

## وصف البرنامج الاكاديمي

اسم الجامعة: جامعة التراث

الكلية: الصيدلة

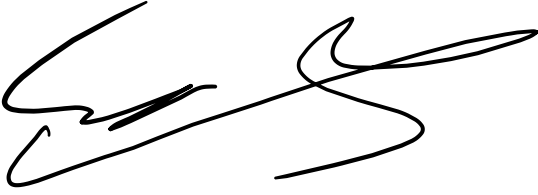
اسم البرنامج الاكاديمي و المهني: بكالوريوس صيدلة

اسم الشهادة النهائية: بكالوريوس في الصيدلة

النظام الدراسي: كورسات

تاريخ اعداد الوصف: 2024\4\14

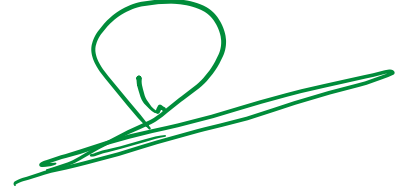
تاريخ ملء الملف: 2024\4\20



التوقيع:

اسم المعاون العلمي: م.د احسان خضير جاسم

التاريخ: 2024/4/20



التوقيع:

اسم العميد: ا.د ساجدة حسين اسماعيل

التاريخ: 2024/4/20

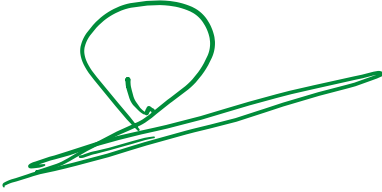
دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة و الأداء الجامعي: م.د سناريا ثامر ناصر

التاريخ: 2024/4/20

التوقيع:



مصادقة السيد العميد

## **1. Program Vision**

Excellence in pharmaceutical education, training and scientific research directed to developing pharmaceutical services dedicated to serving the patient and society at the local, regional and international levels.

## **2. Program Mission**

To prepare educated, highly qualified and well-trained pharmacists who, through their knowledge, dedication to work and leadership, can improve the quality of health services, medical education, conduct scientific research and manufacture medicines in our country and abroad

## **3. Program Objectives**

1. Preparing professional graduates to apply pharmaceutical, social, administrative and clinical sciences for health care in a way that enhances the final outcome with high quality and health performance.
2. Encouraging the state of ambition that fosters intellectual curiosity and reflective analysis committed to the principle of long-term education.
3. Providing programs, services and resources that enhance the personal and professional growth of students, former students, and training and educational staff, in order to contribute to the advancement of clinical sciences, basic and pharmaceutical sciences.
4. Contribute to developing the practice of the pharmacy profession through fellowships, research, and service to individuals, society and the profession.
5. Encouraging the spirit of respect for social traditions, openness, transparency, diversity and good citizenship.

#### 4. Program Accreditation

The program does not have program Accreditation.

#### 5. Other external influences

There isn't sponsor for the program.

#### 6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	18	9.8	
College Requirements	36	165	90.2	
Department Requirements	---	---	---	One department
Summer Training	2	pass	0	
Other	---	---	---	

\* This can include notes whether the course is basic or optional.

#### 7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First year-1st Semester	CIHb101	Human biology	2	2
First year-1st Semester	PPpp102	Principles of Pharmacy Practice	2	----
First year-1st Semester	PcAc103	Analytical Chemistry	3	2
First year-1st Semester	PtMt104	Medical Terminology	1	----
First year-1st Semester	CIMb105	Mathematics and Biostatistics	3	----
First year-1st Semester	TU 141	Computer Sciences	----	2
First year-1st Semester	TU 140	English Language	2	----
First year-1st Semester	TU 101	Human rights and democracy	2	----

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First year-2nd Semester	CIHa108	Human Anatomy	1	2
First year-2nd Semester	PPhc109	Pharmaceutical Calculations	2	2
First year-2nd Semester	CIMp110	Medical Physics	2	2
First year-2nd Semester	PcOc1111	Organic Chemistry I	3	2
First year-2nd Semester	CIHi112	Histology	2	2
First year-2nd Semester	TU 141	Computer Sciences	----	2

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Second year-1st Semester	PcOc2 216	Organic Chemistry II	3	2
Second year-1st Semester	CIMm 217	Medical Microbiology I	3	2
Second year-1st Semester	PPp1 218	Physical Pharmacy I	3	2
Second year-1st Semester	Ptph13 219	Physiology I	3	2
Second year-1st Semester	TU 201	Democracy	1	---
Second year-1st Semester	TU 241	Computer Sciences	----	4
Second year-1st Semester		Baath Party crimes	2	---

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Second year-2nd Semester	PcOc3 223	Organic Chemistry III	2	2
Second year-2nd Semester	CIMv 224	Medical Microbiology II	3	2
Second year-2nd Semester	PPp2 225	Physical Pharmacy II	3	2
Second year-2nd Semester	PtPh2 226	Physiology II	3	2
Second year-2nd Semester	phpa1 227	Pharmacognosy I	3	2
Second year-2nd Semester	TU 241	Computer Sciences	----	4
Second year-2nd Semester	TU 237	Arabic Language	2	-----

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Third year-1st Semester	PcIc 330	Inorganic Pharmaceutical Chemistry	2	2
Third year-1st Semester	phpa2 331	Pharmacognosy II	2	2
Third year-1st Semester	PPt1 332	Pharmaceutical Technology I	3	2
Third year-1st Semester	CIBi1 333	Biochemistry I	3	2
Third year-1st Semester	CIPy 334	Pathophysiology	3	2

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Third year-2nd Semester	PcOp1 336	Organic Pharm. Chemistry I	3	2
Third year-2nd Semester	PtPc1 337	Pharmacology I	3	----
Third year-2nd Semester	Ppt2 338	Pharm. Technology II	3	2
Third year-2nd Semester	CIBi2 339	Biochemistry II	3	2
Third year-2nd Semester	PhPa3 340	Pharmacognosy III	2	2
Third year-2nd Semester	TU 344	Medical Ethics	1	----

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Fourth year-1st Semester	PtPc3 444	Pharmacology II	3	2
Fourth year-1st Semester	PcOp2 445	Organic Pharm. Chemistry II	3	2
Fourth year-1st Semester	CpCp1 446	Clinical Pharmacy I	2	2
Fourth year-1st Semester	PBp 447	Biopharmaceutics	2	2
Fourth year-1st Semester	CIPu 448	Public Health	2	----

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Fourth year-2nd Semester	PtPc3 450	Pharmacology III	2	----
Fourth year-2nd Semester	PcOp3 451	Organic Pharm. Chemistry III	3	2
Fourth year-2nd Semester	CpCp2 452	Clinical Pharmacy II	2	2
Fourth year-2nd Semester	PtGt 453	General Toxicology	2	2
Fourth year-2nd Semester	PIp1 454	Industrial Pharmacy I	3	2
Fourth year-2nd Semester	CpCs 455	Communication Skills	2	----

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Fifth year-1st Semester	PcOp4 557	Organic Pharm. Chemistry IV	2	----
Fifth year-1st Semester	PIp2 558	Industrial Pharmacy II	3	2
Fifth year-1st Semester	CpAt1 559	Applied Therapeutics- I	3	-----
Fifth year-1st Semester	CIcC 560	Clinical Chemistry	3	2
Fifth year-1st Semester	CIcI 561	Hospital Training	----	4
Fifth year-1st Semester	PtCt 562	Clinical Toxicology	2	2

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Fifth year-2nd Semester	CpPm 564	Pharmacoeconomic	2	----
Fifth year-2nd Semester	CpAt2 565	Applied Therapeutics- II	2	----
Fifth year-2nd Semester	CpTd 566	Therapeutic Drug Monitoring (TDM)	2	2
Fifth year-2nd Semester	PcAp 567	Advanced Pharmaceutical Analysis	3	2
Fifth year-2nd Semester	CpHt 568	Clinical Laboratory Training	----	4
Fifth year-2nd Semester	PDF 569	Dosage Form Design	2	----
Fifth year-2nd Semester	PPb 570	Pharmaceutical Biotechnology	1	----
Fifth year-2nd Semester	Pr 563	Graduation project	1	----

8. Expected learning outcomes of the program	
<b>Knowledge</b>	
A1	The ability of student to know and understand the principles and basics of the different pharmaceutical sciences.
A2	The student has the ability to understand the advanced and modern scientific topics in the field of pharmacy
A3	The student has the ability to understand the sciences related to the pharmacy such as: medical, biological and chemical sciences
A4	Communication between theoretical skills and basic sciences
<b>Skills</b>	
B1 Thinking skills	Finding the appropriate diagnosis for simple medical conditions, as well as the ability to reach appropriate solutions related to the pharmaceutical, chemical and physical-pharmaceutical aspects.

B2 Professional and practical skills	The student has an active role in the health organization by providing and supporting health services in the health centers.
B3 Scientific skills	Build up the experience to the student to has ability to write research papers or articles as well as to make a scientific tests programme in various pharmaceutical sciences.
B4 Discrimination skills	Training to differentiate between healthy person and the patient
<b>Ethics</b>	
C1	Understand and follow the occupational, health and safety protocols within the laboratory
C2	Negotiate and accept compromises when working on group task
C3	Create effective materials, such as asides and posters, to support presentations
C4	Other skills relevant to employability and personal development

## 9. Teaching and Learning Strategies

Theoretical lecture with power point presentations and white board clarifications, Laboratory practices. Seminars

## 10. Evaluation methods

Quizzes

Oral exams

Midterm written exams

Final course exams

Practical exams

## 11. Faculty

### Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof.Dr sajida hussein ismael	Pharmacy	Pharmacology			√	
Prof.Dr. Yousif kadhim alhaidarei	Chemistry	Physical chemistry			√	
Assist prof.Dr.Mohanad Naji Sahib	Pharmacy	pharmaceutics			√	
Assist prof Dr Shaymaa Abdalwahed Abdulameer	Pharmacy	Clinical pharmacy			√	
Lecturer Dr ihsan Khudhair Jasim	Pharmacy	pharmaceutics			√	
Lecturer Dr Rana Hussain Kutaif	Pharmacy	Clinical pharmacy			√	
Lecturer Dr. Hasanain Amer Naji	Pharmacy	Pharmaceutical Chemistry			√	
Lecturer Dr Sanarya Thamer Naser	Pharmacy	pharmaceutics			√	
Lecturer Dr. Sura Akram Mohammed	Pharmacy	pharmacology			√	
Lecturer Dr. Rasha Abdul karem Abdul kadeer	Pharmacy	pharmacognosy			√	
Lecturer Dr. Hayder kade oufi	Pharmacy	Pharmacology			√	
Lecturer Dr Ahlam Jameel Buni	Pharmacy	Pharmaceutical Chemistry			√	
Lecturer Dr Suzan Wadie Hanna	Pharmacy	Pharmaceutical Chemistry			√	
Lecturer Dr. Mohammed Mustafa Mohammed Ameen	Pharmacy	Microbiology			√	
Lecturer Wael Waleed Mustafa	Pharmacy	Pharmacology			√	
Assist Lecturer Luma Eassa Hammodi	Pharmacy	Pharmacology			√	
Assist Lecturer Mohammed Shamil Fayyadh	Pharmacy	pharmaceutics			√	
Assist Lecturer Ameer Amir Abdulhussin	Pharmacy	Clinical biochemistry			√	
Assist Lecturer Maryam Saleem Mohammed Ali	Pharmacy	pharmaceutics			√	
Assist Lecturer Asmaa mahdi hussen	Pharmacy	pharmacognosy			√	
Assist Lecturer Mustafa Eglah Kadhim	Pharmacy	pharmaceutics			√	
Assist Lecturer.Abdulmuhammen amjad adnan	Pharmacy	Pharmaceutical Chemistry			√	



<b>Assist Lecturer. Halah Hussein Ali</b>	<b>Pharmacy</b>	<b>pharmaceutics</b>			√	
<b>Assist Lecturer Othman Farooq Bakir</b>	<b>Pharmacy</b>	<b>pharmaceutics</b>			√	
<b>Assist Lecturer Afaq Mahdi Ali</b>	<b>Pharmacy</b>	<b>pharmaceutics</b>			√	
<b>Assist Lecturer Aya Nabeel Yasser</b>	<b>Pharmacy</b>	<b>Clinical pharmacy</b>			√	
<b>Assist Lecturer Safa Adnan Mahmood</b>	<b>Pharmacy</b>	<b>Pharmaceutical Chemistry</b>			√	
<b>Assist Lecturer Asmaa Edrees Fadhil</b>	<b>Chemistry</b>	<b>Organic Chemistry</b>			√	
<b>Assist Lecturer Sally Mazen Saad</b>	<b>Material sciences</b>	<b>bioceramic</b>			√	

### **Mentoring new faculty members**

New faculty members were directed to participate in courses that contribute to developing their skills and abilities, such as the Teaching Methods Course, the Teaching Applicability Course, and other specialized courses held by the university and its various centers, such as the Continuing Education Center.

### **Professional development of faculty members**

Many specialized courses, workshops and seminars were held with the participation of faculty members and hosting external lecturers with expertise in various fields for the professional development of faculty members.

## **12. Acceptance Criterion**

- Applied the admission requirements for students according to the conditions of the Ministry of Higher Education and Scientific Research (central admission)
- High school rate (Average of high school)
- Fit for medical test
- The college's capacity for the number of students

## **13. The most important sources of information about the program**

- Textbooks in the specialty
- Vocabulary of the College of Pharmacy Deans' board based on the recommendations of specialized scientific committees
- The skills requirement to work in the Ministry of Health and the private part. under the Pharmacists Organization.

## **14. Program Development Plan**

To make a good practicing in pharmacy through the obtaining of scientific information

### Program Skills Outline

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First/ 1st semester	CIHb101	Human biology	Basic				√		√					√	
	PPpp102	Principles of Pharmacy Practice	Basic			√					√				√
	PcAc103	Analytical Chemistry	Basic				√			√			√		
	PtMt104	Medical Terminology	Basic			√					√			√	
	CIMb105	Mathematics and Biostatistics	Basic				√				√				√
	TU 141	Computer Sciences	Basic										√	√	√
	TU 140	English Language	Basic					√			√				√
	TU 135	Human rights and democracy	Basic							√	√				√
First /2nd semester	CIHa108	Human Anatomy	Basic				√		√					√	
	PPhc109	Pharmaceutical Calculations	Basic			√						√			√
	CIMp110	Medical Physics	Basic				√		√				√		

	PcOc1111	Organic Chemistry I	Basic		√						√				√
	CIHi112	Histology	Basic				√				√				√
Second/ 1st semester	PcOc2 216	Organic Chemistry II	Basic					√		√				√	
	CIMm 217	Medical Microbiology I	Basic				√				√				√
	PPp1 218	Physical Pharmacy I	Basic			√			√				√		
	Ptph13 219	Physiology I	Basic	√	√	√									
	TU 201	Democracy	Basic						√				√	√	
	TU 241	Computer Sciences	Basic										√	√	√
Second / 2nd semester	PcOc3 223	Organic Chemistry III	Basic							√			√		√
	CIMv 224	Medical Microbiology II	Basic		√			√				√			
	PPp2 225	Physical Pharmacy II	Basic	√							√			√	
	PtPh2 226	Physiology II	Basic		√	√		√							

	phpa1 227	Pharmacognosy I	Basic	√	√	√									
	TU 237	Arabic Language	Basic							√	√				√
Third / 1st semester	PcIc 330	Inorganic Pharmaceutical Chemistry	Basic							√	√	√			
	phpa2 331	Pharmacognosy II	Basic		√			√	√						
	PPt1 332	Pharmaceutical Technology I	Basic		√		√	√							
	CIBi1 333	Biochemistry I	Basic								√		√		√
	CIPy 334	Pathophysiology	Basic			√								√	√
Third /2nd semester	PcOp1 336	Organic Pharm. Chemistry I	Basic			√	√	√							
	PtPc1 337	Pharmacology I	Basic						√			√	√		
	Ppt2 338	Pharm. Technology II	Basic						√	√	√				
	CIBi2 339	Biochemistry II	Basic	√								√		√	

	PhPa3 340	Pharmacognosy III	Basic			√				√				√	
	TU 344	Medical Ethics	Basic					√			√				√
Fouth / 1st semester	PtPc3 444	Inorganic Pharmaceutical Chemistry	Basic				√				√				√
	PcOp2 445	Pharmacognosy II	Basic				√				√				√
	CpCp1 446	Pharmacology II	Basic	√		√			√						
	PBp 447	Organic Pharm. Chemistry II	Basic					√		√				√	
	ClPu 448	Clinical Pharmacy I	Basic							√	√	√			
	PtPc3 444	Biopharmaceutics	Basic		√				√				√		
	PcOp2 445	Public Health	Basic			√						√	√		
	PtPc3 450	Pharmacology III	Basic				√				√				√
PcOp3 451	Organic Pharm. Chemistry III	Basic						√				√		√	

<b>Fourth / 2nd semester</b>	CpCp2 452	<b>Clinical Pharmacy II</b>	<b>Basic</b>	√	√	√									
	PtGt 453	<b>General Toxicology</b>	<b>Basic</b>					√	√	√					
	PIp1 454	<b>Industrial Pharmacy I</b>	<b>Basic</b>							√		√	√		
	CpCs 455	<b>Communication Skills</b>	<b>Basic</b>				√				√				√
	PtPc3 450	<b>Pharmacology III</b>	<b>Basic</b>								√	√			√
<b>Fifth/ 1st semester</b>	PcOp4 557	<b>Organic Pharm. Chemistry IV</b>	<b>Basic</b>		√							√	√		
	PIp2 558	<b>Industrial Pharmacy II</b>	<b>Basic</b>			√						√		√	
	CpAt1 559	<b>Applied Therapeutics- I</b>	<b>Basic</b>		√		√	√							
	CICc 560	<b>Clinical Chemistry</b>	<b>Basic</b>			√					√				√
	CICi 561	<b>Hospital Training</b>	<b>Basic</b>					√				√			√
	PtCt 562	<b>Clinical Toxicology</b>	<b>Basic</b>				√				√			√	
	PcOp4 557	<b>Organic Pharm. Chemistry IV</b>	<b>Basic</b>		√							√	√		

<b>Fifth / 2nd semester</b>	CpPm 564	<b>Pharmacoeconomic</b>	<b>Basic</b>			√						√		√	
	CpAt2 565	<b>Applied Therapeutics-II</b>	<b>Basic</b>					√		√				√	
	CpTd 566	<b>Therapeutic Drug Monitoring (TDM)</b>	<b>Basic</b>	√	√	√									
	PcAp 567	<b>Advanced Pharmaceutical Analysis</b>	<b>Basic</b>							√	√	√			
	CpHt 568	<b>Clinical Laboratory Training</b>	<b>Basic</b>					√	√					√	
	PDf 569	<b>Dosage Form Design</b>	<b>Basic</b>			√				√				√	
	PPb 570	<b>Pharmaceutical Biotechnology</b>	<b>Basic</b>		√			√							√
	Pr 563	<b>Graduation project</b>	<b>Basic</b>				√				√				√

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.



## Course Description

1. Course Name:	
Histology	
2. Course Code:	
CIHi112	
3. Semester / Year:	
2 <sup>nd</sup> /first stage	
4. Description Preparation Date:	
2024\4\14:	
5. Available Attendance Forms:	
Weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 theories + 30 pract. / 3	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer Dr Rana Hussain Kutaif +assist lecturer.Othman farooq\ practical Email: rana.hussain@turath.edu.iq, othman.farooq@turath.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> <li>• An overview of tissues and definitional conce</li> <li>• Knowing the structure of the human body</li> <li>• Study the structure of the cells that make organs</li> </ul>
9. Teaching and Learning Strategies	
Strategy	<ol style="list-style-type: none"> <li>1- Method of giving lectures</li> <li>2- Student groups in practical groups</li> <li>3- E-learning on campus (use of the Internet)</li> <li>4- Using social networks to deliver lectures to the student</li> </ol>

## 10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	Week
Quiz and discussion	Theoretical lectures	Circulatory system:	wall, Arteries, Veins & Capillaries)		
Quiz and discussion	Theoretical lectures	Lymphoid tissue:	Structure & function of the (Thymus gland, Spleen & Lymph nodes)	2hr. Theoretical	2
Quiz and discussion	Theoretical lectures	Nervous system:	Central & Peripheral nervous system	3hrs. Theoretical	3
Quiz and discussion	Theoretical lectures	Respiratory system:	-Conducting portion (Nose, Nasopharynx, Trachea Bronchus & Bronchioles).	3hrs. Theoretical	4
Quiz and discussion	Theoretical lectures	Digestive system:	-General structure of the digestive tract (GIT) (Oral cavity, Mouth, Esophagus & Stomach)	4hrs. Theoretical	5
Quiz and discussion	Theoretical lectures	Endocrine system:	General structure of the pituitary gland -Histophysiology of the pituitary gland.	4hrs. Theoretical	6
Quiz and discussion	Theoretical lectures	Male reproductive system:	General structure of - the testes.	3hrs. Theoretical	7
Quiz and discussion	Theoretical lectures	Female reproductive system:	General structure of - ovary, Oviduct, Uterus & Vagina.	3hrs. Theoretical	8
Quiz and discussion	Theoretical lectures	Urinary system:	Structure & - Function of the (kidney & nephron)	3hrs Theoretical	9
Quiz and discussion	Theoretical lectures	The skin	Thick & Thin skin	2hrs Theoretical	10

Required textbooks ( curricular books, if any)	
Main references (source)	
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:	
Biochemistry	
2. Course Code:	
CIBi1 333	
3. Semester / Year:	
1 <sup>st</sup> /third year	
4. Description Preparation Date:	
2024\4\14	
5. Available Attendance Forms:	
Weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 theory + 30 practical / 4	
7. Course administrator's name (mention all, if more than one name)	
Name:lecturer.Dr.rasha abduLKarem+ aya nabeel Yasir \ practical Email: rasha.abduLKarem@turath.edu.iq	
8. Course Objectives	
Course Objectives	• To integrate basic concepts that describe traditional fundamental topics of biochemis structure and metabolism.
9. Teaching and Learning Strategies	
Strategy	1-Theoretical lectures inside the classroom 2-E-learning on campus (use of the Internet) 2- Student groups 3- Laboratory activities

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Introduction macromolecular biochemis	Macromolecules biochemistry: Definitions and te proteins, enzy DNA; Clinical valu	Lectures	Exam activity
2	3	Identify amino acids, struct properties and classification	Amino acids: Structu classification, properties, isomerism.	Lectures	Exam + activity
3	3	Identify the chemical react of amino acids and titra curves	Amino acids: Chem reactions, Zwitter ions, titra curve calculating isoele point values.	Lectures	Exam + activity
4	3	Identify the peptide bonds the properties of polypeptid	Peptides: Peptide b resonance forms, isom physical properties chemical reactions.	Lectures	Exam + activity
5	3	Learn about the classificat and structures of proteins	Proteins: Prin structure, Secon structure ( $\alpha$ helix sheet), tert structure, quater structure. Classification, synthesis, cell functions	Lectures	Exam activity
6	3	Determine the sequence amino acids in the prot break down the proteins purify them	Denaturation proteins and pro sequencing: Determining composition, terminal A.A anal C- terminal analysis, Ed degradation, Pro purification.	Lectures	Exam activity
7	3	Identify carbohydrates, t importance classification	Carbohydrates: Chemistry classification, biomedical importance, Stereochemistry monosaccharides, Physiologically important monosaccharides, glycosides, disaccharides, polysaccharides	Lectures	Exam activity
8	3	Identify fats, their importa and classification	Lipids: classificat physical physiological properties, , separa and identification lipids	Lectures	Exam activity

9	3	Identify the nature of enzymes, their importance, and their mechanism of action, in addition to their contribution to disformation	Enzymes: Structure and mechanism, nomenclature, classification. Biological function, cofactors, coenzyme involvement, disease.	Lectures	Exam activity
10	2	Identify the kinetic properties and factors affecting the rate of enzyme speed	Kinetics: factors affecting enzyme rate, single-substrate reaction, kinetic constants.	Lectures	Exam activity
11	1	Identify enzyme inhibitors	Enzyme inhibition: Reversible inhibition: competitive and non-competitive inhibition; Irreversible inhibition	Lectures	Exam activity
12	1	Understand how to control the activity and uses of enzyme inhibitors	Control of activity: uses of inactivating multi-substrate reactions, ternary complex mechanism, ping-pong mechanism	Lectures	Exam activity
13	3	Identify the chemical structure of nucleic acids, as well as their importance and properties	Nucleic Acids: Chemical structure, nucleic acid components, nucleic acid bases, nucleotides, and deoxynucleotides	Lectures	Exam activity
14	2	Identify the biological functions of DNA	Biological function of DNA: Genes, genomes, transcription and translation, replication.	Lectures	Exam activity
15	4	Understand the structure and function of the plasma membrane	Biochemistry of extracellular and intracellular communication	Lectures	Exam activity
16	3	Learn about classification of hormones and their medical importance	Biochemistry of endocrine system	Lectures	Exam activity
17	3	Understand how carbohydrates, fats, proteins and vitamins are digested and absorbed	Nutrition, digestion and absorption	Lectures	Exam activity

## 11. Course Evaluation

15	med	1
5	activity	2
15	Practical exam	3
5	Oral exam	4
60	final exam	5

12. Learning and Teaching Resources	
Required textbooks ( curricular books, if any)	Harper's Illustrated Biochemistry, Late edition
Main references (source)	<ul style="list-style-type: none"> <li>Lippincott Biochemistry</li> <li>Lehninger Principles of Biochemistry</li> </ul>
Recommended books and references (scientific journals, reports...)	*Lab Manual for Practical Biochemistry Adopted by the Department
Electronic references, websites.	

1. Course Name:	
Anatomy	
2. Course Code:	
CIHa 108	
3. Semester / Year:	
2 <sup>nd</sup> /first stage	
4. Description Preparation Date:	
2024\4\14	
5. Available Attendance Forms:	
Weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
15 theories + 30 pract. / 2	
7. Course administrator's name (mention all, if more than one name)	
Name: lecturer Dr. sura akram mohammed+ Assist Lecturer Maryam Saleem Email:sura.akram@turath.edu.iq , maryam.saleem@turath.edu.iq	
8. Course Objectives	
Course Objectives	<p>1- Providing students with important theoretical information related to the anatomical structure of the human body.</p> <p>2- Enabling students to understand the locations and anatomy of the various systems and organs of the human body.</p>

	<ul style="list-style-type: none"> <li>• 3- Enabling students to learn the anatomical description of the human body's systems and the locations of the various organs.</li> </ul>
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1- Method of giving lectures</li> <li>2- Student groups in practical groups</li> <li>3- E-learning on campus (use of the Internet)</li> <li>4- Using social networks to deliver lectures to the student</li> </ol>

## 10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	Week
Quiz and discussion	Theoretical lectures	<b>General introduction of anatomy</b>	Structure of the vascular system (Heart wall, Arteries, Veins & Capillaries)	3hrs. Theoretical	1
Quiz and discussion	Theoretical lectures	<b>:Circulatory system Location of vascular system (Heart, Arteries, Veins)</b>	Structure & function of the (Thymus gland, Spleen & Lymph nodes)	2hr. Theoretical	2
Quiz and discussion	Theoretical lectures	<b>:Circulatory system Location of lymphatic system (Lymphatic capillary).</b>	Central & Peripheral nervous system	3hrs. Theoretical	3
Quiz and discussion	Theoretical lectures	<b>:Lymphoid tissue location of the (Thymus gland, Spleen &amp; Lymph nodes)</b>	-Conducting portion (Nose, Nasopharynx, Trachea Bronchus & Bronchioles).	3hrs. Theoretical	4
Quiz and discussion	Theoretical lectures	<b>Lymphoid nodule (MALT) &amp; Tonsils</b>	-General structure of the digestive tract (GIT) (Oral cavity, Mouth, Esophagus & Stomach)	4hrs. Theoretical	5
Quiz and discussion	Theoretical lectures	<b>:Nervous system Central &amp; Peripheral nervous system by location</b>	General structure of the pituitary gland -Histophysiology of the pituitary gland.	4hrs. Theoretical	6
Quiz and discussion	Theoretical lectures	<b>Respiratory system - :Conducting portion (Nose, Nasopharynx, Trachea Bronchus &amp; Bronchioles). -Respiratory portion (Lung)</b>	General structure of - the testes.	3hrs. Theoretical	7
Quiz and discussion	Theoretical lectures	<b>:Digestive system location of different parts of digestive tract (GIT) (Oral cavity, Mouth, Esophagus &amp; Stomach)&amp;Small intestine, Large intestine, Rectum &amp; Anus.</b>	General structure of - ovary, Oviduct, Uterus & Vagina.	3hrs. Theoretical	8
Quiz and discussion	Theoretical lectures	<b>:Digestive system Glands associated with the digestive</b>	Structure & - Function of the (kidney & nephron)	3hrs Theoretical	9



		<b>tract by location (Salivary glands, Pancreas, Liver &amp; Gall bladder).</b>			
Quiz and discussion	Theoretical lectures	<b>:Endocrine system location of the pituitary gland &amp; location of the Adrenal, Thyroid, Parathyroid, Islet of Langerhans &amp; Pineal glands.</b>	Thick & Thin skin	2hrs Theoretical	10
Quiz and discussion	Theoretical lectures	<b>Male reproductive system: location of the testes &amp; Excretory genital ducts , Excretory genital glands (Seminal vesicles, Prostate &amp; Cowper's glands)</b>		3hrs. Theoretical	11
Quiz and discussion	Theoretical lectures	<b>Female reproductive location of :system ovary, Oviduct, Uterus &amp; Vagina.</b>		3hrs. Theoretical	12
Quiz and discussion	Theoretical lectures	<b>:Urinary system location of the (kidney &amp; nephrone) &amp; location of the (Ureter, Bladder &amp; Urethra).</b>		3hrs Theoretical	13

## 11. Course Evaluation

Midterm Exams 20  
 Practical Exams 15  
 Quizzes 5  
 Final exam 60

## 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	Clinical anatomy by region, 10th ed. 2010, by Richard S. Snell
Main references (source)	Principles of Human Anatomy, 13th ed. 2014, by Tortora
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

<b>1. Course Name:</b>	
Pharmacognosy II	
<b>2. Course Code:</b>	
Phpa2 331	
<b>3. Semester / Year:</b>	
First/ Third	
<b>4. Description Preparation Date:</b>	
2024\4\14	
<b>5. Available Attendance Forms:</b>	
Weekly	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
30 Hours	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name:lectuere Dr rasha Abdul karem+ Asmaa mhadi \ practical Email: rasha.abdulkarem@ turath.edu.iq, Asmaa.mhadi@ turath.edu.iq	
<b>8. Course Objectives</b>	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Drug overview and introductory concepts</li> <li>• Natural Medicines Sources</li> <li>• Types of plants, animals and microorganisms producing natural medicines</li> <li>• Classification and division of natural products</li> <li>• Classification of drugs depending on their chemical and clinical nature</li> <li>• Drug overview and introductory concepts</li> <li>• Natural Medicines Sources</li> <li>• Types of plants, animals and microorganisms producing natural medicines</li> <li>• Classification and division of natural products</li> </ul>

	<ul style="list-style-type: none"> <li>• Classification of drugs depending on their chemical and clinical nature</li> <li>• Scientific nomenclature of plants and methods of classification</li> <li>• Methods of extracting medicines from their sources</li> <li>• Chemical composition of drugs</li> <li>• General effects of drugs on body systems</li> <li>• Effects of body systems on medicines</li> <li>• Toxic effects of drugs with clinical side effects</li> <li>• Drug separation techniques</li> </ul>
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### 9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> <li>• Recognize the basic principles of pharmacology</li> <li>• Recognize the physical and chemical properties of natural active ingredients</li> <li>• Identify the methods and pathways of biosynthesis of medically active compounds</li> <li>• Identify methods of classifying and dividing natural products and their sources</li> <li>• Learn about methods of extracting medicines from their sources</li> <li>• Identify the effects of drugs on body systems and vice versa</li> </ul>
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### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Definition and using	Introduction: General biosynthesis pathways of secondary metabolites.	Theoretical lectures	Oral exams and discussion
2	2	Definition and using	Carbohydrates.	Theoretical lectures	Oral exams and discussion
3	5	Definition and using	Glycosides: Biosynthesis, physical and chemical properties; cardiac glycosides; saponin glycosides; anthraquinone glycosides; flavonoid glycosides; cyanophore glycosides.	Theoretical lectures	Oral exams and discussion

4	5	Definition and using	Glycosides: Isothiocyanate glycosides; aldehyde glycosides; alcoholic glycosides; phenolic glycosides; lactone glycosides; coumarins and chromones.	Theoretical lectures	Oral exams and discussion
5	2	Definition and using	Resins and resin combination; tannins.	Theoretical lectures	Oral exams and discussion
6	3	Definition and using	Lipids: fixed oils and waxes.	Theoretical lectures	Oral exams and discussion
7	4	Definition and using	Volatile oils: Introduction; chemistry of volatile oils; biosynthesis of volatile oils; hydrocarbons as volatile oils; alcohols as volatile oils; aldehydes as volatile oils.	Theoretical lectures	Oral exams and discussion
8	3	Definition and using	Ketones as volatile oils; Phenols as volatile oils; Oxides as volatile oils; Ester as volatile oils; Phenolic ethers as volatile oils.	Theoretical lectures	Oral exams and discussion
9	2	Definition and using	Non- medicinal toxic plants.	Theoretical lectures	Oral exams and discussion
10	2	Definition and using	Vitamins and Amino acids.	Theoretical lectures	Oral exams and discussion

## 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.

## 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	<b>Pharmacognosy and Pharmacobiotechnology by Tyler, 1996.</b>
Main references (source)	<b>Practical manual, college of pharmacy /. University Baghdad</b>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:	
Analytical Chemistry	
2. Course Code:	
PcAc103	
3. Semester / Year:	
First/First	
4. Description Preparation Date:	
2024\4\14	
5. Available Attendance Forms:	
Weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
48 Hours theoretical + 32 Practical	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist Lecturer Afaq Mahdi Ali+ Assist Lecturer Asmaa Edrees Fadhil Email: <a href="mailto:afaq.mahdi@turath.edu.iq">afaq.mahdi@turath.edu.iq</a> , <a href="mailto:Asmaa.edrees@turath.edu.iq">Asmaa.edrees@turath.edu.iq</a>	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> <li>• Provide students with important theoretical information related to the chemical foundations necessary for the practice of chemical analysis.</li> <li>• Enable students to understand the importance of predicting the accuracy and validity of the data of the results of chemical analysis and the technique of quantitative analysis.</li> <li>• Understand students that theory is usually an important and useful guide to solving analytical problems</li> </ul>
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> <li>• <b>Knowledge and understanding: knowledge of the mechanisms of chemical analysis and understanding of different methods of analysis</b></li> <li>• <b>Subject-specific skills: teach the student additional basic skills of chemical analysis</b></li> </ul>
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Learn some important concepts of chemical analysis	Review of elementary concept important to analytical chemistry	Lectures	Exam+ Activity
2	3	Learn all the concepts related to electrolytic materials	Strong and weak electrolytes; important weight and concen. units	Lectures	Exam+ Activity
3	3	Learn concepts related to the accuracy and validity of analytical results	The evaluation of the reliability of analytical data	Lectures	Exam+ Activity
4	3	Learn about a general introduction to gravimetric analysis	Introduction to gravimetric analysis	Lectures	Exam+ Activity
5	3	Solving mathematical examples of gravimetric analysis	Gravimetric analysis examples	Lectures	Exam+ Activity
6	3	Identify organic and inorganic precipitators	Inorganic and organic precipitating agents	Lectures	Exam+ Activity
7	3	Learn important concepts of volumetric analysis	Introduction to volumetric methods of analysis	Lectures	Exam+ Activity
8	3	Learn equilibrium calculations for acids and bases	Volumetric calculations; acid-base equilibria and pH calculations	Lectures	Exam+ Activity
9	3	Recognize the equivalence theory of simple systems	Buffer solutions: Theory of neutralization titrations of simple system	Lectures	Exam+ Activity
10	3	recognize the equivalence theory of complex systems,	Theory of neutralization titrations of complex system	Lectures	Exam+ Activity
11	3	Learn to solve pH problems for complex systems	Calculation of pH in complex system	Lectures	Exam+ Activity
12	3	Identify methods of volumetric analysis of complex systems	Volumetric methods based on complex system	Lectures	Exam+ Activity

13	3	Learn how to calculate the resulting substance in precipitation titrations	<b>Precipitation titrations</b>	Lectures	Exam+ Activity
14	3	Identify electronic transfer calibrations between materials	<b>Oxidation-reduction titrations</b>	Lectures	Exam+ Activity
15	3	recognize equilibrium in redox systems,	<b>Equilibria in oxidation-reduction system</b>	Lectures	Exam+ Activity
16	3	Identify methods of analysis using spectroscopic instruments	<b>Spectrophotometric analysis: An introduction to optical methods of analysis</b>	Lectures	Exam+ Activity

### 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.

### 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	<b>Fundamentals of Analytical Chemistry. by Skoog and West.</b>
Main references (source)	
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:
<b>Organic Chemistry I</b>
2. Course Code:
PcOc1 111
3. Semester / Year:
Second/First
4. Description Preparation Date:
2024\4\14
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
48 Hours theoretical + 32 Practical

7. Course administrator's name (mention all, if more than one name)					
Name: Assist Lecturer Asmaa Edrees Fadhil, Assist Lecturer safa adnan\practical					
Email: <a href="mailto:Asmaa.edrees@turath.edu.iq">Asmaa.edrees@turath.edu.iq</a> , <a href="mailto:safa.adnan@turath.edu.iq">safa.adnan@turath.edu.iq</a>					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> <li>• Enable students to understand carbon chemistry.</li> <li>• Enable students to understand the basic characteristics of some active groups of organic compounds.</li> <li>• Introduce students to the stereochemistry of organic compounds.</li> </ul>			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> <li>• Knowledge and understanding: knowledge of the important constants of organic chemistry and the qualities of its compounds</li> <li>• B- Subject-specific skills: The student learns basic skills related to organic chemistry</li> </ul>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Learn about some basic concepts of organic compounds,	General introduction	Lectures	Exam+ Activity
2	3	Learn all the concepts related to methane and its interactions	Methane	Lectures	Exam+ Activity
3	3	Learn the qualities of alkenes	Alkanes	Lectures	Exam+ Activity
4	3	Recognize a general introduction to nomenclature and physical properties	Alkenes: Nomenclature and properties	Lectures	Exam+ Activity
5	3	Learn the methods of preparation and reactions of alkenes	Alkenes: Peroration and reactions	Lectures	Exam+ Activity
6	3	Learn the characteristics of alkynes, their naming, physical	Alkynes	Lectures	Exam+ Activity



		<b>properties, preparation, and interactions.</b>			
<b>7</b>	<b>3</b>	<b>Learn the characteristics, naming, physical properties, preparation, and reactions of dienes.</b>	<b>Dienes</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>8</b>	<b>3</b>	<b>Identify the stereospacial positions of organic compounds.</b>	<b>Stereochemistry I</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>9</b>	<b>3</b>	<b>Recognize the behavior of organic compounds during reaction and obtain results for vacuum structure.</b>	<b>Stereochemistry II</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>10</b>	<b>3</b>	<b>Recognize the effect of qualitative selection of interactions.</b>	<b>Stereochemistry II</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>11</b>	<b>3</b>	<b>Learn the characteristics, naming, physical properties, preparation, and reactions of alcohols.</b>	<b>Alcohols</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>12</b>	<b>3</b>	<b>Learn the properties of ethers, their naming, physical properties, preparation and interactions.</b>	<b>Ethers</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>13</b>	<b>3</b>	<b>Learn the properties of alkyl halides, their naming, physical properties, preparation, and reactions.</b>	<b>Alkyl halides</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>14</b>	<b>3</b>	<b>Recognize the mechanics of</b>	<b>Alkyl halides</b>	<b>Lectures</b>	<b>Exam+ Activity</b>

		<b>substitution reactions of the first and second orders.</b>			
<b>15</b>	<b>3</b>	<b>Identify the naming of cyclic alkanes, their physical properties, methods of preparation and interactions,</b>	<b>Cycloalkanes</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>16</b>	<b>3</b>	<b>Recognize the spatial positions of rings and angles between atoms,</b>	<b>Cycloalkanes</b>	<b>Lectures</b>	<b>Exam+ Activity</b>

### 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.

### 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	<b>Organic Chemistry. by Robert T. Morrison and Robert N. Boyd.</b>
Main references (source)	<b>Organic Chemistry. by McCurry; 5th ed. Thomson learning; CA, USA; 2000.</b>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

<b>1. Course Name:</b>
Pharmaceutical Inorganic Chemistry
<b>2. Course Code:</b>
PcIc 330
<b>3. Semester / Year:</b>
First/Third
<b>4. Description Preparation Date:</b>
2024\4\14
<b>5. Available Attendance Forms:</b>
Weekly

<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
32 Hours theoretical + 32 Practical					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: lecturer Dr Hasanain Amer Naji + Assist Lecturer. Abdulmuhaimen amjad adnan \ practical Email: hasanain.amer@turath.edu.iq, abdulmuhaimen.amjad@turath.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Provide students with important theoretical information related to the basic principles of inorganic chemistry related to medicinal and pharmaceutical chemistry.</li> <li>• Understand the atomic and molecular structure of inorganic compounds and the process of formation of these compounds.</li> <li>• Provide students with basic information about inorganic compounds used as pharmaceuticals.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		<ul style="list-style-type: none"> <li>• <b>Knowledge and understanding:</b> knowledge of the processes of formation of inorganic complexes and their pharmaceutical uses.</li> <li>• <b>Subject-specific skills:</b> The student learns basic skills for the preparation of inorganic drugs</li> </ul>			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Learn important concepts about atomic structure	Atomic structure	Lectures	Exam+ Activity
2	2	Learn important concepts about molecular structure	Molecular structure	Lectures	Exam+ Activity
3	2	Learn concepts related to complex formation	Complexation, complexes and chelating agents	Lectures	Exam+ Activity
4	2	Recognize the importance of essential trace	Essential and trace ions: Iron	Lectures	Exam+ Activity

		elements, the first of which is iron			
5	2	Recognize the importance of copper, sulfur and iodine elements	Essential and trace ions: copper, sulfur, iodine	Lectures	Exam+ Activity
6	2	Recognize non-essential elements and their importance	Non-essential ions: Fluoride, bromide, lithium, gold, silver and mercury	Lectures	Exam+ Activity
7	2	Identify important substances used in the treatment of the digestive system	Gastrointestinal agents: Acidifying agents	Lectures	Exam+ Activity
8	2	Recognize important antacids	Antacids	Lectures	Exam+ Activity
9	2	Identification of protective materials and adsorbent materials	Protectives and adsorbent	Lectures	Exam+ Activity
10	2	Identify important topical materials and how to use them	Topical agents	Lectures	Exam+ Activity
11	2	Identify the materials used in dental treatment	Dental agents	Lectures	Exam+ Activity
12	2	Identify methods of radioactive decay of isotopes	Radiopharmaceuticals: Radioisotopes, Radioactive decay particles	Lectures	Exam+ Activity
13	2	Learn how to administer isotopes	Internal administration of radioisotopes	Lectures	Exam+ Activity
14	2	Identification with radioactive preparations	Radiopharmaceutical preparations	Lectures	Exam+ Activity
15	2	Identify ray shader and contrast medium	Radiopaque contrast media	Lectures	Exam+ Activity
16	2	identify radioactive variation agents and how to use them	Radiological contrast agents	Lectures	Exam+ Activity

## 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.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	<b>Inorganic Medicinal and Pharmaceutical Chemistry. by Block, Roche Soine and Wilson.</b>
Main references (source)	<b>Wilson and Gisvold; Textbook of Organic medicinal and Pharmaceutical chemistry; Delgado JN, Remers WA</b>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:
Pharmacognosy I
2. Course Code:
Phpa1 227
3. Semester / Year:
Second/ Second
4. Description Preparation Date:
2024\4\14
5. Available Attendance Forms:
Weekly
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:lectuere Dr rasha abdul karem+ Asmaa mhadi \ practical Email: rasha.abdulkarem@ turath.edu.iq, Asmaa.mhadi@ turath.edu.iq
8. Course Objectives

<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Drug overview and introductory concepts</li> <li>• Natural Medicines Sources</li> <li>• Types of plants, animals and microorganisms producing natural medicines</li> <li>• Classification and division of natural products</li> <li>• Classification of drugs depending on their chemical and clinical nature</li> <li>• Scientific nomenclature of plants and methods of classification</li> <li>• Methods of extracting medicines from their sources</li> </ul>
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### 9. Teaching and Learning Strategies

<b>Strategy</b>	<ul style="list-style-type: none"> <li>• Recognize the basic principles of pharmacology</li> <li>• Recognize the physical and chemical properties of natural active ingredients</li> <li>• Identify the methods and pathways of biosynthesis of medically active compounds</li> <li>• Identify methods of classifying and dividing natural products and their sources</li> <li>• Learn about methods of extracting medicines from their sources</li> <li>• Identify the effects of drugs on body systems and vice versa</li> </ul>
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### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Definition and using	General Introduction: The Scope of Pharmacognosy, definitions and basic principles.	Theoretical lectures	Oral exams and discussion
2	1	Definition and using	Drugs from natural sources, crude drugs, official and non-official drugs.	Theoretical lectures	Oral exams and discussion
3	1	Definition and using	Classification of natural products.	Theoretical lectures	Oral exams and discussion
4	1	Definition and using	Plant nomenclature and taxonomy.	Theoretical lectures	Oral exams and discussion
5	3	Definition and using	Production of crude drugs: Cultivation, collection, drying and storage.	Theoretical lectures	Oral exams and discussion
6	1	Definition and using	Deterioration of crude natural products.	Theoretical lectures	Oral exams and discussion
7	2	Definition and using	pharmacological activities of natural products.	Theoretical lectures	Oral exams and discussion
8	3	Definition and using	Chemistry of natural drug products.	Theoretical lectures	Oral exams and discussion
9	4	Definition and using	Quality control: Evaluation of natural products; macroscopical evaluation; physical evaluation;	Theoretical lectures	Oral exams and discussion

			chemical evaluation; biological evaluation; spectroscopical evaluation.		
10	3	Definition and using	Phytochemical investigation of herbal products: Extraction of the plant material; Separation and isolation of constituents; characterization of the isolated compounds.	Theoretical lectures	Oral exams and discussion
11	7	Definition and using	Separation technique: introduction; Mechanisms of separation and classification based on the type of technique; paper chromatography; Thin layer chromatography; Ion-exchange chromatography; Gel filtration chromatography; Column chromatography; Gas chromatography; HPLC; Electrophoresis; Affinity chromatography.	Theoretical lectures	Oral exams and discussion
12	2	Definition and using	Traditional plant medicines as a source of new drugs.	Theoretical lectures	Oral exams and discussion

### 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.

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<b>Trease and Evans Pharmacognosy</b>
Main references (source)	
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:

Organic Chemistry II

2. Course Code:

PcOc2 216

3. Semester / Year:

First / Second

4. Description Preparation Date:

2024\4\14

5. Available Attendance Forms:

Weekly

6. Number of Credit Hours (Total) / Number of Units (Total)

48 Hours theoretical + 32 Practical

7. Course administrator's name (mention all, if more than one name)

Name: prof Dr Yousif kadhim alhaidarei+ Assist Lecturer Asmaa Edrees Fadhil\ practical

Email: [Yousif.kadhim@turath.edu.iq](mailto:Yousif.kadhim@turath.edu.iq), [Asmaa.edrees@turath.edu.iq](mailto:Asmaa.edrees@turath.edu.iq)

8. Course Objectives

Course Objectives

- Enable students to understand aromatic chemistry, properties and interactions.
- Enable students to understand the basic characteristics of some active groups of organic compounds such as carboxylic acids and their derivatives, aldehydes, ketones, amines and phenols.
- Introduce students to these groups of vehicles.

9. Teaching and Learning Strategies

Strategy

- **Knowledge and understanding:** knowledge of the important constants of organic chemistry and the qualities of its compounds
- **Subject-specific skills:** The student learns basic skills related to organic chemistry

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	identify the structure of aromatic compounds, especially the benzene ring and its physical properties,	Aromatic Hydrocarbons (includes benzene)	Lectures	Exam+ Activity
2	3	Identify the methods of preparing aromatic compounds and their reactions	Aromatic Hydrocarbons (includes benzene, electrophilic aromatic substitution).	Lectures	Exam+ Activity



3	3	Identification of resonant forms of electrophilic compensation for gasoline, steering and ring activated and non-ring activated aggregates	Aromatic Hydrocarbons (includes benzene, electrophilic aromatic substitution).	Lectures	Exam+ Activity
4	3	Knowing the arenas, their formation and toxicity, and identifying their physical properties	Aromatic Hydrocarbons (includes arenes and their derivatives).	Lectures	Exam+ Activity
5	3	Study of methods of preparation of arenes and their interactions	Aromatic Hydrocarbons (includes arenes and their derivatives).	Lectures	Exam+ Activity
6	3	Identify a general introduction to the nomenclature and physical properties of carboxylic acids and their reactions,	Carboxylic acids: properties and reactions.	Lectures	Exam+ Activity
7	3	Recognize the properties, preparation and reactions of carboxylic acid chlorides.	Functional derivatives of carboxylic acid (Acid chloride)	Lectures	Exam+ Activity
8	3	Identify the physical properties and methods of preparation and reactions of carboxylic acid chlorides	Functional derivatives of carboxylic acids (Anhydrides)	Lectures	Exam+ Activity
9	3	Identify the physical properties and methods of preparation and reactions of amides	Functional derivatives of carboxylic acids (Amides)	Lectures	Exam+ Activity
10	3	Recognize the physical properties and methods of preparation and reactions of esters,	Functional derivatives of carboxylic acids (Esters)	Lectures	Exam+ Activity
11	3	Learn the characteristics of amines, their naming, physical	Amines I and II.	Lectures	Exam+ Activity

		<b>properties, preparation, and interactions,</b>			
<b>12</b>	<b>3</b>	<b>Learn the basic properties of amines-derived diazonium salts, methods of preparation and interactions,</b>	<b>Amines I and II.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>13</b>	<b>3</b>	<b>Learn the structure of aldehydes and ketones, their physical properties and methods of preparation</b>	<b>Aldehydes and ketones properties.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>14</b>	<b>3</b>	<b>Identify their interactions, especially the mechanics of the condensation of countries and the condensation of important Cleesen</b>	<b>Aldehydes and Ketones (include also aldol and Claisen condensation).</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>15</b>	<b>3</b>	<b>Full knowledge of the composition, naming and properties of pharmacologically important phenols</b>	<b>Phenols.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>16</b>	<b>3</b>	<b>Learn the methods of preparation, preparation and reactions of phenolic compounds</b>	<b>Phenols.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>

### 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.

### 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	<b>Organic Chemistry. by Robert T. Morrison and Robert N. Boyd.</b>
Main references (source)	<b>Organic Chemistry. by McCurry; 5th ed. Thomason learning; CA,USA; 2000. .</b>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:					
Advanced Pharmaceutical Analysis					
2. Course Code:					
PcAp567					
3. Semester / Year:					
Second/Fifth					
4. Description Preparation Date:					
2024\4\14					
5. Available Attendance Forms:					
Weekly					
6. Number of Credit Hours (Total) / Number of Units (Total)					
48 Hours theoretical + 32 Practical					
7. Course administrator's name (mention all, if more than one name)					
Name:					
Email:					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> <li>• Provide students with important theoretical information related to the chemical spectroscopy of organic compounds using UV/VIS, IR, NMR and Mass spectra techniques.</li> <li>• Enable students to understand the applications of these techniques in the quantitative and qualitative analysis of organic compounds.</li> <li>• Enable students to learn the process of linking the results of the analysis with different devices together to know the composition of the sample.</li> </ul>			
9. Teaching and Learning Strategies					
Strategy		<p>a. <b>Knowledge and understanding: knowledge of chemical analysis mechanisms and understanding of different spectroscopy methods of analysis</b></p> <p>b. <b>Subject-specific skills: The student learns basic skills of spectroscopy</b></p>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	3	Knowledge of spectroscopy and electromagnetic spectrum	Spectroscopy and electromagnetic radiation, Introduction to UV/Vis	Lectures	Exam+ Activity
2	3	Learn all the concepts related to UV/VIS spectroscopy	Lambda max, Sample handling, Problems and solutions	Lectures	Exam+ Activity
3	3	Learn concepts related to infrared spectroscopy	General introduction for IR	Lectures	Exam+ Activity
4	3	Recognize the frequencies of different functional groups	Characteristic group frequencies of organic compounds	Lectures	Exam+ Activity
5	3	Recognize the effect of hydrogen bonding,	Effect of H bonding	Lectures	Exam+ Activity
6	3	Learn how to handle solid, liquid, and gas samples	Sample handling	Lectures	Exam+ Activity
7	3	Learn how to apply technology to organic compounds	Application of IR spectroscopy	Lectures	Exam+ Activity
8	3	Learn important concepts of H <sup>1</sup> , C <sup>13</sup> -NMR spectroscopy	H <sup>1</sup> -NMR and C <sup>13</sup> -NMR spectroscopy	Lectures	Exam+ Activity
9	3	Identify the nature of NMR absorption and the factors affecting it	The nature of NMR absorption, chemical shifts and factors affecting them	Lectures	Exam+ Activity
10	3	Learn about the information derived from the technology	Information obtained from NMR spectra, more complex spin-spin splitting patterns	Lectures	Exam+ Activity
11	3	Learn about H <sup>1</sup> -NMR applications	Application of H <sup>1</sup> -NMR spectroscopy,	Lectures	Exam+ Activity
12	3	Recognize the theory of mass spectrometry,	General Introduction about mass spectrometry	Lectures	Exam+ Activity
13	3	Learn how to interpret the result of mass spectrometry analysis	Interpreting mass spectra	Lectures	Exam+ Activity

14	3	Recognize the behavior of some important functional groups	Mass behavior of some common functional groups	Lectures	Exam+ Activity
15	3	Learn how to interpret the results of the analysis of different parts of vehicles	Interpreting mass spectra fragmentation patterns	Lectures	Exam+ Activity
16	3	Learn about methods of racial analysis of CHNSO elements	Elemental microanalysis CHNSO	Lectures	Exam+ Activity

### 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.

### 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	<b>Spectrometric Identification of Organic Compounds. by Silverstein, Bassler and Morrill.</b>
Main references (source)	<b>Applications of absorption spectroscopy of organic compounds. by Dyer JR. Organic Chemistry. by McMurry; 5<sup>th</sup>ed; Thomason learning CA, USA 2000.</b>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:
Pharmaceutical Organic Chemistry3
2. Course Code:
PcOp3 451
3. Semester / Year:
Second/ Fourth
4. Description Preparation Date:
2024\4\14
5. Available Attendance Forms:
Weekly

<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
48 Hours theoretical + 32 Practical					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: lecturer Dr Hasanain Amer Naji + Assist Lecturer.safa adnan \ practical Email: hasanain.amer@turath.edu.iq, safa.adnan @turath.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Providing students with basic and important information to know the nature of the action of the drug inside the body and its relationship to the chemical composition of the treatment, as well as enabling them to discover and develop new drugs for the treatment of diseases.</li> <li>• Enable students to translate the structural formula of the drug into a therapeutic medical effect.</li> <li>• Training students on methods of preparing some appropriate pharmaceutical treatments. and classification of organic compounds according to their biological efficacy.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		<ul style="list-style-type: none"> <li>• Knowledge and understanding: Knowledge of the mechanisms and methods of action of medicines within the body, as well as enabling students to link the relationship between the action of medicine and its chemical composition, as well as to identify the effects of drugs on body systems and vice versa</li> <li>• Subject-specific skills: The student learns the basic skills to link bioactivity with the chemical composition of the drug, as well as to find a close chemical relationship between a group of compounds with the same bioactivity, as well as to derive the bioactivity of some organic compounds.</li> </ul>			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Learn about antibiotics and methods of manufacture Study of penicillins, cephalosporins and monobactam	$\beta$ -Lactam antibiotics (Penicillins); $\beta$ -Lactamase inhibitors; Cephalosporins and Monobactams.	Lectures	Exam+ activity
2	3	Learn about antibiotics and methods of manufacture	$\beta$ -Lactam antibiotics (Penicillins); $\beta$ -Lactamase inhibitors; Cephalosporins and Monobactams.	Lectures	Exam+ activity

		Study of penicillins, cephalosporins and monobactam			
3	3	Learn about antibiotics and methods of manufacture Study of penicillins, cephalosporins and monobactam	$\beta$ -Lactam antibiotics (Penicillins); $\beta$ -Lactamase inhibitors; Cephalosporins and Monobactams.	Lectures	Exam+ activity
4	3	Learn about antibiotics and methods of manufacture Study of aminocyclitides, tetracyclines, lincomycins and polypeptides as well as the study of antivirals and methods of action	Aminoglycosides and Chloramphenicol; Tetracyclines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products).	Lectures	Exam+ activity
5	3	Learn about antibiotics and methods of manufacture The study of aminocyclitides, tetracyclines, lincomycins and polypeptides as well as the study of antivirals, methods of action and classification	Aminoglycosides and Chloramphenicol; Tetracyclines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products).	Lectures	Exam+ activity
6	3	Learn about antibiotics and methods of manufacture The study of aminocyclitides, tetracyclines, lincomycins and polypeptides as well as the study of antivirals, methods of action and classification	Aminoglycosides and Chloramphenicol; Tetracyclines; Macrolides; Lincomycins and Polypeptides; Antiviral agents (properties of viruses, viral classification, products).	Lectures	Exam+ activity
7	3	Identify antibiotics and methods of manufacturing them, such as sulfone amide (sulfa) drugs, methods of naming, method of action, toxicity and resistance of bacteria to them	Sulfonamides (chemistry, nomenclature, mechanism of action, resistance, toxicity, side effects, metabolism, protein binding, distribution and SAR); products; Sulfones.	Lectures	Exam+ activity

8	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity
9	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity
10	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity
11	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity
12	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity
13	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity
14	3	Identify anticancers, their classification and methods of action such as alkylated drugs, anti-metabolites, antibiotics as well as plant extracts	Anti-neoplastic agents; Alkylating agents; Antimetabolites; Antibiotics; Plant products; Miscellaneous compounds.	Lectures	Exam+ activity



15	3	The study of hormones and their use to treat cancer and finally the study of modern cancer antibiotics such as monoclonal antibodies	Hormones and related compounds; Future anti-neoplastic agents; Monoclonal antibodies; Gene therapy of cancer.	Lectures	Exam+ activity
16	3	The study of hormones and their use to treat cancer and finally the study of modern cancer antibiotics such as monoclonal antibodies	Hormones and related compounds; Future anti-neoplastic agents; Monoclonal antibodies; Gene therapy of cancer.	Lectures	Exam+ activity

### 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.

### 12. Learning and Teaching Resources

Required textbooks ( curricular books, if any)	Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (Eds.); 12th ed., 2010.
Main references (source)	<ul style="list-style-type: none"> <li>• Beale, John M. , Block, John H. Publisher: Lippincott Williams &amp; Wilkins (Mar. 31st, 2010)</li> <li>• An Introduction to Medicinal Chemistry; FIFTH EDITION 2013, Graham L. Patrick, Great Clarendon Street, Oxford</li> </ul>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:

Pharmacognosy III

2. Course Code:

Phpa3 340

3. Semester / Year:

Second/ Third	
4. Description Preparation Date:	
2024\4\14	
5. Available Attendance Forms:	
Weekly	
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:lectuere Dr rasha abdul karem+ Asmaa mhadi \ practical Email: rasha.abdulkarem@ turath.edu.iq, Asmaa.mhadi@ turath.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> <li>• Drug overview and introductory concepts</li> <li>• Natural Medicines Sources</li> <li>• Types of plants, animals and microorganisms producing natural medicines</li> <li>• Classification and division of natural products</li> <li>• Classification of drugs depending on their chemical and clinical nature</li> <li>• Drug overview and introductory concepts</li> <li>• Natural Medicines Sources</li> <li>• Types of plants, animals and microorganisms producing natural medicines</li> <li>• Classification and division of natural products</li> <li>• Classification of drugs depending on their chemical and clinical nature</li> <li>• Scientific nomenclature of plants and methods of classification</li> <li>• Methods of extracting medicines from their sources</li> <li>• Chemical composition of drugs</li> <li>• General effects of drugs on body systems</li> <li>• Effects of body systems on medicines</li> <li>• Toxic effects of drugs with clinical side effects</li> <li>• Drug separation techniques</li> </ul>
9. Teaching and Learning Strategies	

<b>Strategy</b>	<ul style="list-style-type: none"> <li>• <b>Recognize the basic principles of pharmacology</b></li> <li>• <b>Recognize the physical and chemical properties of natural active ingredients</b></li> <li>• <b>Identify the methods and pathways of biosynthesis of medically active compounds</b></li> <li>• <b>Identify methods of classifying and dividing natural products and their sources</b></li> <li>• <b>Learn about methods of extracting medicines from their sources</b></li> <li>• <b>Identify the effects of drugs on body systems and vice versa</b></li> </ul>
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### 10. Course Structure

<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	5	Definition and using	Alkaloids: Introduction; Physical and chemical properties; pyridine, piperidine alkaloids; tropane alkaloids.	Theoretical lectures	Oral exams and discussion
2	5	Definition and using	Alkaloids: Quinoline tropan alkaloids; iso-quinoline alkaloids; imidazole alkaloids; indole alkaloids.	Theoretical lectures	Oral exams and discussion
3	4	Definition and using	Alkaloids: Steroidal alkaloids; lupinane alkaloids; alkaloidal amines; purine alkaloids.	Theoretical lectures	Oral exams and discussion
4	8	Definition and using	Antibiotics: Natural sources; biosynthetic pathways, isolation and purification.	Theoretical lectures	Oral exams and discussion
5	4	Definition and using	Tissue culture of medicinal plant: Introduction and history; laboratory of the plant tissue culture; aseptic techniques.	Theoretical lectures	Oral exams and discussion

6	4	Definition and using	Application of the plant tissue culture; environmental and biological control; plant growth regulators.	Theoretical lectures	Oral exams and discussion
<b>11. Course Evaluation</b>					
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.					
<b>12. Learning and Teaching Resources</b>					
Required textbooks ( curricular books, if any)			<b>Pharmacognosy and Pharmacobiotechnology by Tyler, 1996.</b>		
Main references (source)			<b>Practical manual, college of pharmacy /. University Baghdad</b>		
Recommended books and references (scientific journals, reports...)					
Electronic references, websites.					

<b>1. Course Name:</b>
Pharmaceutical Organic Chemistry II
<b>2. Course Code:</b>
PcOp2 445
<b>3. Semester / Year:</b>
First/ Fourth
<b>4. Description Preparation Date:</b>
2024\4\14
<b>5. Available Attendance Forms:</b>
Weekly
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>

48 Hours theoretical + 32 Practical					
7. Course administrator's name (mention all, if more than one name)					
Name: lecturer Dr Hasanain Amer Naji + Assist Lecturer. Abdulmuhammen amjad adnan \ practical Email: hasanain.amer@turath.edu.iq, Abdulmuhammen.amjad@turath.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> <li>• Providing students with basic and important information to know the nature of the action of the drug inside the body and its relationship to the chemical composition of the treatment, as well as enabling them to discover and develop new drugs for the treatment of diseases.</li> <li>• Enable students to translate the structural formula of the drug into a therapeutic medical effect.</li> <li>• Focus on methods of preparing some appropriate pharmaceutical treatments and classify organic compounds according to their biological effectiveness.</li> </ul>			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> <li>• Knowledge and understanding: Knowledge of the mechanisms and methods of action of drugs within the body, as well as enabling students to link the relationship between the action of the drug and its chemical composition, as well as to identify the effects of drugs on the body systems and vice versa.</li> <li>• Subject-specific skills: The student learns the basic skills of linking biological activity with the chemical composition of the drug, as well as to find a close chemical relationship between a group of compounds with the same biological activity, as well as to derive the bioactivity of some organic compounds.</li> </ul>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Knowledge of the parasympathetic system and its effect on the body	Cholinergic agents, cholinergic receptors and their subtypes.	Lectures	Exam+ Activity

2	3	Learn all the concepts related to the study of the chemical characteristic of compounds affecting the stimulation of the parasympathetic system	Cholinergic agonists; stereochemistry and structure-activity relationships (SAR);	Lectures	Exam+ Activity
3	3	Study of choline esterase inhibitors	Products; cholinesterase inhibitors.	Lectures	Exam+ Activity
4	3	Learn all the concepts related to the study of the chemical characteristic of compounds affecting parasympathetic system inhibition	Cholinergic blocking agent; structure-activity relationships (SAR); Solanaceous alkaloid and analogues; synthetic cholinergic blocking agents	Lectures	Exam+ Activity
5	3	Compounds acting on striated muscles	Products; ganglionic blocking agents (neuromuscular blocking agents).	Lectures	Exam+ Activity
6	3	Learn all the concepts related to the study of the chemical characteristic of opium compounds (opioids) and ways of their effect on the human body	Analgesic agents (SAR of morphine, SAR of meperidine type molecules; SAR of methadone type compounds; N-methylbezomorphans, antagonist type analgesics in benzomorphans).	Lectures	Exam+ Activity
7	3	Learn all the concepts related to the study of the chemical characteristic of opium compounds (opioids) and ways of their effect on the human body	Analgesic agents (SAR of morphine, SAR of meperidine type molecules; SAR of methadone type compounds; N-methylbezomorphans, antagonist type analgesics in benzomorphans).	Lectures	Exam+ Activity
8	3	Recognize opioid receptors within the body and their painkiller effect	Analgesic receptors, endogenous opioids; Products; Antitusive agents; Anti-inflammatory analgesics.	Lectures	Exam+ Activity

9	3	Recognize opioid receptors within the body and their painkiller effect	Analgesic receptors, endogenous opioids; Products; Antitusive agents; Anti-inflammatory analgesics.	Lectures	Exam+ Activity
10	3	Knowledge of the sympathetic system and its effect on the body	Adrenergic agents (Adrenergic neurotransmitters); Adrenergic receptors; Drugs affecting Adrenergic neurotransmission;	Lectures	Exam+ Activity
11	3	Study of the chemical characteristic of compounds affecting the stimulation or inhibition of the sympathetic system	Sympathomimetic agents; Adrenergic receptor antagonists.	Lectures	Exam+ Activity
12	3	Knowledge of the central nervous system and the study of inhibitory substances such as treatments for epilepsy, psychological conditions or muscle relaxant	CNS depressant; Benzodiazepines and related compounds; Barbiturates; CNS depressant with skeletal muscle relaxant properties; Antipsycotics; Anticonvulsants.	Lectures	Exam+ Activity
13	3	Knowledge of the central nervous system and the study of inhibitory substances such as treatments for epilepsy, psychological conditions or muscle relaxant	CNS depressant; Benzodiazepines and related compounds; Barbiturates; CNS depressant with skeletal muscle relaxant properties; Antipsycotics; Anticonvulsants.	Lectures	Exam+ Activity
14	3	Knowledge of the central nervous system and the study of its stimulant substances	CNS Stimulants	Lectures	Exam+ Activity
15	3	Study of steroidal and nonsteroidal anti-inflammatory	Steroidal & nonsteroidal hormones	Lectures	Exam+ Activity

		<b>drugs and their medical benefits</b>			
<b>16</b>	<b>3</b>	<b>Study of steroidal and nonsteroidal anti-inflammatory drugs and their medical benefits</b>	<b>Steroidal &amp; nonsteroidal hormones</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>11. Course Evaluation</b>					
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.					
<b>12. Learning and Teaching Resources</b>					
Required textbooks ( curricular books, if any)					
Main references (source)					
Recommended books and references (scientific journals, reports...)					
Electronic references, websites.					

<b>1. Course Name:</b>
Pharmaceutical Organic Chemistry IV
<b>2. Course Code:</b>
PcOp4 557
<b>3. Semester / Year:</b>
First/ Fifth
<b>4. Description Preparation Date:</b>
2024\4\14
<b>5. Available Attendance Forms:</b>
Weekly
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>
32 Hours theoretical
<b>7. Course administrator's name (mention all, if more than one name)</b>
Name:
Email:
<b>8. Course Objectives</b>



Course Objectives	<ul style="list-style-type: none"> <li>• Providing students with basic and important information to know the nature of the work of the drug inside the body and its relationship to the chemical composition of the treatment, as well as enabling them to discover and develop new drugs to treat diseases through the use of prodrug technology as a way to reduce drug problems and increase its effectiveness</li> <li>• Using modern manufacturing methods such as combinatoric chemistry as a method of manufacturing pharmaceutical compounds in huge numbers with less time and high quality.</li> <li>• Classification of organic compounds according to their biological efficacy using computer technologies to discover new pharmaceutical compounds by using sophisticated computer programs.</li> </ul>
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### 9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> <li>• <b>Knowledge and understanding:</b> Knowledge of the mechanisms and methods of action of drugs within the body, as well as enabling students to link the relationship between the action of the drug and its chemical composition and the effect of changing some effective groups to improve the work of the drug, as well as identifying the side effects of drugs on the body systems and how to reduce them by converting the drug into Prodrug</li> <li>• <b>Subject-specific skills:</b> The student learned the basic skills of linking biogenetics with the chemical composition of a drug as well as to find a chemical method to improve the effectiveness of a group of compounds with the same bioactivity and how to reduce its effects</li> </ul>
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### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Identify the concept of prodrug and study the types of prodrug, their classification and benefits	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs.	Lectures	Exam+ Activity
2	2	Identify the concept of prodrug and study the types of prodrug,	Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of	Lectures	Exam+ Activity

		<b>their classification and benefits</b>	<b>functional groups; Types of prodrugs.</b>		
<b>3</b>	<b>2</b>	<b>Identify the concept of prodrug and study the types of prodrug, their classification and benefits</b>	<b>Basic concept of prodrugs; Covalent bonds (cleavable); Prodrugs of functional groups; Types of prodrugs.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>4</b>	<b>2</b>	<b>Identify the chemical drug delivery system responsible for delivering the drug to its workplace correctly, as well as study the use of polymers in prodrug technology</b>	<b>Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>5</b>	<b>2</b>	<b>Identify the chemical drug delivery system responsible for delivering the drug to its workplace correctly, as well as study the use of polymers in prodrug technology</b>	<b>Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>6</b>	<b>2</b>	<b>Identify the chemical drug delivery system responsible for delivering the drug to its workplace correctly, as well as study the use of polymers in prodrug technology</b>	<b>Chemical delivery systems; Polymeric prodrugs; Types and structure of polymers; Cross-linking reagents.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>7</b>	<b>2</b>	<b>Recognize and understand modern drug delivery methods</b>	<b>Drug targeting.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>8</b>	<b>2</b>	<b>Recognize and understand modern drug delivery methods</b>	<b>Drug targeting.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>
<b>9</b>	<b>2</b>	<b>Understand how a research project works</b>	<b>Project.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>

10	2	Understand how a research project works	Project.	Lectures	Exam+ Activity
11	2	Study of combinational chemistry and its use in the manufacture of peptides As well as studying and understanding the methods of drug discovery	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	Lectures	Exam+ Activity
12	2	Study of combinational chemistry and its use in the manufacture of peptides As well as studying and understanding the methods of drug discovery	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	Lectures	Exam+ Activity
13	2	Study of combinational chemistry and its use in the manufacture of peptides As well as studying and understanding the methods of drug discovery	Combinatorial chemistry; Peptides and other linear structures; Drug like molecules; Support and linker; Solution-phase combinatorial chemistry.	Lectures	Exam+ Activity
14	2	Classification of organic compounds according to their biological efficacy using computer technologies to discover new pharmaceutical compounds by using advanced computer programs	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design.	Lectures	Exam+ Activity
15	2	Classification of organic compounds according to their biological efficacy using computer technologies to discover new pharmaceutical	Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical	Lectures	Exam+ Activity

		<b>compounds by using advanced computer programs</b>	<b>diversity and library design.</b>		
<b>16</b>	<b>2</b>	<b>Classification of organic compounds according to their biological efficacy using computer technologies to discover new pharmaceutical compounds by using advanced computer programs</b>	<b>Detection, purification and analgesics; Encoding combinatorial libraries; High-throughput screening; Virtual screening; Chemical diversity and library design.</b>	<b>Lectures</b>	<b>Exam+ Activity</b>

### 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.

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<b>Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (Eds.); 1</b>
Main references (source)	<b>Beale, John M. , Block, John H. Publisher: Lippincott Williams &amp; Wilkins (Mar. 31st, 2010) An Introduction to Medicinal Chemistry; IFTH EDITION 2013; Graham L. Patric; Great Clarendon Street, Oxford</b>
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

1. Course Name:

Microbiology I

2. Course Code:

CIMm 217

3. Semester / Year:

1<sup>st</sup> /second stage

4. Description Preparation Date:

2024\4\14

5. Available Attendance Forms:

Weekly

6. Number of Credit Hours (Total) / Number of Units (Total)

45/4	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer Dr. Sura Akram Mohammed+ Assist Lecturer Luma Eassa Hammodi \ practical Email: sura.akram@turath .edu.iq, luma.eassa @turath .edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> <li>• Medical bacteriology is concerned with know the different types of bacteria, the shape name of all microorganisms, parts of microscope and how it can be used to diagn different types of bacteria, and classify bacteria according to their livelihood, example, into aerobic and non-aerobic, according to their shape, such as bacillary spherical, as well as according to their interact with the dye, such as Gram-negative. And gr positive. How to cultivate bacteria in media how to sterilize. Provides a basic understand of the form, anatomy, physiology, and gene of bacteria as well as methods for dealing w visualizing, and identifying bacterial disease.</li> </ul>
9. Teaching and Learning Strategies	
Strategy	<ol style="list-style-type: none"> <li>1- Method of giving lectures</li> <li>2- Student groups in practical groups</li> <li>3- E-learning on campus (use of the Internet)</li> <li>4- Using social networks to deliver lectures to the student</li> </ol>

## 10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	Week
Oral exams and discussion	Theoretical lectures	Importance of microbiology, History of microbiology	Definition and using	2hrs. Theoretical	1
Oral exams and discussion	Theoretical lectures	Anatomy of bacteria: Surface appendage, Capsule, Cell wall of G +ve & G -ve bacteria, Cytoplasmic membrane.	Definition and using	2hrs. Theoretical	2
Oral exams and discussion	Theoretical lectures	Bacterial physiology: Physical and chemical growth determinate, growth and growth curves, bacterial reproduction.	Definition and using	2hrs. Theoretical	3
Oral exams and discussion	Theoretical lectures	Genetics: Definition, genetic, element, mutation (spontaneous, gene transfer, transformation, conjugation, and gene transduction).	Definition and using	2hrs. Theoretical	4
Oral exams and discussion	Theoretical lectures	Recombinant DNA biotechnology.	Definition and using	2hrs. Theoretical	5
Oral exams and discussion	Theoretical lectures	Sporulation and germination	Definition and using	2hrs. Theoretical	6
Oral exams and discussion	Theoretical lectures	Sterilization (chemical + physical Methods).	Definition and using	2hrs. Theoretical	7
Oral exams and discussion	Theoretical lectures	Chemotherapy	Definition and using	2hrs. Theoretical	8
Oral exams and discussion	Theoretical lectures	Morphology of Bacteria, Staining and Classification.	Definition and using	1hrs. Theoretical	9
Oral exams and discussion	Theoretical lectures	Staphylococci species: <i>Streptococcus pyogenes</i> ; <i>Streptococcus pneumoniae</i> .	Definition and using	3hrs. Theoretical	10

<b>10. Course Evaluation</b>	
Midterm Exams 20 Practical Exams 15 Quizzes 5 Final exam 60	
<b>11. Learning and Teaching Resources</b>	
Required textbooks ( curricular books, if any)	Jawetz Melnick & Adelbergs Medical Microbiology 27 E (Lange) 27th Edition by Karen Carroll (Author), Janet Butel (Author), Stephen Morse (Author)
Main references (source)	Bailey & Scott's Diagnostic Microbiology 14th Edition by Patricia Tille (Author)
Recommended books and references (scientific journals, reports...)	
Electronic references, websites.	

<b>1. Course Name:-</b>
<b>2. Medical Virology and Parasitology</b>
<b>3. Course Code: /</b>
<b>223 PcOc3</b>
<b>4. Semester / Year:</b>
2nd /second stage
<b>5. Description Preparation Date:</b>
2024\4\14
<b>6. Available Attendance Forms:</b>
weekly
<b>7. Number of Credit Hours (Total) / Number of Units (Total)</b>
45/4
<b>8. Course administrator's name (mention all, if more than one name)</b>
Name: Assist prof Dr Shaymaa Abdalwahed Abdulameer +Lecturer Luma Eassa Hammodi \ practical Email: Shaymaa.Abdalwahed @turath .edu.iq, luma.eassa @turath .edu.iq

## 9. Course Objectives

<b>Course Objectives</b>	Objectives: 1-An overview of viruses, parasites, medical immunity and defining concepts about these microorganisms 2- Sources of these materials 3- Types of viruses, pathogenic parasites, and components of the immune system 4- Classification and division of these microorganisms 5- Classification of diseases caused by these pathogens depending on their clinical nature 6- Scientific terminology of living organisms and methods of their classification 7- Methods of diagnosing these pathogens 8- Knowing the clinical and pathological symptoms of these organisms 9- Understanding the mechanism of injury and human pathological events 10- Knowing the drugs used against these pathogens
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## 10. Teaching and Learning Strategies

<b>Strategy</b>	<p>1-Quarterly exams (Midterm Exams.)</p> <p>2- Daily Sudden Exams (Quizzes)</p> <p>3- Discussions and dialogues inside the classroom</p> <p>4-Weekly reports with practical lessons</p>
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## 11. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2hrs. Theoretical	Definition	Introduction medical parasitolog	1	2hrs. Theoretical
2	5hrs. Theoretical	Definition	Intestinal proto (Amoeba, Balantidi Giardia, Chilomasti	2	5hrs. Theoretical
3	4hrs. Theoretical	Definition	Haemoflagellates: Leshmania s Trypanosome spp.	3	4hrs. Theoretical
4	4hrs. Theoretical	Definition	Sporozoa: Mal parasites of hu Toxoplasma.	4	4hrs. Theoretical
5	8hrs. Theoretical	Definition	Helminthes: Classification, Flu Hepatic flukes, Bl flukes (Schistos spp).Tap wor Taenia s Echinococcus (Hyd cyst).Nematods: Ascaris, Entrobilus.	5	8hrs. Theoretical
6	7hrs. Theoretical	Definition	Virology: Introduction, Comparison between viruses and bacteria	6	7hrs. Theoretical



			<p>and other microbes;          Classification of viruses; Replication;          Chemotherapy;  <i>Herpes viridae</i>;          Orthomyxo viruses;          Paramyxo viruses;          Retro viruses; Hepato viruses; Oncogenic viruses.</p>		
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**12. 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.

**13. Learning and Teaching Resources**

Required textbooks ( curricular books, if any)	<ul style="list-style-type: none"> <li>• <u>Medical Virology and Parasitology</u>            Course number: <i>Animal Agents and Vectors of Human Disease. P.C. Beaver &amp; R.C. Jung; (Latest edition).</i></li> </ul>
Main references (source)	
Recommended books and references (scientific journals, reports...)	<i>Practical Medical Virology and Parasitology, Lab Manual for Practical Virology and Parasitology Adopted by the Department. College of pharmacy / University Baghdad</i>
Electronic references, websites.	