

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and

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Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well—planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: University of Babylon

Faculty/Institute: college of pharmacy

Scientific Department: pharmaceutical chemistry

Academic or Professional Program Name: sciences in pharmacy

Final Certificate Name: Bachelor's

Academic System: two semesters in each academic year

Description Preparation Date:

File Completion Date:

Signature:

Head of Department Name:

Date:

Signature:

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

Course Description Form

1. Course Name:	
Organic Chemistry II	
2. Course Code:	
PhOci2B00016	
3. Semester / Year:	
2 / 2	
4. Description Preparation Date:	
1/9/2023	
5. Available Attendance Forms:	
Weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
7. Course administrator's name (mention all, if more than one name)	
Asim Alaa Abdalhussein Asim_alsalehi@hotmail.com	
8. Course Objectives	
Course Objectives To enable students to understand the chemistry of carbon, and the classification, properties and reactions of organic compounds. It includes understanding the basic structure and properties of organic halides, carboxylic acids, aldehydes, ketones and amines, in addition to the principles and application of stereochemistry on these compounds.	
9. Teaching and Learning Strategies	
Strategy	Lecturing, discussions, brainstorming questions and problem solving.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	10	A student who possesses knowledge of the main types of organic compounds, methods of their preparation, reactions, and related mechanisms.	Aromatic Hydrocarbons	Lectures	Written and oral exams.
5-6	5		Carboxylic acids		
7-9	7		Functional derivatives of carboxylic acids.		
10-11	6		Amines I and II.		
12--14	12		Aldehydes and ketones		
15	5		Phenols		

11. Course Evaluation					
25 practical + 25 Theoretical + 25 Final exam					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Course Description Form

1. Course Name:	
Advanced Pharmaceutical Analyses	
2. Course Code:	
PhApa5B00061	
3. Semester / Year:	
2/5	
4. Description Preparation Date:	
18/02/2024	
5. Available Attendance Forms:	
Weekly lecture	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hrs theoretical/2 hrs practical (4 units)	
7. Course administrator's name (mention all, if more than one name)	
<p>Name:</p> <p>Dr.Ra na Sahib Khalaf Al- Shem ary</p> <p>Email:</p> <p>:</p> <p>sci.rana.sahib@uoba.bylon.edu.iq</p>	
8. Course Objectives	
<p>Course Objectives</p>	<p>The Post-Graduates will acquire adequate scientific information regarding basic principles of Pharmaceutics including Cosmetology, Specialized drug delivery systems. They will also have hands on training of practical aspects of Synthesis of APIs and its intermediates along with Formulation and Development, Analysis and Quality assurance of various pharmaceutical dosage forms including those of herbal origin</p>

	<p>as per standards of official books, WHO, and other regulatory agencies. • The Post-Graduate will be able to think logically and solve the problems, will develop an ability to conduct, analyze and interpret data of pharmaceutical experiments in various departments (Eg: Drug discovery, Formulation & Development, Production, Quality control & Quality assurance etc) as per the needs of pharmaceutical industries • The Post-Graduates will develop an ability to visualize and work on multidisciplinary tasks. They will be able to demonstrate necessary skills (eg.working independently, time management and organizational skills).They will demonstrate an adaptable, flexible and effective approach towards organizational development</p>
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9. Teaching and Learning Strategies

Strategy	<ol style="list-style-type: none"> 1. Lecture 2. laboratory work 3. Reports
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Introduction of UV / visible spectroscopy;	General introduction of Uv-visible spectroscopy	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
2	3	Sample handling and instrumentation; Characteristic absorption of organic compounds;	Knowledge of instrumentation; Characteristic absorption of organic compounds;	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination

3	3	Rules for calculation of lambda max	How calculation of lambda max	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
4	3	Application of UV/visible; spectroscopy; Problems and solutions.	General applications of UV/visible; spectroscopy	Use of white board Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
5	3	Infra-Red spectroscopy (theory and H-bonding effect;	General introduction of Infra-Red spectroscopy	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
6	3	Sampling techniques and interpretation of spectra.	General information of Sampling techniques and interpretation of spectra.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
7	3	Characteristic group frequencies of organic compounds.	Knowledge of Characteristic group frequencies of organic compounds.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
8	3	Application of IR spectroscopy; Problems and solutions.	Knowledge the application of IR spectroscopy.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
9	3	H ¹ –Nucleomagnetic Resonance (NMR) and C ¹³ -NMR spectroscopy.	Introduction of H ¹ – Nucleomagnetic Resonance (NMR) and C ¹³ -NMR spectroscopy.	Use of white board Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination

10	3	Introduction, the nature of NMR absorption, chemical shifts and factors affecting them.	General introduction about the nature of NMR absorption, chemical shifts and factors affecting them.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
11	3	Information obtained from NMR spectra, more complex spin-spin splitting patterns.	General information of NMR spectra, more complex spin-spin splitting patterns.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
12	3	application of H ¹ -NMR spectroscopy; C ¹³ -NMR spectroscopy: introduction and characteristics, DEPT C ¹³ -NMR spectroscopy.	Applications of H ¹ -NMR spectroscopy; C ¹³ -NMR spectroscopy.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
13	3	Mass spectroscopy: Introduction and interpreting Mass spectra.	General Introduction and interpreting Mass spectra.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
14	3	Interpreting Mass spectra fragmentation patterns.	Knowledge of Interpreting Mass spectra fragmentation patterns.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
15	3	Mass behavior of some common functional groups.	Knowledge of Mass behavior of some common functional groups.	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination

11.Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc					
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	40%	20%	20%		60%
12.Learning and Teaching Resources					
Required textbooks (curricular books, if any)	Harris DC. <i>Quantitative Chemical Analysis</i> . 7th ed, 3rd printing. W. H. Freeman; 2007.				
Main References (sources)	Diffey BL. Sources and measurement of ultraviolet radiation. <i>Methods</i> . 2002;28(1):4-13. doi: 10.1016/S1046-2023(02)00204-9				
Recommended books and references (scientific journals, reports...)	Diffey BL. Sources and measurement of ultraviolet radiation. <i>Methods</i> . 2002;28(1):4-13. doi: 10.1016/S1046-2023(02)00204-9				
Electronic References, Websites	https://micro.magnet.fsu.edu/primer/digitalimaging/concepts/photomultipliers.html				

Course Description Form

1. Course Name	
Analytical Chemistry	
2. Course Code	
PhAc1B00003(3+2)	
3. Semester / Year:	
1 st course/1 st grade	
4. Description Preparation Date	
18/02/2024	
5. Available Attendance Forms	
Weekly lecture	
6. Number of Credit Hours (Total) / Number of Units (Total):	
45 hours/15 week/4 units	
7. Course administrator's name (mention all, if more than one name)	
<p>Name: Dr.Rana Sahib Khalaf Al-Shemary</p> <p>Email: sci.rana.sahib@uobabylon.edu.iq</p> <p>sci.rana.sahib@uobabylon.edu.iq</p> <p>sci.rana.sahib@uobabylon.edu.iq</p>	
8. Course Objectives	
<p>Course Objectives</p>	<p>Analytical Chemistry has two essential aims:</p> <p>One, which is intrinsic, is the obtainment of as high metrological quality as possible (i.e. of as true as possible analytical information with as low as possible uncertainty). The other, extrinsic aim is solving analytical problems derived from (bio)chemical information needs posed by “clients” engaged in a great variety of activities (health, general and agrifood industries, the environment).</p>
9. Teaching and Learning Strategies	
<p>Strategy</p>	<p>1. Lecture</p> <p>2. seminar</p> <p>3. laboratory work</p> <p>4. Reports</p>

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	General knowledge of analytical methods	General introduction of analytical methods	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
2	3	Calculation the Concentration of Solution	Neutralization reaction	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
3	3	Acid – Base equilibrium	Quantitative analysis	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
4	3	Volumetric analysis	A buffer solution	Use of white board Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
5	3	Types of titrations	Titration calculation	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
6	3	Titration of strong acid-base	Buffer solution	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
7	3	Titration of weak acid with strong base	Neutralization titration	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
8	3	How to calculate a buffer capacity	Buffer capacity	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
9	3	Types of indicators	Acid-base indicators	Use of white board Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination

				Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
10	3	How to application of buffer equations	Buffer Equations	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
11	3	Precipitating an Insoluble Salt	Precipitation titrations	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
12	3	Analysis of Silver Group	The Common Ion Effect	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
13	3	Quantification of hydrogen peroxide	Redox titrations	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
14	3	Measuring the motor nerve conduction velocity	Back titration reactions	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination
15	3	EDTA titration	Complication titration	Use of whiteboard Data show Seminars	Quizzes, Oral examination, Midterm examination, Final examination

11.Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc					
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	40%	20%	20%		60%
12.Learning and Teaching Resources					
Required textbooks (curricular books, if any)	(Fundamentals of Analytical Chemistry). 9th edition, 2013.				
Main References (sources)	A. Skoog, Donald M. West F. James Holler, and Stanley R. Crouch (Student Solutions Manual). 9th edition, 2013.				
Recommended books and references (scientific journals, reports...)	Gary D. Christian (Analytical Chemistry). 6th edition,2004.				
Electronic References, Websites	https://byjus.com/chemistry/neutalization-reactions-questions/				

Course Description Form

1. Course Name:					
Organic pharmaceutical Chemistry III					
2. Course Code:					
PhOci2B00016					
3. Semester / Year:					
2 nd , 2 nd					
4. Description Preparation Date:					
15/3/2024					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours					
7. Course administrator's name (mention all, if more than one name)					
Name: Lec.Dr.Haider Abbase Alwan Name: Lec.Dr.Aseel Fadhil Kareem Email : pharm.aseel.fadhil@uobabylon.edu.iq					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • The student can know the basic concepts of selected topics in organic pharmaceutical Chemistry are presented, including theoretical application, practical experiments • The student can a statement of the basic principles, Knowledge and principles in organic Chemistry sciences. • The student can enhance the abundant scientific base for studying type of the chemical drugs importance 		
9. Teaching and Learning Strategies					
Strategy		Enhancing the abundant scientific base for students that will help them in their future careers as pharmacists by studying type of the chemical drugs importance , how can preparation that's , made in humans and Identify Damages it's and Use of treatment to solve the problem which causes it's .			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Heterocyclic Compounds/introduction	Attendance	Quizzes

2	2		Heterocyclic Compounds		And Mid exam Attendance exam
3	2		Heterocyclic Compounds six rings		
4	2		Heterocyclic Compounds six rings		
5	2		Heterocyclic Compounds five rings		
6	2		Heterocyclic Compounds five rings		
7	2		Pyridind		
8	2		Pyridind		
9	2		Fused rings		
10	2		Fused rings/Bioactive		
11	2		Fused rings/ Natural		
12	2		Indole		
13	2		Bioactive – Indole		
14	2		Azoles		
15			Final exam		

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11. Course Evaluation

Distributing the out of 100 according to the tasks assigned to

Mid exam theory 20, Mid exam practice 20 , Final exam theory 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	MORRISON+ Organic Chemistry
Main references (sources)	Organic Chemistry+Boyd book
Recommended books and references (scientific journals, reports...)	Organic Medicinal and Pharmaceutical Chemistry
Electronic References, Websites	

Course Description Form

1. Course Name:	
organic pharmaceutical Chemistry	
2. Course Code:	
PhOpciii4B00042	
3. Semester / Year:	
1 st , 4 th	
4. Description Preparation Date:	
15/2/2024	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Lec.Dr. Shaker Awad Abdul Hussein Email: phar.shaker.awad@uobabylon.edu.iq	
8. Course Objectives	
<p>Course Objectives</p>	<p>The student must master the classifications of drugs similar to and antagonistic to the action of acetylcholine</p> <ul style="list-style-type: none"> • The student should know the chemical structures of the above drugs and the way they are metabolized or eliminated from the body. • The student will understand how drugs similar to and antagonistic to the action of adrenaline work, their chemical composition, and how to benefit from them • The student will learn the types of medications suitable for heart disease, prostate enlargement, and decongestants • The student will learn how to dispense non-steroidal anti-inflammatory drugs and the relationship of chemical composition to biological activity and the method of their metabolism • The student will master the method of action of opioids and the relationship of the chemical structure to the action of these compounds

9. Teaching and Learning Strategies

Strategy	<p>. Introducing the basics and steps of pharmaceutical design, the strategies and steps followed in that, and their purpose and benefit in the modern manufacturing, development and design of pharmaceuticals. Many drugs are now being designed to target a specific disorder. Abnormal biochemical and cellular changes caused by the disease are identified, and then compounds can be designed that may prevent or correct these changes (by acting at specific sites in the body). When a promising new compound is discovered, its structure undergoes significant modification in order to improve its ability to target the intended site (selectivity), maintain its binding to the site (affinity), improve its effectiveness (potency), and enhance its safety (minimize side effects).</p>
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Cholinergic agents	Attendance	Quizzes And Mid exam Attendance exam
2	3		Cholinergic agents		
3	3		Cholinergic agents		
4	3		Cholinergic agents		
5	3		Cholinergic agents		
6	3		Adrenergic agents		
7	3		Adrenergic agents		
8	3		Adrenergic agents		
9	3		Adrenergic agents		
10	3		Non-steroidal anti-inflammatory drugs		
11	3		Non-steroidal anti-inflammatory drugs		
12	3		Radiopharmaceutical Preparations		
13	3		Radio opaque and contrast media		
14	3		Dental agents		
15			Final exam		

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11. Course Evaluation

Distributing the out of 100 according to the tasks assigned to

Mid exam theory 20, Mid exam practice 20 , Final exam theory 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceuticalcal Chemistry 12 ed Jr., John H Block and John M. Beale.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Foye's Principles of Medicinal Chemistry by David A. Williams and Thomas L.Lemke
	Roche Soine and Wilson .Latest
Electronic References, Websites	

Course Description Form

1. Course Name:					
organic pharmaceutical Chemistry					
2. Course Code:					
PhOpciii4B00047					
3. Semester / Year:					
2 nd , 4 th					
4. Description Preparation Date:					
15/2/2024					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours					
7. Course administrator's name (mention all, if more than one name)					
Name: Lec.Dr.Shaker Awad Abdul Hssein Email: phar.Shaker.awad@uobabylon.edu.iq					
8. Course Objectives					
Course Objectives				
				
				
9. Teaching and Learning Strategies					
Strategy	. Introducing the basics and steps of pharmaceutical design, the strategies and steps followed in that, and their purpose and benefit in the modern manufacturing, development and design of pharmaceuticals. Many drugs are now being designed to target a specific disorder. Abnormal biochemical and cellular changes caused by the disease are identified, and then compounds can be designed that may prevent or correct these changes (by acting at specific sites in the body). When a promising new compound is discovered, its structure undergoes significant modification in order to improve its ability to target the intended site (selectivity), maintain its binding to the site (affinity), improve its effectiveness (potency), and enhance its safety (minimize side effects).				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Synthetic antibacterial agents	Attendance	Quizzes And Mid exam

2	3		Antibacterial antibiotics		Attendance exam
3	3		Antibacterial antibiotics		
4	3		Antibacterial antibiotics		
5	3		Antibacterial antibiotics		
6	3		<i>Antiviral agents</i>		
7	3		<i>Antiviral agents</i>		
8	3		Anticancer agents		
9	3		Anticancer agents		
10	3		Anticancer agents		
11	3		Anticancer agents		
12	3		Anticancer agents		
13	3		Anticancer agents		
14	3		Anticancer agents		
15			Final exam		

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11. Course Evaluation

Distributing the out of 100 according to the tasks assigned to

Mid exam theory 20, Mid exam practice 20 , Final exam theory 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceuticalcal Chemistry 12 ed Jr., John H Block and John M. Beale.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Foye's Principles of Medicinal Chemistry by David A. Williams and Thomas L.Lemke
Electronic References, Websites	

Course Description Form

1. Course Name:					
Inorganic pharmaceutical Chemistry 1					
2. Course Code:					
PhIpc3B00029					
3. Semester / Year:					
Semester					
4. Description Preparation Date:					
15/2/2024					
5. Available Attendance Forms:					
Attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours					
7. Course administrator's name (mention all, if more than one name)					
Name: Lec.Dr.Aamer Mousa Ali Email: pharm.aamer.mousa@uobabylon.edu.iq					
Name: Lec.Dr.Aseel Fadhil Kareem Email: aseelpharmacy77@gmail.com					
8. Course Objectives					
Course Objectives			<ul style="list-style-type: none"> • The student can know the basic concepts of selected topics in Inorganic pharmaceutical Chemistry are presented, including theoretical application, practical experiments • The student can a statement of the basic principles, Knowledge and principles in Inorganic Chemistry sciences. • The student can enhance the abundant scientific base for studying type of the chemical drugs importance 		
9. Teaching and Learning Strategies					
Strategy		Enhancing the abundant scientific base for students that will help them in their future careers as pharmacists by studying type of the chemical drugs importance , how can preparation that's , made in humans and Identify Damages it's and Use of treatment to solve the problem which causes it's .			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Atomic and molecular structure/complications	Attendance	Quizzes And Mid exam

2	2		Atomic and molecular structure/complications		Attendance exam
3	2		Atomic and molecular structure/complications		
4	2		Atomic and molecular structure/complications		
5	2		Gastrointestinal agents: Fluoride, bromide, lithium, gold, silver and mercury		
6	2		<i>Protective adsorbents</i>		
7	2		Topical agents		
8	2		Mid Examination		
9	2		Dental agents		
10	2		Dental agents		
11	2		Radiopharmaceutical preparations		
12	2		Radiopharmaceutical Preparations		
13	2		Radio opaque and contrast media		
14	2		Dental agents		
15			Final exam		

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11. Course Evaluation

Distributing the out of 100 according to the tasks assigned to

Mid exam theory 20, Mid exam practice 20 , Final exam theory 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceutical Chemistry 12 ed Jr., John H Block and John M. Beale.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Faye's Principles of Medicinal Chemistry by David A. Williams and Thomas L.Lemke
	Inorganic Medicinal and
Electronic References, Websites	