation employed for pharmaceutical dosage forms production: o Solid dosage forms o Liquid dosage forms o Semisolid dosage forms • Identifying the aspects of Pharmaceutical research and development. o Master file o Similar Products investigation o Formulation steps • Stability studies	12th-14th weeks	75
FINAL - assessment				15th week	
TOTAL					325 actual contact hours

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Number of Weeks	15 weeks	3 credit hours equivalent to 325 contact hours

Teaching strategies of the course:
Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor

Accomplishment and Reporting assignment:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual :** each student is assigned complete all tasks mentioned in the course content and to fill the field-training booklet and answers all questions in it.	a1, b1, c1, c2, d2, d4	1- 14 th week	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Training works Assessment (by the supervisor of training)	Attitude	1-15	20	20 %	d1, d3
2		Reporting and accomplishment	12	50	50 %	a1, b1, c1, c2, d2, d4
4	Final Committee exam * (Oral exam)		17	30	30 %	a1, b1, c1, c2, d1, d2, d3, d4
TOTAL				100	100 %	

* : A committee of three of the teaching stuff including the supervisor of the training.

The marks of the committee exam is divided as follows:

Item	Mark
Supervisor	10

Committee member (A member of staff of pharmacy department)	20

General Rule

- The student should provide a signed letter form the from the community pharmacy where he has practiced. The letters shall confirm the student`s appropriate attendance, behavior and number hours of practice. No student will be allowed to enter the final exam without such letters.

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Lillian M Azzopardi. Lecture notes on pharmacy practice, Pharmaceutical press. 2. A Langley, Dawn Belcher. Applied pharmaceutical skills, Pharmaceutical press.
2- Essential References.
1. Agarwal. Dispensing and community pharmacy 2. Jain. A text book of professional pharmacy
3- Electronic Materials and Web Sites *etc*.

Course Policies:	
1.	**Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

HOSPITAL PHARMACY

Course Identification and General Information:							
1.	Course Title:	HOSPITAL PHARMACY					
2.	Course Code &Number:	PHPP 521					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	2	-	-	2
4.	Study level/ semester at which this course is offered:	*(Fifth) Year – (2nd) semester*					
5.	Pre –requisite (if any):	• Pharmaceutical calculations • Pharmaceutics I, II, III • Clinical pharmacy I & II					
6.	Co –requisite (if any):	• Pharmacy training II					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	Prepared by	Dr/ Anes A. M. Thabit					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the students with essential knowledge and skills necessary to effectively and ethically perform missions of hospital pharmacist in healthcare facilities. The missions include, for instance, affording pharmaceutical care services to in-patient and out-patients , management of the hospital pharmacy , medical stores and medical supply administration, participation in the drug and therapeutics committee and education of patients and healthcare professionals in rational use of medications. The course is co-requisite with (Pharmacy II) training that involve visits to a local hospital der in order to link the theoretical aspects of the course to actual-field practice.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A9	**a1.** Explain the regulations and polices employed in hospital pharmacy practice.
2.	A10	**a2**. Describe the role of hospital pharmacists in providing services to in-patients and outpatients in the healthcare facilities.

3.	**A12**	**a3.** Describe the methods of calculations relevant to hospital pharmacy practice.
4.	**B5**	**b1.** Plan a modern system to manage the hospital pharmacy and manage medical stores and medical supply administration.
5.	**B7**	**b2.** Review and evaluate prescriptions and patient`s medication record to improve patient safety and medication efficacy.
6.	**B8**	**b3.** Apply calculations in preparation of extemporaneous preparations including IV-admixtures and TPN and to modify dose for children, renal failure and obese patients.
7.	**C4**	**c1.** Advise patients and healthcare professionals to optimize medicines use.
8.	**C5**	**c2.** Employ the relevant way to prepare extemporaneous preparations including IV-admixtures and TPN.
9.	**C6**	**c3.** Apply administrative rules in hospital pharmacy practice.
10.	**D2**	**d1.** Demonstrate time management, problem-solving and self-learning skills.
11.	**D4**	**d2.** Take responsibility of adaption to change needs in hospital pharmacy practice.
12.	**D5**	**d3.** Retrieve evidence-based references to achieve maximal clinical efficacy.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1, b3	**Lecture, feed-back learning**	**Written exams , quizzes, assignment**
b2	**feed-back learning**	**Assignment**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1, c2, c3	**Feed-back learning,**	**Quizzes**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Feed-back learning**	**Assignments**
d2	**Feed-back learning**	**Quizzes**

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction**	a1, a2, a3, b1, b3	• definition of hospital, hospital pharmacy hospital pharmacists • difference between community, clinical and hospital pharmacy. • Objectives and responsibilities of hospital pharmacists • Missions of hospital pharmacists • Risks of hospital pharmacy practice • Complexity of hospital pharmacy practice • requirements of a pharmacist to practice	1	2
2	**Organization and management of hospital pharmacy**	a1, a2, a3, b1, b3	• Physical organization: location , area, interior design • Personnel (Staff) organization • Drugs and therapeutics committee (DTC): members, missions, meetings, budget plan and implantation • Hospital formulary : components, missions	1	2
3	**Medical supply, stores and control**	a1, a2, a3, b1, b3	• The structure of medical supply administration • Types and goals and controlling systems in medical supply administration • Systems controlling Flow of medications • Regulations of medications Receiving process • Regulations of medical stores • Principles of issuing medications • Procedure and measures of safety in medical stores • Controlling of leakage of medications	2	4

4	**Specific drug products in the hospital**	a1, a2, a3, b1, b3	Types, examples, Regulation and specific store and dispensing rules of : o Emergency medications o Pre-operative and operative medications o Controlled drugs	1	2
5	**In-patient services (1)**	a1, a2, a3, b1, b3	**1- Distribution of medications to in-patients (Drug distribution systems): mechanism,** advantages and disadvantages of floor (ward) stock system, individual prescription system, combined system, unit dose system (procedures). **2- Wards inspection services** 3- **After-hours pharmacy services**	1	2
MID-TERM EXAM				1	2
5	**In-patient services (2)**	a1, a2, a3, b1, b3	**4- Extemporaneous preparations in hospital** (i) Non-sterile : repacking, preparations from raw materials, preparations from available dosage forms (ii) Sterile requirements: aseptic conditions, laminar air flow (iii) IV-admixtures: definition, components, advantages, disadvantages, incompatibility problem (iv) IV-mixtures of electrolytes: calculations and preparation of IV electrolyte salt required daily: calcium, sodium, magnesium, potassium , iron (v) Total parenteral nutrition (TPN): definition, components, indications, calculation of daily requirement of water, lipid, protein and carbohydrates, vitamins.	3	6
5	**In-patient services (3)**	a1, a2, a3, b1, b3	**5- Clinical missions of hospital pharmacist** (i) Checking of prescribed medications (ii) Review patient medication record (iii) Dose adjustment: children, renal failure patients, underweight/overweigh obese/t patient (iv) Drug therapy monitoring	2	4
6	**Outpatient services**	a1, a2, a3, b1, b3	1- Dispensing of medications to outpatients: types of prescriptions, data in prescriptions, checking errors	1	2s

			2- Patient counseling and education 3- Health promotion: family planning, smoking cessation		
7	**Educative, training and research missions of hospital pharmacists**	a1, a2, a3, b1, b3	○ Education of healthcare professionals about rational drug use ○ Training of undergraduate and pharmacy technicians ○ Research aspects in hospital pharmacy	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficienc4 of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation

Assignments:

No	Assignments	Aligned CILOs	Week Due	Mark
1	**Individual**: every student is assigned to execute the following homework tasks 1- Review and evaluate patient1s medication record 2- Solve problems related to hospital practice The teacher provide the student with those records and problems	b2, b3, d1, d3	4-13	10

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13	10	10	b1, b3, d2
		Assignments	4-13	10	10	b2, b3, d1, d3
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, a3, b1, b3
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, a3, b1, b3
			TOTAL	100	100 %	

Learning Resources:

1- Required Textbook(s) (maximum two).

4. Martin Stephens. Hospital pharmacy. 2nd Edition, Pharmaceutical press.

2- Essential References.

1. Paradkar. Hospital and clinical pharmacy
2. Qadry. A text book of hospital pharmacy
3. Mark Jackson, Andrew Lowey. Handbook of extemporaneous preparation, The NHS Pharmaceutical Quality Assurance Committee, pharmaceutical press.

3- Electronic Materials and Web Sites *etc*.

Hospital Pharmacy: Sage Journals (sagepub.com)
tandfonline.com/journals/werm20
Journals - Pharmacy Subject Guide - LibGuides at Marshall B. Ketchum University
Pharmacy Journals - Pharmacy Resource Portal - LibGuides at Health Sciences Library, University of Colorado Anschutz Medical Campus

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:**

	any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACEUTICAL MARKETING

I. Course Identification and General Information:							
1.	Course Title:	PHARMACEUTICAL MARKETING					
2.	Course Code &Number:	PHPP 522					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		1	-	1	-	-	2
4.	Study level/ semester at which this course is offered:	*(5TH) Year – (SECOND) semester*					
5.	Pre –requisite (if any):	• Pharmacoeconomics					
6.	Co –requisite (if any):	• NIL					
7.	Program (s) in which the course is offered:	Pharmacy					
8.	Language of teaching the course:	ENGLISH					
9.	Location of teaching the course:	IN THE UNIVERSITY					
10.	Prepared by	Dr/ Anes A. M. Thabit					
11.	Date of Approval	8/2019					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is designed to provide the students with knowledge and skills required to effectively promote pharmaceutical and cosmetic products. The course also concerns with skills of self-promotion including preparation of CV and practicing effective Job interview. It aims at introducing students to the skills of pharmaceutical marketing.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	PILOs	CILOs
1.	A9	**a1.** Define the basis of marketing and its strategies and applications in pharmacy.
2.	A10	**a2.** Describe the role of pharmacist in promoting pharmaceutical and cosmetic products
3.	B2	**b1.** Plan a modern marketing strategy to promote pharmaceutical and cosmetic products.
4.	C3	**c1.** Apply marketing rules to apply to jobs and to promote pharmaceutical and cosmetic products.

5.	**D1**	**d1.** Interact and communicate effectively with healthcare professional during marketing of pharmaceutical and cosmetic products.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Seminar**	**Seminar assessment**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**Seminar**	**Seminar assessment**

Course Content:

Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
1	**Introduction to marketing**	a1, a2, b1	• definitions, (markets, marketing, promotion, promotional materials, products, competitors, customers, marketing targets, plan and planning • Significance and objectives of marketing	1	2
2	**Requirements of a successful marketing**	a1, a2, b1	• personnel, mental, skills communication and relationship building • Strategy of marketing: planning, execution, evaluation • Designing a marketing plan	2	4

3	**Understanding the customers**	a3, b1	• Types of customers • Dealing with customers • customers need and satisfaction	1	2
4	**Pharmaceutical marketing**	a1, a2, b1	• significance • Who is the med. Rep. ? • ethical issues • Pharmaceutical products: differences from other products, essential information to be full known on pharmaceutical products (pharmaceutical, pharmacological, commercial)properties • Pharmaceutical Promotional materials: brochures, gifts, charts, etc.	3	6
Mid-term exam				1	2
5	**Role play:**	a1, a2, b1	• **Training on visiting to customers (physicians)** : pre-visit preparation ad skills of effective visit (meeting, opening, offering, closing), post-visit evaluation	1	2
6	**Self-marketing { C.V)**	a1, a2, b1	• How to prepare C.V.	1	2
	Self-marketing (Job applications and interview)	a1	• Requirements of successful job application and interview	1	2
7	**Seminar (1)**	c1, d1	• Role play	2	4
	Seminar (2)	c1, d1	• CV preparation	1	4
	Seminar (3)	c1, d1	• Job interview	1	4
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	7 Units

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Seminar : The student(s) is assigned to present one-related topic with discussion such topic with other students

Seminar :

No	Topic	Aligned CILOs	Week Due
Individual: every student is assigned to participate in one of the following seminar tasks 1-			
1	Role play marketing	c1, d1	12, 13
2	Job interview	c1, d1	14
3	CV preparation	c1, d1	15

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13	5	5	c1
		Seminar	12, 13, 14, 15	15	15	c1, d1
2	Mid-semester exam of theoretical part (written exam		7	20	20	a1, a2, b1
3	Final exam of theoretical part (written exam)		16	60	60	a1, a2, b1
		TOTAL		100	100 %	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Learning Resources:
1- Required Textbook(s) (maximum two).
1. Ross Mulner. Pharmaceutical marketing, Journal of Consumer Marketing, 2005
2- Essential References.
1. Handbook of pharmaceutical marketing
3- Electronic Materials and Web Sites *etc*.
1- Product lifecycle management in pharmaceuticals - Vandana Prajapati, Harish Dureja, 2012 (sagepub.com) 2- Strategic Market Segmentation: An Opportunity to Integrate Medical and Marketing Activities - Janice MacLennan, David MacKenzie, 2000 (sagepub.com) 3- Page not found - The Pharmaceutical Journal (pharmaceutical-journal.com)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACY REGULATIONS & ETHICS

Course Identification and General Information:								
1.	Course Title:	PHARMACY REGULATIONS & ETHICS						
2.	Course Code &Number:	FOP 523						
3.	Credit hours:	C.H						TOTAL
		Theoretical			P.	Tr.		
		L.	Tut.	S.				
		2	-	-	-	-		2
4.	Study level/ semester at which this course is offered:	*(Fifth) Year – (2nd) semester*						
5.	Pre –requisite (if any):	-------						
6.	Co –requisite (if any):	--------						
7.	Program (s) in which the course is offered:	Pharmacy						
8.	Language of teaching the course:	ENGLISH						
9.	Location of teaching the course:	IN THE UNIVERSITY						
10.	Prepared by	Dr/ Anes A. M. Thabit						
11.	Date of Approval	8/2019						

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course equips the students with basic knowledge relevant to regulations and ethics of pharmacy profession. The main purpose of this course is to make the graduate able to demonstrate and practice his/her responsibilities as pharmacist ethically and legally and to respect the rights of patients, colleagues and healthcare professionals.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies

1. Alignment CILOs to PILOs

No.	PILOs	CILOs
1.	A2	**a1.** Explain the fundamentals of pharmacy regulations and ethics and their impact to relationship with patients and healthcare professionals
2.	A10	**a2.** Describe the pharmacists role to practice pharmacy legally and ethically.
3.	B5	**b1.** Emerge ethics to different types of pharmacy practice
4.	C6	**c1 .**Ethically use knowledge and skills in pharmacy.
5.	D2	**d1.** Demonstrate time management and self-learning skills

6.	**D4**	**d2.** Take responsibility of adaption to change needs in pharmacy practice.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge & understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**feed-back learning**	**Assignments, quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**feed-back learning**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d2	**feed-back learning**	**Assignments**

Course Content:

Order	**Units/ Topics**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
Part I: Pharmacy laws, regulations and acts					
1	**Introduction**	a1, a2	• Definition of regulations, act, laws • History of pharmacy regulations	1	2
2	**Foundations and authorities controlling pharmacy profession**	a1, a2	➢ Pharmacy Authority in : • Yemen • Arab countries • International ➢ Pharmacy practice licenses: requirements and procedures in Yemen , Arab countries and international	2	4

3	**Regulations and acts of pharmacy**	a1, a2	Pharmacy Regulations and acts controlling pharmacy profession in Yemen • Local (Yemeni)	3	6
Mid-term exam				1	2
3	**Regulations and acts of pharmacy**		Regulations in Arab countries and global e.g. UK and USA	2	4
Part II: Pharmacy Ethics					
4	**Patients and professional Rights**	a1, a2	• Patient rights • Medical workers rights • Pharmacist rights	3	6
5	**Pharmacy Code of Ethics**	a1, a2	• Old (Oath of Hippocrates) • Arab countries • Asian • Europe • USA • Local (Yemeni) Code of ethics	2	4
Course Review		a1, a2	Review of the course topics by discussion session.	1	2
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	5 Units

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector.
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Assignments:				
No	**Assignments**	**Aligned CILOs**	**Week Due**	
1	**Individual**: every student is assigned to provide a survey/observational/ and/or web-search based report on one illegal or non-ethical issue related to pharmacy practice in Yemen	b1, c1, d1, d2	12	

Schedule of Assessment Tasks for Students During the Semester						
No.	**Assessment Method**		**Week Due**	**Mark**	**Proportion of Total course Assessment**	**Aligned Course Learning Outcomes (CILOs)**
1	Term Works	Quizzes	4-13, 14	10	10	b1
		Assignments	12	10	10	b1, c1, d1, d2
2	Mid-semester exam (written exam)		7	20	20	a1, a2
3	Final exam of (written exam)		16	60	60	a1, a2
		TOTAL		100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).
2. Yemeni law of medical profession and pharmacy 3. Pharmacy code of ethics. USA, American association of pharmacy 4. Pharmacy laws & regulations, USA, 2014
2- Essential References.
2. قانون مزاولة مهنة الصيدلة- مصر 3. قانون المهن الطبية – الجمهورية اليمنية
3- Electronic Materials and Web Sites *etc*.
http://doh.dc.gov/service/pharmacy-laws-and-regulations قانون رقم (٢٦) لسنة ٢٠٠٢م بشأن مزاولة المهن الطبية والصيدلانية (yemen-nic.info) نصوص و مواد قانون مزاولة مهنة الصيدلة في مصر - استشارات قانونية مجانية (mohamah.net)

Course Policies:	
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

NUCLEAR PHARMACY

Course Identification and General Information:							
1.	Course Title:	NUCLEAR PHARMACY					
2.	Course Code &Number:	PHT 524					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		2	-	-	-	-	**2**
4.	Study level/ semester at which this course is offered:	*(FIFTH) Year – (2ND) semester*					
5.	Pre –requisite (if any):	• **Pharmaceutics I, II, III** • **Novel drug delivery systems** • **Pharmacology I, II, III & IV**					
6.	Co –requisite (if any):						
7.	Program (s) in which the course is offered:	**Pharmacy**					
8.	Language of teaching the course:	**ENGLISH**					
9.	Location of teaching the course:	**IN THE UNIVERSITY**					
10.	Prepared by	Dr./ Abdulkarem Alzomer					
11.	Date of Approval	**8/2019**					

Course Description:
The course concerns with the study of types, production, regulations , risks and quality control of radiopharmaceuticals products and their applications in diagnosis and treatment of human disease.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A3**	**a1.** Explain the physicochemical properties of radionuclides, radioisotopes , radioisomers and radiopharmaceuticals.
2.	**A4**	**a2.** Describe the analytical methods used for measurement of radioactivity , radiodiagnosis of human diseases and quality evaluation of radiopharmaceuticals.
3.	**A5**	**a3**. Identify actions of radiations and radiopharmaceuticals in human.
4.	**A10**	**a4.** Describe the role of pharmacist in safe and effective radiopharmaceutical administration.
5.	**B2**	**b1.** Classify radiations, radionuclides and radiopharmaceuticals.

6.	**B9**	**b2 .**Apply calculations to measure radioactivity and radiopharmaceutical doses.
7.	**C7**	**c1 .**Search efficiently for information using documented and electronic sources of information.
8.		**c2.** Present and report his/her works correctly using appropriate writing rules and technologies media.
9.	**D2**	**d1.** Demonstrate time management and self-learning skills.

Alignment CILOs to teaching strategies and assessment strategies		
(a) Alignment Course Intended Learning Outcomes (CILOs) of knowledge& understanding to Teaching Strategies and Assessment Strategies		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1, a2, a3, a4	**Lecture**	**Written exams**
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Lecture**	**Written exams**
b2	**Lecture , feed-back learning**	**Written exams , Quizzes**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 , c2	**feed-back learning**	**Assignments**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1	**feed-back learning**	**Assignments**

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Course Content:

Order	Units/ Topics List	CILOs	Sub Topics List	No. of Weeks	contact hours
1	**Introduction To Nuclear pharmacy**	a1, a2, a3, a4, b1, b2	• Definitions : nuclear medicine, nuclear pharmacy, , radiopharmaceuticals). • Regulations of nuclear pharmacy • Significance of nuclear pharmacy • Interior design and location of a nuclear pharmacy • The basics of atom radioactivity : atom nuclear structure, types of particles. • Radioactivity: lower, high energy, theories • Radionuclides, radioisotopes, radioisomers, normal atoms vs. radionuclides • Types of radiations : ionizing, non-ionizing. Differences and types • Ionizing radiations : Particle radiations (α, β), wave radiations (gamma radiations, X-rays) properties. • Risks of radiations: types of risks, factors affecting risks	2	4
2	**Radioactivity**	a1, a2, a3, a4, b1, b2	• Radioactivity: types of radioactive substances (natural, artificial) • Properties of commonly used radionuclides • Units of measurement of radioactivity • Half-lives : physical, biological, effective • Kinetics of radioactivity • Calculation of radiation exposure • calculation of radiation absorbed by man • calculation of dose of radiopharmaceutical: dose as Ci or Bq, as µg as rad/mCi	3	6

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

3	**Introduction to Radiopharmaceuticals**	a1, a2, a3, a4, b1, b2	• Definition and components of radiopharmaceutical • Production and labeling • classification • properties of ideal radiopharmaceutical • Routes of administration • Administration procedures: dose calibrator	2	4
	Mid-term exam			1	2
4	**Diagnostic radiopharmaceuticals**	a1, a2, a3, a4, b1, b2	**I. In vitro diagnostic methods** o Radioimmunoassay o Schilling test o Blood volume determination **II. In vivo (Imaging diagnostic radiopharmaceuticals):** (i) **Gamma camera techniques:** scintillation, SPECT techniques , types , doses and adverse effects for o Heart imaging o Brain imaging o Kidney imaging o Thyroid and parathyroid imaging o Lung imaging o Bone and joint imaging o Liver imaging o Infection and inflammation imaging **(ii) Positron emission tomography (PET)** o Advantages o Disadvantages	4	8

			○ Radionuclides and Radiopharmaceuticals used for imaging.		

5	**Therapeutic Radiopharmaceuticals**	a1, a2, a3, a4, b1, b2	• General properties of radiotherapeutics • Types , doses and adverse effects for Radiopharmaceuticals used for therapy of : ○ Hyperthyroidism ○ Thyroid cancer ○ Bone metastasis ○ Neuroendocrine digestive system tumor ○ Prostate cancer ○ Liver cancer ○ Non-Hodking lymphoma ○ Polycythemia and leukemia	2	4
6	**Quality control of radiopharmaceuticals**	a2, a4	• Physicochemical tests • Radioactive purity • Radiochemical purity • Chemical purity • Radioassay • Biological tests: sterility, apyrogenicity	1	
FINAL – EXAM				1	2
TOTAL				16	32
Number of Weeks /and Units Per Semester				16 weeks	6 Units

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Teaching strategies of the course:
Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom. The efficiency of lecturing can be enhanced by using techniques such as **Brain-storming**: It depends on stimulation of the student`s brain through a group of questions &/or **Concepts map**: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using **learning aids** such as Data show projector
Feed-back learning: students are individually asked to do perform quick tests (quiz) or to do certain assignments such lab. experiments, problems solving, homework, topics summarizing or internet search. The teacher will provide them feed-back correction & evaluation
Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing, using the results in practical manner &for promoting team work skills

Assignments:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual**: every student is assigned to provide a search-based report on one radiopharmaceutical product.	c1, c2, d1	4-13	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion to Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Term Works	Quizzes	4-13, 14	10	10	b2
		Assignments	7, 12	10	10	c1, c2, d1
2	Mid-semester exam (written exam)		7	20	20	a1, a2, a3, a4, b1, b2
3	Final exam of (written exam)		16	60	60	a1, a2, a3, a4, b1, b2
		TOTAL		100	100 %	

Learning Resources:
1- Required Textbook(s) (maximum two).

2. Gopal B. Saha. Fundementals of nuclear pharmacy, 2010, Springer.

2- Essential References.

1. Ansel`s Pharmaceutical dosage forms and drug delivery system, 2011, Lippincott Williams and Wilkins

3- Electronic Materials and Web Sites *etc*.

Nuclear Pharmacy | Pharmaceutical Press
Human Health Campus - Nuclear Medicine Journals (iaea.org)
Nuclear Pharmacy (pharmacist.com)

	Course Policies:
1	**Class Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam
2	**Tardy:** any student who is late for more than 15 minutes from starting the lecture will not be allowed to attend the lecture and will be considered absent.
3	**Exam Attendance/Punctuality:** any student who is late for more than 30 minutes from starting the exam will not be allowed to attend the exam and will be considered absent.
4	**Assignments & Projects:** Assignments and projects will be assessed individually unless the teacher request for group work
5	**Cheating**: Cheating by any means will cause the student failure and he/she must re-study the course
6	**Plagiarism**: Plagiarism by any means will cause the student failure in the course . Other disciplinary procedures will be according to the college rules.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

PHARMACY TRAINING II

	I. Course Identification and General Information:						
1.	**Course Title:**	**PHARMACY TRAINING II**					
2.	**Course Code &Number:**	**PHPP 525**					
3.	**Credit hours:**	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		-	-	-	-	3	**3****
		The Actual contact hours are (325 hours)					
4.	**Study level/ semester at which this course is offered:**	*(5TH) Year – (SECOND) semester*					
5.	**Pre –requisite (if any):**	• **Pharmaceutics I, II & III** • **Clinical pharmacy II** • **Pharmacology I & II & III** • **Pharmaceutical quality control** • **Industrial pharmacy**					
6.	**Co –requisite (if any):**	• **Hospital pharmacy**					
7.	**Program (s) in which the course is offered:**	**Pharmacy**					
8.	**Language of teaching the course:**	**ENGLISH**					
9.	**Location of teaching the course:**	**IN THE UNIVERSITY**					
10	**Prepared by**	Dr / Anes A. M. Thabit					
11.	**Date of Approval**	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training
****: 3 credit hrs are equivalent to 325 contact hrs; 25 hrs/ week for 13 week**

Course Description:
This is course is the second training course in the program and it concerns with actual training and visits to real life-fields including: hospitals and Pharmaceutical manufacturing plants. The course is co-requisite with the (hospital pharmacy course) in order to make the students able to apply their knowledge and skills attained with the relevant course into real practice in hospitals.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
1. Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**A10**	**a1.** Describe the role of pharmacist in actual life-practice in hospitals and pharmaceutical manufacturing plants.
2.	**B3**	**b1.** Design and evaluate different types of pharmaceutical products.
3.	**C4**	**c1.** Advice patients to optimize medicines use.
4.	**C6**	**c2 .** Apply administrative and pharmacoeconomics rules in hospitals.
5.	**D1**	**d1.** Communicate effectively and behave in discipline with colleagues , supervisor and field managers.
6.	**D2**	**d2.** Demonstrate the skills of time management.
7.	**D4**	**d3.** Take responsibility for adaption to change needs in community pharmacy practice
8.	**D5**	**d4.** Retrieve evidence-based references to obtain correct information on medications.

2. Alignment CILOs to teaching strategies and assessment strategies		
(a)Alignment Course Intended Learning Outcomes (CILOs) of knowledge skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1	**Field training**	**Committee Exam**
(b) Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment assessment (by the supervisor of training)**
(b)Alignment Course Intended Learning Outcomes (CILOs) of intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1	**Field training**	**Committee exam Committee Exam, Reporting & accomplishment assessment**

		(by the supervisor of training)
c2	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**
(d)Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1, d3	**Field training**	**Attitude assessment (by the supervisor of training)**
d2, d4	**Field training**	**Reporting & accomplishment assessment (by the supervisor of training)**

I. Course Content: Field training in a community pharmacy (supervised and monitored by a supervisor)					
Order	**Units/ Topics List**	**CILOs**	**Sub Topics List**	**No. of Weeks**	**contact hours**
	Hospital training	a1, b1, c1, c2, d1, d2, d3, d4	**Training in the hospital** **Hospital pharmacy tasks** • Distribute drugs to in-patients • Dispense drugs to in-patients and out-patients • Arrangement of hospital specific drug products: operations and preoperative drug products, emergency drug products • Documenting • performing Medical supply practice in the hospital **Clinical tasks** • Checking of patients prescriptions using reliable references e.g. Medscape • Evaluation of patient medication records	1-6th weeks (6 weeks)	30
	Drug plants	a1, b1, d1, d2, d3	**Visiting 2 local drug plants:** Students are intended to visit 2 pharmaceutical manufacturing companies	7-16th weeks	

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

			in order to accomplish the following tasks :- • **Quality control** ○ Identifying processes of Sampling and analysis of raw materials ○ Identifying processes Sampling and analysis of pharmaceutical dosage forms. ○ Identifying Microbiological analysis in the plant • Identifying unit-operation employed for pharmaceutical dosage forms production: ○ Solid dosage forms ○ Liquid dosage forms ○ Semisolid dosage forms • Identifying the aspects of Pharmaceutical research and development. ○ Master file ○ Similar Products investigation ○ Formulation steps ○ Stability studies	(10 weeks)	20 (approximately 4 visits)
FINAL – EXAM				1	2
TOTAL				16	3 credit hrs are equivalent to 325 contact hrs; 25 hrs/ week for 13 week
Number of Weeks /and Units Per Semester				16 weeks	2 Units

Teaching strategies of the course:
Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor

Accomplishment and Reporting assignment:

No	Assignments	Aligned CILOs	Week Due	
1	**Individual :** each student is assigned complete all tasks mentioned in the course content and to fill the field-training booklet and answers all questions in it.	a1, b1, c1, c2, d2, d4	1- 14 th week	

Schedule of Assessment Tasks for Students During the Semester

No.	Assessment Method		Week Due	Mark	Proportion of Total course Assessment	Aligned Course Learning Outcomes (CILOs)
1	Training works Assessment (by the supervisor of training)	Attitude	1-15	20	20 %	d1, d3
2		Reporting and accomplishment	12	50	50 %	a1, b1, c1, c2, d2, d4
3	Final Committee exam * (Oral exam)		17	30	30 %	a1, b1, c1, c2, d1, d2, d3, d4
TOTAL				100	100 %	

* : A committee of three of the teaching stuff including the supervisor of the training.

The marks of the committee exam is divided as follows:

Item	Mark
Supervisor	10
Committee member (A member of staff of pharmacy department)	20

General Rule

- The student should provide a signed letter form the from the community pharmacy where he has practiced. The letters shall confirm the student`s appropriate attendance, behavior and number hours of practice. No student will be allowed to enter the final exam without such letters.

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Learning Resources:
1- Required Textbook(s) (maximum two).
3. Lillian M Azzopardi. Lecture notes on pharmacy practice, Pharmaceutical press. 4. A Langley, Dawn Belcher. Applied pharmaceutical skills, Pharmaceutical press.
2- Essential References.
3. Agarwal. Dispensing and community pharmacy 4. Jain. A text book of professional pharmacy
3- Electronic Materials and Web Sites *etc*.

Course Policies:	
1	**Attendance:** At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

GRADUATION RESEARCH PROJECT

Course Identification and General Information:							
1.	Course Title	GRADUATION RESEARCH PROJECT					
2.	Course Code &Number:	FOP 526					
3.	Credit hours:	C.H					TOTAL
		Theoretical			P.	Tr.	
		L.	Tut.	S.			
		-	-	-	4	-	**4**
4.	Study level/ semester at which this course is offered:	*(Fifth) Year – (2ND) semester*					
5.	Pre –requisite (if any):	• **All specific program courses + Biostatistics**					
6.	Co –requisite (if any):	• **None**					
7.	Program (s) in which the course is offered:	**Pharmacy**					
8.	Language of teaching the course:	**ENGLISH**					
9.	Location of teaching the course:	**IN THE UNIVERSITY**					
10.	Prepared by	Assistant Prof./ Shawki Hussien Al-Awdi					
11.	Date of Approval	**8/2019**					

L: lecturing ; Tut: Tutorial , S: seminar ; P: practical ; Tr.: training

Course Description:
The course is a fulfillment for graduation from the program. It is designed to provide the students skills of practicing scientific research in pharmacy. The course aims to nurture the Pharmacy students for inquiry and knowledge creation through fostering their intellectual rigor in tackling research questions related to pharmacy and pharmaceutical sciences. The research project will allow students to have the hands-on opportunity to develop pertinent skills in research, including the formulation of a research hypothesis, critique of published literature, experimental design methodologies, and data collection and analysis.

Intended learning outcomes of the course (CILOs) and their alignment to Program Intended learning outcomes (PILOs), teaching strategies and assessment strategies		
Alignment CILOs to PILOs		
No.	**PILOs**	**CILOs**
1.	**B8**	**b1.** Use appropriate research methods to conduct the graduation project.
2.	**C7**	**c1.** Conduct research studies and utilize the results in different pharmacy fields.
3.	**D1**	**d1**. Communicate effectively and behave in discipline with colleagues and supervisor

4.	**D2**	**d2.** Demonstrate skills of effective presentation and time-management.
5.	**D3**	**d3**. Participate successfully with colleagues in team work
6.	**D5**	**d4**. Retrieve evidence-based references while proposing, conducting and writing the research papers.

Alignment CILOs to assessment strategies	
(b) Alignment Course Intended Learning Outcomes (CILOs) of Intellectual Skills to Assessment Strategies:	
Course Intended Learning Outcomes	Assessment Strategies
b1	**Research methodology assessment (by internal and external examiner)**
(c)Alignment Course Intended Learning Outcomes (CILOs) of Professional and Practical Skills to Assessment Strategies:	
Course Intended Learning Outcomes	Assessment Strategies
c1	**Research methodology assessment (by internal and external examiner)**
(d) Alignment Course Intended Learning Outcomes (CILOs) of Transferable Skills to Assessment Strategies:	
Course Intended Learning Outcomes	Assessment Strategies
d1	**Attitude assessment (by the supervisor)**
d2	**Presentation assessment (by internal and external examiner)**
d3	**Participation assessment (by the supervisor)**
d4	**Research methodology assessment (by internal and external examiner)**

Course Content:

Ø Each 4-7 students group is assigned to do a research (experimental or observational) directied by a supervisor of the department teaching staff or outside the faculty.
Ø The topic of research can be proposed by :

- The supervisor
- Or the students after supervisor acceptance

Ø The topic must be approved by the department/faculty administration.
Ø Experiments are carried out in the faculty laboratories and if necessary outside the faculty
Ø The department and the faculty provide the students with necessary instruments and materials
Ø The research is to be carried out within the period of the term (i.e. 16 weeks) and must be delivered to the department within that period
Ø The faculty propose the name of committee members to the faculty council . The committee will discuss and judge the research as described below in the assessment schedule .

وثيقة مواصفات المقررات الدراسية لبرنامج الصيدلة ٢٠١٩م

Schedule of Assessment Tasks for Students During the Semester

Each project will be assessed by a committee of three member as follows

Items	Weight	Aligned CILOs
Project supervisor	70 %	c1, d1, d3
Internal examiner : a member of the department teaching stuff.	15 %	b1, c1, d2, d4
external examiner : a qualified external examiner (either from other departments of the faculty or from another university)	15 %	
Total	**100**	

Assessment of the project by the project supervisor		
Items	**Mark** [1]	**Aligned CILOs**
Attitude	30	d1
Participation	40	c1, d3
Total	**70**	

[1]: Every student will be assessed by the supervisor individually.

Assessment of the project by the internal examiner		
Items	**Mark** [1]	**Aligned CILOs**
Research methodology	10	b1, c1, d4
Research presentation	*5*	d2
Total	**15**	

[1]: The whole students will be assessed by the internal as one unit

Assessment of the project by the external examiner		
Items	**Mark** [1]	**Aligned CILOs**
Research methodology	10	b1, c1, d4
Presentation	*5*	d2
Total	**15**	

[1]: The whole students will be assessed by the internal as one unit

Learning Resources:
1- Required Textbook(s) (maximum two).

Variable
2- Essential References.
Variable
3- Electronic Materials and Web Sites *etc*.
Variable

Course Policies:	
	Attendance: At least 75 % of the course hours should be attended by the student. Otherwise, he/she will not be allowed to attend the final exam