Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Pharmacy

Scientific Department: Clinical Pharmacy Dept.

Academic or Professional Program Name: Bachelor in Pharmacy Sciences

Final Certificate Name: Bachelor in Pharmacy Sciences

Academic System: Semester system (Two semesters/year)

Description Preparation Date: 01/03/2024

File Completion Date: 22/03/2024

Signature: 

Head of Department Name:

Assist. Prof. Dr. Mohanad Yasir Radeef

Date: 25/03/2024

Signature: 

Scientific Associate Name:

Lect. Dr. Ali Hussain Abbas

Date: 25/03/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Nashwan Ahmed Sumait

Date: 25/03/2024

Signature: 

Approval of the Dean

Lect. Dr. Ali Hussain Abbas

1. Program Vision
1- Excellence in the field of clinical pharmacy and comprehensive scientific pharmaceutical practice by providing specialized educational and health services to the community. 2- Improving the therapeutic services provided to the community by keeping pace with the latest developments and adhering to quality standards and continuous development.
2. Program Mission
Preparing qualified pharmacists with sufficient theoretical knowledge and practical practice, who have the ability to apply pharmaceutical practices and perform an effective role in social, therapeutic and health care services in accordance with international standards in their workplaces.
3. Program Objectives
1- Graduating distinguished pharmacists who are qualified to work in public and private hospitals and pharmacies with the ability to understand and diagnose medical conditions and determine the appropriate treatment for them. 2- Preparing pharmacists who are able to communicate and deal with the rest of the medical team to provide appropriate health care to the patient
4. Program Accreditation
None currently available
5. Other external influences
None currently available

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	**3**	**5**	**2.7%**	**Basic Course**
College Requirements	**61**	**180**	**97.3%**	**Basic Course**
Department Requirements	---	---	---	**Basic Course**
Summer Training	---	---	---	**Pass**
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
3rd / 2nd semester	3211	Pharmacy ethics	1	----
4th / 1st semester	413	Clinical Pharmacy I	2	2
4th / 2nd semester	428	Clinical Pharmacy II	2	2
	215	Communication Skills	2	----
5th / 1st semester	513	Applied Therapeutics I	3	----
5th / 2nd semester	5211	Hospital Training	----	4
	527	Pharmacoeconomics	2	----
	528	Applied Therapeutics II	2	----
	529	Therapeutic Drug Monitoring	2	2

8. Expected learning outcomes of the program

Knowledge

A1. Introduce the student to human diseases and their causes

A2. Introduce the student to how to diagnose these diseases clinically to reach the final diagnosis

A3. Introduce the student to the most important techniques used in diagnosis

A4. Introduce the student to the methods of treatment for each medical condition that are followed globally

A5. Introduce the student to the optimal use of medicines according to the disease condition

Skills

B1. Acquisition of clinical applied skills for dealing with patients in hospitals and community pharmacies

B2. Acquire the skills to prescribe treatment for each disease condition

B3. Acquire the skills of detecting defects in drug doses and identifying drug-drug interactions

Thinking Skills

C1. Develop the student's ability to discuss

C2. Actual application with existing capabilities

C3. Develop the student's ability to take advantage of the available means

C4. Develop the student's ability to perform daily duties

General and Transferable Skills (other skills relevant to employability and personal development)

D1. Activating the student's ability to deal with books and websites specialized in drug information

D2. Develop the student's ability to deal with laboratory equipment

D3. Develop the student's ability to dialogue and discussion

9. Teaching and Learning Strategies

- Theoretical and practical lectures

- Frequent visits to teaching hospitals

- Daily assignments and discussions

10. Evaluation methods

Theoretical and practical exams in addition to classroom and extracurricular activities and holding scientific seminars

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistance Professor	2	---	---	---	1	1
Lecturer	3	---	---	---	1	1
Assistant Lecturer	4	---	---	---	2	2

Professional Development
Mentoring new faculty members
- Directing teachers to organize seminars, courses, and give scientific lectures periodically. - Directing teachers to publish scientific research in their field of specialization in reputable journals - Directing teachers to participate in local and international scientific conferences
Professional development of faculty members
- Participation in academic courses concerned with various fields of education - Participation in curriculum development. - Active participation in scientific conferences - Motivating the teacher to use various teaching methods for students.

12. Acceptance Criterion
Admission is made within the central admission criteria of the Ministry of Higher Education and Scientific Research

13. The most important sources of information about the program
The college website, the college guide, the university website, the college page on social media sites, in addition to professional institutions (the Iraqi Pharmacists Syndicate) and the Ministry of Higher Education and Scientific Research

14. Program Development Plan
- Updating and developing curricula according to the requirements of the labor market - Successfully use contemporary technology applications and master conducting experiments - Providing volunteer activities - Directing students' research towards applied projects that address societal problems

Curriculum Skills Map

please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Programme Learning Outcomes														
				Knowledge and understanding					Subject specific skills			Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development		
				A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**
3rd / 2nd semester	3211	Pharmacy ethics	Core						√			√	√	√	√	√		√
4th / 1st semester	413	Clinical Pharmacy I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4th / 2nd semester	428	Clinical Pharmacy II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	215	Communication Skills	Core						√			√	√	√	√	√		√
5th / 1st semester	513	Applied Therapeutics I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
5th / 2nd semester	5211	Hospital Training	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	527	Pharmaco-economics	Core						√			√	√	√	√	√		√
	528	Applied Therapeutics II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	529	Therapeutic Drug Monitoring	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Course Description Form

1. Course Name:
Pharmacy Ethics
2. Course Code:
3211
3. Semester / Year:
2nd semester / 3rd year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
One Credit theory hour/week – One unit
7. Course administrator's name (mention all, if more than one name)
Name: Lect. Dr. Omar Salah Aldoori Email:
8. Course Objectives
Course Objectives: The course will provides an overview of ethical issues facing practicing pharmacists in order to enable the student to understand the basic concepts of ethics which formulate the relationship of pharmacist with the patient, colleges, and other health personnel in order to deliver his pharmaceutical services in good way.The course will begin with an introduction to ethics in pharmaceutical practice and then proceed to examine in depth specific topics (Beneficence, Autonomy, Confidentiality, Consent...).The course will include lectures, case analysis, and classroom discussion.
9. Teaching and Learning Strategies

Strategy	- Theoretical and practical lectures - Daily assignments and discussions

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1+ 2	2	This course focuses on medical ethics necessary to build the kind of relationship that result in improved therapeutic outcomes	Introduction to Pharmacy Ethics (Theoretical considerations).	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
3	1		Code of Ethics for Pharmacists.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
4 + 5 + 6	3		Common Ethical Considerations in Pharmaceutical Care Practice (Beneficence, Autonomy, Honesty, Informed Consent, Confidentiality, Fidelity ……).	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
7 + 8	2		Interprofessional Relations.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
9	1		Making ethical decisions.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
10	1		Ethical issues related to clinical pharmacy research.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
11	1		Ethical problems in the pharmacist's clinical practice.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
12	1		Preventing misuse of medicines.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
13 + 14 +15	3		Case studies in pharmacy ethics.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

١١. 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

Mid-Term Exam: 30 Marks

Final-Term Exam: 70 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Ethics in Pharmacy Practice: A Practical Guide, by Dennis M. Sullivan, Douglas C. Anderson, and Justin W. Cole, latest edition**
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Clinical Pharmacy I
2. Course Code:
413
3. Semester / Year:
1st semester / 4th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week and Two Credit practical hours/week – Three units
7. Course administrator's name (mention all, if more than one name)
Name: Assist Prof. Dr.Mohanad Yasir Radeef, Assist. Lect. Ibraheem Yawr anwar, Assist. Lect. Zainab AH. Ibraheem Email: mohanadyasir@tu.edu.iq
8. Course Objectives
Course Objectives: Teach the students how to treat common diseases and simple illness in community pharmacies. ....
9. Teaching and Learning Strategies

Strategy	- Theoretical and practical lectures - Daily assignments and discussions - Training in community pharmacies

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	This course provides main points of how to treat common diseases and simple illness in community pharmacies	Introduction to community pharmacy.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
2	3		Respiratory problems: Cough, Common cold, allergic rhinitis, Otitis media, Laryngitis & Pharyngitis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

3	4		G.I.T problems: Diarrhea, Constipation, Heart burn and indigestion, IBS and Hemorrhoids	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
4	2		Pediatric care practice : Oral thrush, pinworms and head lice	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
5	5		Skin conditions: Acne, Scabies, Psoriasis, Hair loss, Fungal infection, Eczema and Dermatitis , Dandruff, Cold sore, Corns and Callus.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
6	2		Women's health care: Cystitis and vaginal thrush, primary dysmenorrhea and Premenstrual syndrome.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
7	3		CNS related problems: Headache, Insomnia, Motion sickness, Nausea and vomiting	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
8	1		Eye problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
9	1		ENT problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
10	1		Oral hygiene, mouth ulcer	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
11	1		Obesity and body weight control.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
12	1		Pain and musculoskeletal disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
13	1		Nicotine replacement therapy (NRT).	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
14	1		Dietary supplements	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

15	**2**		**An update in reclassification of OTC drugs (simvastatin, Tamusotisin & azithromycin).**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**

١١. 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

Mid-Term Theory Exam: 20 Marks

Mid-Term Practical Exam: 20 Marks

Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Alison Blenkinsopp, Paul Paxton(eds), Symptoms in the Pharmacy. A Guide to the Management of Common Illness, latest edition**
Main references (sources)	**Paul Rutter. Community Pharmacy: Symptoms, Diagnosis and Treatment, latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Clinical Pharmacy II
2. Course Code:
428
3. Semester / Year:
2nd semester / 4th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week and Two Credit practical hours/week – Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lect. Dr. Zainab Mustafa Mahdi, Assist. Lect. Ibraheem Yawr anwar, Assist. Lect. Zainab AH. Ibraheem Email: mohanadyasir@tu.edu.iq
8. Course Objectives
Course Objectives: Teach the students how to treat common diseases in hospitals' wards ....
9. Teaching and Learning Strategies

Strategy	- Theoretical and practical lectures - Daily assignments and discussions - Training in Hospital wards

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 +2	This course provides main points of how to treat common diseases in hospitals' wards	-Introduction to the concept of clinical pharmacy- its activities and professional responsibilities.(including current state of clinical pharmacy in Iraq) . - An overview of pharmaceutical care practice (the patient care process).	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

2	**2+2**		**Hematologic disorders: Anemia and sickle cell disease.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
3	**2+2**		**Hypertension.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
4	**2+2**		**Ischemic heart diseases**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
5	**2+2**		**Heart failure.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
6	**2+2**		**Asthma.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
7	**2+2**		**Peripheral vascular diseases. Chronic obstructive pulmonary disease (COPD).**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
8	**2+2**		**Diabetes mellitus & Diabetic ketoacidosis (DKA) .**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
9	**2+2**		**Peptic ulcer disease.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
10	**2+2**		**Tuberculosis**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
11	**2+2**		**Infective meningitis**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
12	**2+2**		**Rheumatoid arthritis (RA) and osteoarthritis (OA)**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
13	**2+2**		**-GIT infections -Gout and hyperuricemia**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**

14	**2+2**		**-Osteoporosis and other metabolic bone disease. -Infectious Endocarditis**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
15	**2+2**		**-Surgical antibiotic prophylaxis -Urinary tract infection (UTI)**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**

١١. 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

Mid-Term Theory Exam: 20 Marks

Mid-Term Practical Exam: 20 Marks

Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Pharmacotherapy Handbook, Terry L. Schwinghammer, Joseph T. DiPiro, Vicki L. Ellingrod, Cecily V. DiPiro, latest edition.**
Main references (sources)	**Clinical Pharmacy and Therapeutics E-Book By Roger Walker, latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Communication Skills
2. Course Code:
215
3. Semester / Year:
2nd semester / 4th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Lect. Ibraheem Yawr anwar Email: mohanadyasir@tu.edu.iq
8. Course Objectives
Course Objectives: Communication skill is one of the missions of pharmacy care practice, aims to develop a conventional relationship between pharmacist and patients, in which information is exchanged, hold in confidence and used to optimize patient care through appropriate drug therapy. This course is intended to pharmacist provide better care to patients, and focus on communication skills necessary to build the kind of relationship that result in improved therapeutic outcomes.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	This course focuses on communication skills necessary to build the kind of relationship (pharmacist-patients and pharmacist-health care providers) that result in improved therapeutic outcomes	Patient-Centered Communication in Pharmacy Practice	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
2	2		Principles and Elements of Interpersonal Communication	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

3	**2**		**Nonverbal type of communication.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
4	**2**		**Barriers to communication.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
5	**2**		**Listening and empathic responding during communication.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
6	**2**		**Assertiveness.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
7	**2**		**Interviewing and assessment.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
8	**2**		**Helping patients to manage therapeutic regimens.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
9	**2**		**Patient counseling; counseling check list; point-by-point discussion; counseling scenario.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
10	**2**		**Medication safety and communication skills.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
11	**2**		**Strategies to meet specific needs.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
12	**2**		**Communicating with children and elderly about medications.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
13	**2**		**Communication skills and inter-professional collaboration.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
14	**2**		**Electronic communication in healthcare.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**

15	**2**		**Ethical behavior when communicating with patients.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**

١١. 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

Mid-Term Theory Exam: 30 Marks

Final-Term Exam: 70 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Robert S. Beardsley, (ed.); Communication Skills in Pharmacy Practice, latest edition.**
Main references (sources)	**Bruce A. Burger (ed.), Communication Skills for Pharmacists; American Pharmacists Association; latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Applied Therapeutics I
2. Course Code:
513
3. Semester / Year:
1st semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lect. Dr. Zainab Mustafa Mahdi, Lect. Dr. Shaimaa Saleh khuder Email:
8. Course Objectives
Course Objectives: Educate the fifth stage students important diseases and their therapy. .....
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures ..... - Daily assignments and discussions - Training in hospitals' wards

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	This course provides main points of how to treat common diseases in hospitals' wards	-Interpretation of Lab. data. -Dyslipidemia	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
2	3		-Acute coronary syndrome. -Stroke	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
3	3		-Arrhythmias -Viral hepatitis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam

					Final-Term exam
4	3		-Thrombosis -Acute renal failure (ARF)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
5	3		-Inflammatory bowel diseases	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
6	3		-Chronic renal failure (CRF)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
7	3		-Hemodialysis and peritoneal dialysis -Systemic lupus erythematosis (SLE) -Benign prostatic hyperplasia (BPH)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
8	3		-Acid – base disorders -Urinary incontinence and pediatric enuresis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
9	3		-Disorders of fluid and electrolytes	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
10	3		-Pain management -Headache disorders -Tobacco use and dependence	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
11	3		-Epilepsy and status epilepticus -Fungal infections	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
12	3		-Parasitic infections -Viral diseases -Parenteral nutrition	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
13	3		-Drug distribution systems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
14	3		-Pharmacovigilance	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
15	3		-Enteral nutrition -Evidence-based pharmacy practice and	The blackboard PowerPoint slides Case study	Reports Homework Daily quizzes

			medicine.	**E-learning**	**Mid-Term exam** **Final-Term exam**

١١. 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

Mid-Term Theory Exam: 30 Marks

Final-Term Exam: 70 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Pharmacotherapy Handbook,** **Terry L. Schwinghammer, Joseph T. DiPiro, Vicki L. Ellingrod, Cecily V. DiPiro, latest edition.**
Main references (sources)	**Clinical Pharmacy and Therapeutics E-Book By Roger Walker, latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Applied Therapeutics II
2. Course Code:
528
3. Semester / Year:
2nd semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Name: Assist Prof. Dr.Mohanad Yasir Radeef Email: mohanadyasir@tu.edu.iq
8. Course Objectives
Course Objectives: Educate the fifth stage students the important diseases and their therapy. .....
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures ..... - Daily assignments and discussions - Training in hospitals' wards

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	This course provides main points of how to treat common diseases in hospitals' wards	-Thyroid and parathyroid disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
2	2		-Contraception -Endometriosis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
3	2		-Menstruation related disorders -Hormonal replacement therapy (HRT)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam

					Final-Term exam
4	2		-Cancer treatment and chemotherapy	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
5	2		-Leukemias	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
6	2		-Lymphomas and Multiple myeloma	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
7	2		-Breast and prostate cancers	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
8	2		-HSCT(Hematop. Stem-cell- Transplantion). -Adverse effects of chemotherapy	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
9	2		-Human immunodeficiency viruse -Multiple seclerosis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
10	2		-Adrenal gland disorders -Pituitary gland disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
11	2		-Gluacoma -Alzheimer's disease	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
12	2		-Schizophrenia	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
13	2		-Depressive disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
14	2		-Anxiety disorders -Sleep disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
15	2		-Bipolar disorders -Adverse drug reactions	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam

					Final-Term exam

١١. 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

Mid-Term Theory Exam: 30 Marks

Final-Term Exam: 70 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Pharmacotherapy Handbook, Terry L. Schwinghammer, Joseph T. DiPiro, Vicki L. Ellingrod, Cecily V. DiPiro, latest edition.**
Main references (sources)	**Clinical Pharmacy and Therapeutics E-Book By Roger Walker, latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Pharmacoeconomics
2. Course Code:
527
3. Semester / Year:
2nd semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Name: Assist Lect. Adnan Mostafa Ismail Email:
8. Course Objectives
Course Objectives: The present course will give students the basic understanding of the tools needed to assess the costs and outcomes of medications and pharmaceutical care services. It will enable participants to evaluate the pharmacoeconomic literature for the purpose of rational decision-making. Students will be exposed to the drug-focused approaches to pharmacoeconomic research.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The present course will give students the basic understanding of the tools needed to assess the costs and outcomes of medications and pharmaceutical care services.	Course overview, Changes in health care delivery, overview of pharmacoeconimics.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
2	2		Cost determination.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

3	**2**		**Evaluation of outcomes and effectiveness, types of pharmacoeconomic analyses: Cost effectiveness analyses (CEA), cost minimization analyses (CMA).**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
4	**2**		**Methods of data collection and analyses, modeling (decision analyses).**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
5	**2**		**1st mid-term examination.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
6	**2**		**Incremental analyses; case studies.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
7	**2**		**Evaluation outcomes: Utility and quality of life; types of pharmacoeconomic analyses, cost utility analyses (CUA).**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
8	**2**		**Evaluation outcomes: Net benefit, cost utility analyses (CBA), compare and contrast CEA, CUA and CBA.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
9	**2**		**Methods of data collection and analyses: Statistical/Econometric modeling.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
10	**2**		**2nd mid-term examination.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
11	**2**		**Drug-focused versus disease-focused frame work for conducting pharmacoeconomic analyses.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
12	**2**		**Critical review of pharmacoeconomic and quality of life literature.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
13	**2**		**Introduction to epidemiology.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**
14	**2**		**Project presentation.**	**The blackboard PowerPoint slides Case study**	**Reports Homework Daily quizzes**

				E-learning	**Mid-Term exam** **Final-Term exam**
15	**2**		**Project presentation.**	**The blackboard** **PowerPoint slides** **Case study** **E-learning**	**Reports** **Homework** **Daily quizzes** **Mid-Term exam** **Final-Term exam**

١١. 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

Mid-Term Theory Exam: 30 Marks

Final-Term Exam: 70 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Bootman JL, Townsend RJ, McGhan WF, (Eds.), Principles of Pharmacoeconomics, Harvey Whitney Books Company, Cincinnati, Oh, latest edition**
Main references (sources)	**Karen L. Rascati, Essentials of Pharmacoeconomics, latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Therapeutic Drug Monitoring (TDM)
2. Course Code:
529
3. Semester / Year:
2nd semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical and practical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week and Two Credit practical hours/week – Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lect. Dr. Shaimaa Saleh Khuder, Assist Lect. Zainab AH. Iraheem Email:
8. Course Objectives
Course Objectives: Provide students with a basic understanding of clinical pharmacokinetics in order to design individual doses for specific medications, which improve the therapeutic response to the drug while reducing the chance of side effects. .....
9. Teaching and Learning Strategies

Strategy	- Theoretical and practical lectures - Daily assignments and discussions

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	This course provides main points of how to calculate the dose of specific drug according to their TDM properties	Course Overview	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
2	2		Review of basic pharmacokinetic (PK)-	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
3	1		Review of basic pharmacodynamic (PD)	The blackboard PowerPoint slides	Reports Homework Daily quizzes

				Case study E-learning	Mid-Term exam Final-Term exam
4	3		Clinical PK equations and calculations	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
5 +6	6		Clinical PK in special population and cases	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
7	4		Clinical PK/PD for Antibiotics (e.g., Aminoglycosides, Vancomycin	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
8	4		Clinical PK/PD for Cardiovascular agents (e.g., Digoxin, Lidocaine, Procainamide/N-Acetyl Procainamide	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
9 + 10	6		Clinical PK/PD for Anticonvulsants (e.g., Phenytoin, Carbamazepine, Valproic Acid, Phenobarbitone / Primidone, Ethosuxsimide	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
11	2		Clinical PK/PD for Immunossprasants (e.g., Cyclosporine, Tacrolimus	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
12	4		Clinical PK/PD of other drugs (e.g., Lithium, Theophylline, Anticancer agents, Anticoagulats	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
13	2		Review	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
14	2		Problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
15	2		Problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

١١. 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

Mid-Term Theory Exam: 20 Marks

Mid-Term Practical Exam: 20 Marks

Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Applied Clinical Pharmacokinetics, by Larry A. Bauer. Latest edition**
Main references (sources)	**Clinical Pharmacokinetics Concepts and Applications, by Malcolm Rowland and Thomas Tozer; latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Hospital Training
2. Course Code:
5211
3. Semester / Year:
2nd semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical and practical lectures in Teaching hospital's wards.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit practical hours/week – Two units
7. Course administrator's name (mention all, if more than one name)
Name: Hospital training committee Email:
8. Course Objectives
Course Objectives: Teaching students how to apply pharmacy practice in various hospital wards. It includes training in evaluating and following up cases, evaluating therapeutic regimens, recording errors related to drug treatment, and providing ideas to solve problems.
9. Teaching and Learning Strategies

Strategy	- Theoretical and practical lectures - Training in hospitals' wards - Daily assignments and discussions

10. Course Structure

WW	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	16	This course provides main points and principles of how to deal and treat common diseases in hospitals' wards	Internal medicine ward	Case study PowerPoint slides E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
5-8	16		Surgical ward	Case study PowerPoint slides E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
9-12	16		Gynaecology and obstetrics ward	Case study PowerPoint slides E-learning	Reports Homework Daily quizzes

					Mid-Term exam **Final-Term exam**
12-15	**12**		**Pediatrics ward**	**Case study** **PowerPoint slides** **E-learning**	**Reports** **Homework** **Daily quizzes** **Mid-Term exam** **Final-Term exam**

١١. 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

Mid-Term Theory Exam: 15 Marks

Mid-Term Practical Exam: 15 Marks

Final-Term Exam: 70 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Applied Clinical Pharmacokinetics, by Larry A. Bauer. Latest edition**
Main references (sources)	**Clinical Pharmacokinetics Concepts and Applications, by Malcolm Rowland and Thomas Tozer; latest edition.**
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

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 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) 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

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: Tikrit University

Faculty/Institute: College of Pharmacy

Scientific Department: Pharmacognosy and medicinal plant
Academic or Professional Program Name: Bachelor in Pharmacy Sciences
Final Certificate Name: Bachelor in Pharmacy Sciences
Academic System: Semester (courses)
Description Preparation Date: 1/ 3/ 2024
File Completion Date: 22/ 3/ 2024

Signature: 

Head of Department Name:

Assist. Prof. Dr. Omar Hussein Ahmed

Date: 26/03/2024

Signature: 

Scientific Associate Name:

Lect. Dr. Ali Hussein Abbas

Date: 26/03/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Nashwan Ahmed Sumait

Date: 26/03/2024

Signature: 

Approval of the Dean

Lect. Dr. Ali Hussein Abbas

1. Program Vision
The college aspires to creativity, leadership and innovation in the field of pharmacology and pharmaceutical compounds found in plants and to rise the quality ladder to qualify distinguished pharmacists to work in various state institutions and the private sector to serve our dear country to take its natural position among the countries of the developed world

2. Program Mission
Developing the knowledge and skills necessary to practice the pharmacy profession at the highest levels to upgrade it and keep pace with global development to achieve the highest quality in the service of health institutions and provide the community with pharmacists with efficiency, professional skills and high ethical values and work to develop the capabilities of the faculty and their assistants and the administrative apparatus and promote scientific and applied research aimed at

3. Program Objectives
1.Knowledge of plant preparations 2. Study of medicinal plants and methods of extraction 3. The possibility of artificial reproduction of plants to increase the percentage of active substances

4. Program Accreditation
There is no accredited program in the Ministry of Higher Education and Scientific Research

5. Other external influences				
Training courses in hospitals, pharmaceutical laboratories and private pharmacies				
6. Program Structure				
Program Structure	**Number of Courses**	**Unit of study**	**Percentage**	**Reviews**
Requirements of the institution	**3**	**5**	**2.7%**	**Basic Course**
College Requirements	**61**	**180**	**97.3%**	**Basic Course**
Department Requirements	**---**	**---**	**---**	**Basic Course**
Summer Training	**---**	**---**	**---**	**Met**
Other	**---**	**---**	**---**	**---**

7 . Program Description				
Year/Level	**Course or Course Code**	**Course Name**	**Credit Hours**	
			theoretical	**Practical**
Second / Second Semester	2210	Drugs I	45	30
Third / First Semester	312	Drugs II	30	30
Third / Second Semester	312	Drugs III	30	30

***** Notes can include whether the course is basic or optional.

8. Expected Learning Outcomes of the Program

Knowledge

A- Knowledge of plant preparations

2- Study of medicinal plants and methods of extraction

3- The possibility of artificial reproduction of plants to increase the percentage of active substances

Skills

1- Acquire skill in extraction methods.

2- Acquire skill in isolating active substances

3- Acquire skill in diagnosing them

Values

C1- Developing the student's ability to discuss

C2- Actual application with existing capabilities

C3- Developing the student's ability to benefit from the available means

C4- Developing the student's ability to perform daily duties

9. Teaching and learning strategies

- Theoretical and practical lectures
- Field visits to places where plants are located
- Daily assignments and discussions

10. Evaluation methods

Theoretical and practical exams in addition to classroom and extracurricular activities and scientific seminars

11. Faculty

Faculty Members

Academic Rank	**Specialization**		**Requirements/Skills (if applicable)**	**Preparation of the teaching staff**	
	year	special		angel	Lecturer
Assistant Professor		1		1	
Assistant Lecturer		1		1	

Professional Development
Mentoring new faculty members
- Urging teachers to organize seminars and courses and give scientific lectures periodically. - Urging teachers to publish scientific research in their field of specialization in sober journals - Urging teachers to participate in local and international scientific conferences
Professional development of faculty members
- Participation in academic courses that are concerned with the field of education - Participate in curriculum development. - Active participation in scientific conferences - Motivating the teacher to use the various teaching methods for students

12. Acceptance Criterion
Admission is within the central admission in the Ministry of Higher Education and Scientific Research
13. The most important sources of information about the program
College website, college directory, university website, college page in social networking sites in addition to professional institutions (Iraqi Pharmacists Syndicate) and the Ministry of Higher Education and Scientific Research
14. Program Development Plan
- Updating and developing curricula according to the requirements of the labor market - Use contemporary technology applications successfully and master experiments - Providing volunteer activities - Directing student research towards applied projects that address the problems of society

Curriculum Skills Map

please tick in the relevant boxes where individual Program Learning Outcomes are being assessed

Year/ Level	Course Code	CourseTitle	Core (C) Title or Option(O)	Program Learning Outcomes															
				Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
2nd		Pharmacognosy I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3rd		Pharmacognosy II	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
		PharmacognosyIII	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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

Course Description Form

1. Course Name:	
Pharmacognosy I	
2. Course Code:	
2210	
3. Semester/Year	
Second course / second year	
4. Date of preparation of this description	
1/3/2024	
5. Available Attendance Forms:	
Theoretical lectures in classroom and practical lectures in specialized lab.	
6. Number of credit hours (total) / number of units (total)	
45 hours theoretical / 30 hours practical number of units 4	
7. Course Administrator Name	
Assistant Professor Dr. Omar Hussein Ahmed	
8. Course Objectives	
Course Objectives	Study of the meaning of drugs and medicinal plants - diagnosis of medicinal plants - plant chemistry - methods of extraction, isolation and diagnosis Active compounds within the plant.
9. Teaching and learning strategies	
1- Theoretical lectures 2- Educational laboratories 3- Scientific reports 4- Office Research 5- learning	

10. Course Structure					
Week	Hours	International Labour Organization (ILO)	Unit/Unit or Subject Title	Teaching method	Evaluation method
1	3	General introduction	Introduction to Pharmacognosy	Whiteboard, Newsletter	Discussions
2	1	Drugs from natural Sources, official and unofficial raw medicines drugs	Recognition of consent Medicinal plants	Whiteboard, Newsletter	Discussions
2	2	Classification of natural products	Learn about the different types of classification of medicinal plants	Smart Board, Whiteboard, Newsletter	Discussions
3	2	Plant nomenclature and classification	Determine the system of plant nomenclature	Smart Board, Whiteboard, Newsletter	
4	3	Raw drug production: cultivation, collection, drying and storage	Different steps for the production of phytochemicals	Smart Board, Whiteboard, Newsletter	Discussions
					Midterm Exam
5	1	Deterioration of raw natural products	Identify factors affecting drug degradation	Smart Board, Whiteboard, Newsletter	Discussions
5	3	Chemistry of Natural Pharmaceutical Products	Determine the chemical type of phytochemicals in a plant,	Whiteboard, Newsletter	Discussions
	4	Quality Control: Evaluation of	Provide knowledge about	Whiteboard,	Discuss

6		Natural Products; Microscopic Evaluation, Physical Evaluation, Chemical Evaluation, Biological Assessment, Spectroscopic Assessment	quality control of phytochemical products	Newsletter	ions
7	4	Phytochemical examination of herbal products: extraction of plant material; separation and isolation of voters; Characterization of isolated vehicles	Separation and identification of active phytochemicals in plant parts	Whiteboard, Newsletter	Dis cuss ions
11,10,9,8	15	Separation technique: introduction. separation and classification mechanisms based on type of technique; Paper chromatography Thin layer chromatography ion- exchange chromatography of gel filtration chromatography; Column chromatography Gas chromatography HPLC. Electrophoresis. Convergence chromatography.	Provide knowledge about various chromatography methods	Smart Board, Whiteboard, Newsletter	Dis cuss ions

12	**3**	**Traditional plant medicines as a source of new medicines.** **Bioassay-oriented segmentation**	**Separation of pharmacologically active ingredients based on their activity**	**Smart Board, Whiteboard, Newsletter**	**Dis cuss ions**
13	**4**	**Tissue culture of medicinal plants: introduction and history.** **Plant Tissue Culture Laboratory. Sterilization techniques** **Apply plant tissue culture. Environmental and biological** **Control; Plant growth regulators.**	**Production of high-quality phytochemicals and phytochemicals by plant tissue culture**	**Smart Board, Whiteboard, Newsletter**	**Dis cuss ions**

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports... etc Tide score 20 out of 100 Practical score 20 out of 100 Final score 60 out of 100	
12. Learning and Teaching Resources	
Required textbooks (methodology, if any)	Pharmacognosy by Teyler
Key references (sources)	Trease and Evans Pharmacognosy; 15th ed., 2000
Recommended books and references (scientific journals, reports...)	Phytochemistry and pharmacognoy
Electronic References, Websites	UptodateACSPublications.National Institute of Health (NIH). -American Society of Pharmacognosy

Course Description Form

1. Course Name:	
Pharmacognosy II	
2. Course Code:	
312	
3. Semester/Year	
First course / third year	
4. Date of preparation of this description	
1/3/2024	
5. Available Attendance Forms:	
Theoretical lectures in classroom and practical lectures in specialized lab.	
6. Number of credit hours (total) / number of units (total)	
30 hours theoretical / 30 hours practical number of units 3	
7. Course Administrator Name	
Assistant Professor Dr. Omar Hussein Ahmed	
8. Course Objectives	
Course Objectives	Pathways of organic synthesis of plant compounds, study of glycoside types and classification with the most important active substances of glycoside species, knowledge of volatile oils, their types and method of extraction with their medical benefits
9. Teaching and learning strategies	
1- Theoretical lectures 2- Educational laboratories 3- Scientific reports 4- Office Research 5- Electron Education	

10. Course Structure					
Week	Hours	International Labour Organization (ILO)	Unit/Unit or Subject Title	Teaching method	Evaluation method
1	2	Introduction: General Biosynthesis Pathways for Secondary Metabolites	understand the biosynthesis pathways of various secondary metabolites,	Smart Board, Whiteboard, Newsletter	Discussions
2	2	carbohydrates	Overview of carbohydrates derived from pharmacologically important plants	Smart Board, Whiteboard, Newsletter	Discussions
3 ، 4	5	glycosides: biosynthesis, physical and chemical properties; Cardiogenic Glycosides. Glycosides of saponins. Anthraquinone glycosides. Flavonoids Glycosides. Cyanover glycosides	Understanding the active heart of saponin glycoside, anthraquinone and flavonoids as medicinal significance, SAR, mechanism of action and plant containing them.	Smart Board, Whiteboard, Newsletter	Discussions
5 ، 6	5	Glycosides: isotthiocyanate glycosides. Alcoholic aldehyde glycosides Glycosides. Phenolic glycosides Lactone glycosides. Coumarin and Chromons	Presentation of different types of glycosides and important medicinal plants that contain them.	Smart Board, Whiteboard, Newsletter	
7	2	Mix resins and resin. Tannins	Recognition of resin, resin-containing plant and resin chemistry Determination of the type of tannins, tannins, chemistry and medical significance	Smart Board, Whiteboard, Newsletter	Discussions
					Midterm Exam
8	2	Fats: fixed oils and candles	Overview of fat as a natural molecule, its chemistry and applications in pharmaceutical sciences..	Smart Board, Whiteboard, Newsletter	Discussions
9	2	Volatile oils: introduction; chemistry of volatile oils. Biosynthesis 3 Volatile oils hydrocarbons as volatile oils; alcohols	Learn about the method of extracting volatile oils, physical and chemical properties, pharmaceutical importance, and	Smart Board, Whiteboard, Newsletter	Discussions

		as volatile oils; Aldehydes as volatile oils	chemistry-based classification		
10	2	Ketones as volatile oils. Phenols as volatile oils. Volatile oxides Oils; Ester as volatile oils.phenolic ethers as volatile oils.	Persistence of physical and chemical properties, pharmaceutical significance and chemistry-based classification.	Smart Board, Whiteboard, Newsletter	Discussions
11	2	Vitamins and amino acids.	Medical significance, dosage, source, vitamin and amino acid deficiencies	Smart Board, Whiteboard, Newsletter	Discussions
12	2	Non-medicinal poisonous plants	Identification of non-medicinal poisonous plants	Smart Board, Whiteboard, Newsletter	Discussions

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports... etc Tide score 20 out of 100 Practical score 20 out of 100 Final score 60 out of 100	
12. Learning and Teaching Resources	
Required textbooks (methodology, if any)	Robbers JE, Speedie MK, Tyler VE (Eds.); Pharmacognosy and Pharmacobiotechnology; the latest edition.
Key references (sources)	Trease and Evans Pharmacognosy; 15th ed., 2000
Recommended books and references (scientific journals, reports...)	Phytochemistry and pharmacognoy
Electronic References, Websites	UptodateACSPublications.National Institute of Health (NIH). -American Society of Pharmacognosy

Course Description Form

1. Course Name:	
Pharmacognosy III	
2. Course Code:	
312	
3. Semester/Year	
Second course / third year	
4. Date of preparation of this description	
1/3/2024	
5. Available Attendance Forms:	
Theoretical lectures in classroom and practical lectures in specialized lab.	
6. Number of credit hours (total) / number of units (total)	
30 hours theoretical / 30 hours practical number of units 3	
7. Course Administrator Name	
Assistant Professor Dr. Omar Hussein Ahmed	
8. Course Objectives	
Course Objectives	Study of alkaloids , its types, the most important active substances and the method of extraction, antibiotics: natural sources; pathways of biosynthesis, isolation and purification. Phytotherapy: Introduction, principles and medicinal plants in selected healthcare systems. Important natural products and plant preparations used in pharmacy and medicine
9. Teaching and learning strategies	
1- Theoretical lectures 2- Educational laboratories 3- Scientific reports 4- Office Research 5-learning	

10. Course Structure					
week	Hours	International Labour Organization (ILO)	Unit/Unit or Subject Title	Teaching method	Evaluation method
1st, 2sec	5	Alkaloids: Introduction; Physical and chemical properties. pyridine, Alkaloids Piperidine Tropan alkaloids	Identify plants that contain pyridine Piperidine alkaloids. Tropan alkaloids and their medicinal importance	Smart Board, Whiteboard, Newsletter	Discussions
3rdthird, 4thth	5	Alkaloids: quinoline tropan alkaloids. Isoquinoline alkaloids; Imidazole alkaloids. Indole alkaloids	Identify and identify a plant that contains different classes of alkaloids and their medicinal importance.	Smart Board, Whiteboard, Newsletter	Discussions
5s,6s,7s	5	Alkaloids: Steroidal alkaloids. Lupine alkaloids. Alkaline amines. Purine alkaloids.	Identify and identify a plant that contains different classes of alkaloids and their medicinal importance	Smart Board, Whiteboard, Newsletter	
8s, 9s	6	Antibiotics:natural sources; pathways of biosynthesis, isolation and Purification..	Providing knowledge about antibiotics, their detection and uses	Smart Board, Whiteboard, Newsletter	Discussions
					Midterm Exam
10s, 11s, 12s, 13s, 14s	10	Phytotherapy: introduction, principles, selected medicinal plants Healthcare systems. Important natural plant medicine products used in medicine and pharmacy	Systematic classification of phytochemical supplements in domestic pharmacy, their medicinal significance and possible side effects	Smart Board, Whiteboard, Newsletter	Discussions

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports... etc

Tide score 20 out of 100 Practical score 20 out of 100 Final score 60 out of 100	
12. Learning and Teaching Resources	
Required textbooks (methodology, if any)	Pharmacognosy by Teyler
Key references (sources)	Trease and Evans Pharmacognosy; 15th ed., 2000
Recommended books and references (scientific journals, reports...)	Phytochemistry and pharmacognoy
Electronic References, Websites	Up to date ACS Publications.National Institute of Health (NIH). -American Society of Pharmacognosy

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 Course Description Guide

2025

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 staP 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, quaJerly), 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: Tikrit University

Faculty/Institute: College of Pharmacy

Scientific Department: Clinical Laboratory Sciences department

Academic or Professional Program Name: Bachelor in Pharmacy Sciences

Final Certificate Name: Bachelor in Pharmacy Sciences

Academic System: - Semester system

Description Preparation

Date:23/1/2025

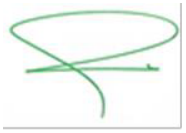
File Completion Date:27/1/2025

Signature:

Head of Department Name:

Lect .Dr. Sarwa Azeez Khalid

Date:27/1/2025



Signature:

Scientific Associate Name:

Lect. Dr. Ali Hussain Abbas

Date:27/1/2025

The file is checked by:

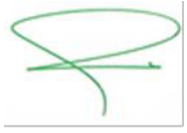
Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Nashwan Ahmed Sumait

Date:27/1/2025

Signature:



Approval of the Dean
Lect. Dr. Ali Hussain Abbas

1. Program Vision

Program vision is written here as stated in the university's catalogue and website.

1- It aspires to be progenitor in term of academic level and scientific creativity of student.
2- Introducing students to the most important recent developments in term of techniques in laboratory diagnosis and giving graduates the ability to deal with the results of the analyzed in all departments of health institution .

2. Program Mission

Program mission is written here as stated in the university's catalogue and website.

Implementation of modern scientific developments to sustain comprehensive .

3. Program Objectives

General statements describing what the program or institution intends to achieve.

1-Training students to conduct medical laboratory analyzes using latest means and scientific methods .
2- The student must be able to apply his skills to ensure community service .
3- Developing students scientific abilities and using them in multiple medical fields .

4. Program Accreditation

Does the program have program accreditation? And from which agency?

None currently available

5. Other external influences

Is there a sponsor for the program?

None currently available

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	3	5	2.7%	Basic Course

College Requirements	61	180	97.3%	Basic Course
Department	---	---	---	Basic Course
Requirements	---	---	---	Pass
Summer Training	---	---	---	---

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First year / first semester	111	Human biology	2	2
First year / first semester	115	Mathematics and medical statistics	3	-
First year / second semester	129	Medical physics	2	2
First year / first semester	127	Human anatomy	2	2
First year / second semester	114	Computer science		2
First year / first semester	1271	Histology	2	2
Second year / first semester	212	Medical Microbiology I	3	2
Second year / first semester	114	Computer science	-	2
Second year / second semester	227	Medical microbiology II	3	2
Third year / first semester	314	Bio-chemistry I	3	2
Third year / first semester	315	Pathology	3	2
Third year / second semester	329	Bio-chemistry II	3	2
Fourth year / first semester	415	Public health	2	-
Fifth year / first semester	514	Clinical chemistry	3	2
Fifth year / first semester	521	Lab training	-	4
Second year / first semester		Crimes Ba'ath Party	2	-
First year / first semester		human rights and Democracy	2	-
Second year / second semester		Arabic language	2	-

8. Expected learning outcomes of the program

A1- Follow up on developments in techniques used in clinical chemistry as well as in molecular diagnostics
A2- It provides students with the knowledge, skills and efforts required to work in diagnosing diseases through laboratory tests
A3- Understand the basics of biochemistry.

Skills

B 3- Diagnosing diseases by detecting the causative factors.

B4- Use appropriate antibiotics in treatment according to the laboratory result report.

B 5- Emphasis on the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist

B9- Upon completing the course, students will be able to understand the applications of statistics

Ethics

C1. Develop the student's ability to discuss
C2. Actual application with existing capabilities
C3. Develop the student's ability to take advantage of the available means
C4. Develop the student's ability to perform daily duties

9. Teaching and Learning Strategies

- Theoretical and practical lectures
- Classroom
-power point
-- Frequent visits to teaching hospitals

10. Evaluation methods

-Theoretical exams
- Practical lab exams
-Reports
- Homework
- extracurricular activities
- Quiz

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	**Lecturer**
Assistance professor	2	1			3	
Lecturer	3	1			4	
Assistance lectures	7	3			10	

Professional Development

Mentoring new faculty members

-Directing teachers to organize seminars, courses, and give scientific lectures periodically.

- Directing teachers to publish scientific research in their field of specialization in reputable journals

- Directing teachers to participate in local and international scientific conferences

Professional development of faculty members

Participation in academic courses concerned with various fields of education

- Participation in curriculum development.

- Active participation in scientific conferences

- Motivating the teacher to use various teaching methods for students.

12. Acceptance Criterion

Admission is made within the central admission criteria of the Ministry of Higher Education and Scientific Research.

13. The most important sources of information about the program

The college website, the college guide, the university website, the college page on social media sites, in addition to professional institutions (the Iraqi Pharmacists Syndicate) and the Ministry of Higher Education and Scientific Research

14. Program Development Plan
- Updating and developing curricula according to the requirements of the labor market - Successfully use contemporary technology applications and master conducting experiments - Providing volunteer activities - Directing students' research towards applied projects that address societal problems

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 year / first semester	Human biology	111	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Computer science		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Mathematic and Statistics	115	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	English language			√	√	√	√	√	√	√	√	√	√	√	√
	human rights and Democracy		Basic	√	√	√	√	√	√	√	√	√	√	√	√
First year / second semester	**Human anatomy**	127	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
	Computer Science		**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
	Medical physics	129	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
	Histology	1271	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second year / first semester	Medical microbiology I	212	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Computer Science		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Democracy		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Crimes Ba'ath Party		Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second year / second semester	Medical microbiology II	227	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Arabic language		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Computer Science		Basic	√	√	√	√	√	√	√	√	√	√	√	√
Third year / first semester	Biochemistry I	314	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Pathophysiology	315	Basic	√	√	√	√	√	√	√	√	√	√	√	√

Third year / second semester	Biochemistry II	329	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√
Fourth year / first semester	Public health	415	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√
Fifth year / first semester	Clinical Chemistry	514	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√
	Clinical laboratory training	515	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√

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

Course Description Form

1. Course Name:
Human biology
2. Course Code:
111
3. Semester / Year:
First / First
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Two hours /week (theory) and two hours/ week (practical) – 3 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof Dr.Maysam Adnan @ Assist. Prof Heba hazem Email:

8. Course Objectives	
Course Objectives : The study of human body composition, types of cell structures, types of tissues, bones, skeleton, joints, and muscles as well as nutrition. Human biology is also explained in details of the various body systems, and human genetics. At the end of the course the student should be able to describe human body composition, body structure and function, and human genetics such as Mendelian inheritance, chromosomal division.	....

9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	definition of Biology	Introduction	2	1
Theory exam reports homework	smart board classroom	cell division	The Cell	2	2
Theory exam reports homework	smart board classroom	Type . Occupation . distribution	Texture. Bone. cartilage	2	3
Theory exam reports homework	smart board classroom	Central and Peripheral	Nervous system	2	4
Theory exam reports homework	smart board classroom	vitamins and minerals	nutrition	2	5
Theory exam reports homework	smart board classroom	The mouth. Esophagus. stomach	Digestive	2	6
		Exam 1			7
Theory exam reports homework	smart board classroom	Small and large intestine	Digestive	2	8
Theory exam reports homework	smart board classroom	types of glands	Excretory and respiratory system	2	9
Theory exam reports homework	smart board classroom	Chromosomes and semi-lethal genes	human genetics	2	10
Theory exam reports	smart board classroom	Layers Occupation. Glands. the	Skin	2	11

homework		disease			
Theory exam reports homework	smart board classroom smart board classroom	Part of the rotating device. Arteries, veins, and blood composition	Rotary system	2	12
Theory exam reports homework	smart board classroom	Inflammation and immunity to diseases	Immunity	2	13
		Exam 2			

Course Description Form

1. Course Name:
Mathematic and Statistics
2. Course Code:
115
3. Semester / Year:
First / First
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
Three hours / week (theory) – 3 units
7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Ayob Aalwan Email:
8. Course Objectives

Course Objectives : It gives students the ability to deal with the concept of mathematics and statistics, emphasizes the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist. The student deals with the concept of basic mathematics and the application of biostatistics in the medical field.	• ..... • ..... • .....

9. Teaching and Learning Strategies	
Strategy	Theoretical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	General principles The plan includes shapes	Mathematics general principles The plan includes shapes. Inequality. Absolute values. Multiples	3	1
Theory exam reports homework	smart board classroom	Functions and inclination	Functions and fees. Mutual slope functions and line equations	3	2
Theory exam reports homework	smart board classroom	Determinants and integration	Determinant and Integration Determinant Theorems and Conditions of Integration	3	3
Theory exam reports homework	smart board classroom	Derivative and Trigonometric Functions	Line tangent deviation and derivatives. Discrimination rules	3	4
Theory exam reports homework	smart board classroom	Integration concept	Integration: Indefinite integration. The rules of integrals are indefinite. Integration Formulas for the Basic Trigonometric Function	3	5
Theory exam reports homework	smart board classroom	...	Properties of specific integrals. exercise	3	6
		Exam 1			7
Theory exam reports homework	smart board classroom	General concept of statistics possibility	Biostatistics: General Concepts of Statistics; Statistical methods Probability concepts: properties of probability	3	8
Theory exam reports homework	smart board classroom	Poisson distribution	The probability distribution of a discrete variable. binomial distribution,	3	9

			Poisson distribution		
Theory exam reports homework	smart board classroom	.....	Continue Probability Distribution and Normal Distribution, Review Questions and Exercises	3	10
Theory exam reports homework	smart board classroom	Central tendency	The concept of central tendency: the mean of the sample and the average of the ;population. middle	3	11
Theory exam reports homework	smart board classroom	skew and volatility	Deviations and difference: deviation. Dispersion and contrast. standard deviation and variance	3	12
Theory exam reports homework	smart board classroom	Variation coefficient. standard error. Correlation analysis	Variation coefficient. standard error. Correlation analysis. (Regression model and regression equation model	3	13
Theory exam reports homework	smart board classroom	Statistics tests	T-test, Z-test, chi-test and ANOVA	3	14
Theory exam reports homework	smart board classroom	.....	Statistics application in the medical field. Review questions .and exercises	3	15
		exam 2			

Course Description Form

1. Course Name:
Computer Science
2. Course Code:

3. Semester / Year:
second / First
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week – one units
7. Course administrator's name (mention all, if more than one name)
Name: Lec . Dalal saleh , Assist Lec. Maha safer @ Assist Lec. Yaser khider Email:
8. Course Objectives

Course Objectives gives students the ability to deal with the concept of computer science, and emphasizes the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist. The course deals with the basic concept of computer and its application in human life and the medical field. Upon completion of the course students will be able to understand computer terms and acronyms used to describe the lecture, and the different programming languages:	• • •

9. Teaching and Learning Strategies

Strategy	Practical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Practical exam and class efficacy	Data show +Classroom	Workspace google	Introduction to classroom	2	1
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	file ، Home	2	2
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Insert tab	2	3
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Layout Tab	2	4
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	References Tab	2	5
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Mailings Tab	2	6
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Review Tab	2	7
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	View Tab	2	8
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Introduction to Microsoft PowerPoint (File and Home Tab , Insert tab	2	9
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Design	2	10
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Transition Tab	2	11

Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Animation Tab	2	12
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Slide View	2	13
		Exam 1 theoretical and practical			
Course Structure: Computer Science, 1st year / 2nd semester					
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Introduction to Microsoft Excel	2	1
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Insert	2	2
Practical exam and class efficacy	Data show + Electronic classroom			2	3
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Page Layout	2	4
Practical exam and class efficacy	Data show + Electronic classroom			2	5
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Formula	2	6
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	formula errors in Excel	2	7
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet		2	8
Practical exam and class efficacy	Data show + Electronic classroom		Data Analysis	2	9
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	How to add Data Analysis	2	10
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	T-test one sample	2	11
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	T-test paired	2	12

Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	T- test Independent	2	13
		Exam 2 theoretical and practical			

Course Description Form

1. Course Name:	
Human anatomy	
2. Course Code:	
127	
3. Semester / Year:	
Second / First	
4. Description Preparation Date:	
23/1/2025	
5. Available Attendance Forms:	
Theoretical lectures in classroom and practical lectures in specialized lab	
6. Number of Credit Hours (Total) / Number of Units (Total)	
One hours/ week (theory) and two hours / week (practical) – 2 units	
.....	
7. Course administrator's name (mention all, if more than one name)	
Name: Lec. Dr. Muthana Hussein Email:	.....
8. Course Objectives	
Course Objectives : The study of the position of various organs in the chest and abdominal cavity including: the digestive system, the circulatory system, the lymphatic system, the respiratory system, the urinary system, the reproductive system, the endocrine system, and the nervous system.	• • •
9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	Location of the vascular system (heart, arteries and veins)	Circulatory system	1	1
Theory exam reports homework	smart board classroom	Location of the lymphatic system (lymphatic capillary)	Circulatory system	1	2
Theory exam reports homework	smart board classroom	Location (thymus gland, spleen and lymph nodes)	Lymphatic tissue	1	3
Theory exam reports homework	smart board classroom	Lymphatic nodules and tonsils	Lymphatic tissue	1	4
Theory exam reports homework	smart board classroom	Central and Peripheral Nervous System	Nervous system	1	5
Theory exam reports homework	smart board classroom	Connecting part (nose, nasopharynx, trachea, bronchi and bronchioles) lung breathing (part	Respiratory system	2	6
		Exam 1		1.5	7
Theory exam reports homework	smart board classroom	The location of the different parts of the gastrointestinal tract (GIT) (oral cavity, mouth, esophagus and stomach). Small intestine, large intestine, rectum and anus. Glands associated with the digestive	Digestive	3	8

		system by location (salivary glands, pancreas, liver and gallbladder)			
Theory exam reports homework	smart board classroom	Location of the adrenal gland, thyroid gland, thyroid gland, islets of Langerhans and pineal glands. pituitary gland site	Glandular system	1	9
Theory exam reports homework	smart board classroom	Excretory gonads (seminal vesicles, prostate and Cooper's glands) Genital excretory ducts. The location of the testicles	male reproductive system	2	10
Theory exam reports homework	smart board classroom	Location of the ovary, oviduct, uterus and vagina	female reproductive system	2	11
Theory exam reports homework	smart board classroom	The site of (kidneys and nephrons), the site of (ureters, bladder and .urethra)	Urinary tract	1	12
		Final exam			13

Course Description Form

1. Course Name:
Histology
2. Course Code:
1271
3. Semester / Year:
Second / First
4. Description Preparation Date:

23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week (theory) and Two hours / week (practical) – 3 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Huda Saleh Email:
8. Course Objectives

Course Objectives : This science is concerned with the study of the histological structure of the human body, as well as primarily aims to give the student a basis for advanced study in the field of health care, physiology, pathology, and fields related to health and fitness. At the end of the course, the student should be familiar with the histological description of the human body in a way that corresponds to what was previously studied.	• • •

9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	Location of the vascular system (heart, arteries and veins)	Circulatory System	1	1
Theory exam reports homework	smart board classroom	Location of the lymphatic system (lymphatic capillary)	Circulatory System	1	2
Theory exam reports homework	smart board classroom	Location (thymus gland, spleen and lymph (nodes	lymphatic tissue	1	3
Theory exam reports homework	smart board classroom	Lymphatic nodules and tonsils	lymphatic tissue	1	4
Theory exam reports homework	smart board classroom	Central and Peripheral Nervous System by Location	Nervous system	3	5
Theory exam reports homework	smart board classroom	Connecting part (nose,nasophar nx, trachea, bronchi and bronchioles) Lung breathing part	Nervous system	3	6
		Exam 1		1,5	7
Theory exam reports homework	smart board classroom	The location of the different parts of the gastrointestinal tract (GIT) (oral cavity, mouth, esophagus and stomach). Small intestine, large intestine, rectum and anus. Glands associated with	Digestive	3	8

		the digestive system by location (salivary glands, pancreas, liver and gallbladder)			
Theory exam reports homework	smart board classroom	Glands associated with the digestive system (salivary glands, pancreas, liver, and gallbladder)	Digestive	1	9
Theory exam reports homework	smart board classroom	General physiological histological structure of the pituitary gland	glandular system	2	10
Theory exam reports homework	smart board classroom	General structure of the adrenal glands, thyroid gland, thyroid gland, islets of Langerhans and pineal glands	glandular system	2	11
Theory exam reports homework	smart board classroom	sperm steps The general structure of the testicles. Ducts that carry the excretory gonads (seminal vesicles, prostate and Cooper's gland)	male reproductive system	2	12
Theory exam reports homework	smart board classroom	Thick and thin skin	The Skin	1	13
Theory exam reports homework	smart board classroom	General structure of the ovary, oviduct, uterus and vagina follicle growth steps ovulation	The female reproductive system	3	14
Theory	smart board	Structure	Urinary tract	2	15

exam reports homework	classroom	(ureters, bladder and urethra) Nephron tissue filtration, absorption and excretion Structure and function of the kidneys and nephrons			
		Final exam			16

Course Description Form

1. Course Name:	
Medical physics	
2. Course Code:	
129	
3. Semester / Year:	
Second / First	
4. Description Preparation Date:	
23/ 1/2025	
5. Available Attendance Forms:	
Theoretical lectures in classroom and practical lectures in specialized lab	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Two hours / week (theory) and Two hours / week – 3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Lec. Dr. Ayob Aalwan	Email:
8. Course Objectives	
Course Objectives : It gives students the ability to deal with the concepts of physics, and emphasizes the knowledge and skills necessary to perform and efficiently the duties and responsibilities of a pharmacist. This part deals with the concept of basic physics and the application of physics in the medical field. At the end of the course students will be able to understand the physical terms that are used to describe the lecture and their application in the medical field.	• • •

9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	General concept of physics thermodynamic system	General concepts: Physics method and standards; Thermodynamic system and system properties. Conservation of energy principle; Application of thermodynamics. .Zero law	2	1
Theory exam reports homework	smart board classroom	the pressure; temperature in medicine	the pressure; Temperature in medicine and thermometers	2	2
Theory exam reports homework	smart board classroom	public law equilibrium state	case equation. ideal gas and real gas; General Gas Law. Balance and types of balance. Compressibility factor, volume expansion modulus	2	3
Theory exam reports homework	smart board classroom	heat and energy; Effort	Heat and energy; voltage and forms of mechanical action; Energy; 1st law of thermodynamics. Boyles and Charles Law	2	4
Theory exam reports homework	smart board classroom	Randomness and enthalpy	The second law of thermodynamics. Inverse and inverse randomness and enthalpy	2	5
Theory exam reports homework	smart board classroom	Thermal theory	Infrared and thermal theory	2	6
		Exam1			7
Theory exam reports	smart board classroom	The concept of internal energy	Internal energy. Heat capacity and adiabatic process.	2	8

homework			The relationship between pressure, volume, and temperature in an adiabatic process		
Theory exam reports homework	smart board classroom	kinetic theory optics	Fundamentals of physics: kinetic theory of gases. electromagnetic waves; optics physics	2	9
Theory exam reports homework	smart board classroom	radiation effect	The effect of radiation on the transfer of heat in the human body	2	10
Theory exam reports homework	smart board classroom	Radiation concept	Infrared and ultraviolet indication	2	11
Theory exam reports homework	smart board classroom	medical app	The medical and biological effect of radiation	2	12
Theory exam reports homework	smart board classroom	Electromagnetic radiation concept	Electromagnetic radiation	2	13
Theory exam reports homework	smart board classroom	X-ray concept	X-ray production and X-ray spectrum	2	14
Theory exam reports homework	smart board classroom	Radiation absorption	X-ray absorption	2	15
		Exam 2			

Course Description Form

1. Course Name:
Medical microbiology I
2. Course Code:
212
3. Semester / Year:
First / Second
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Three hours / week (theory) and two hours / week (practical)- 4 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Huda Saleh , Lec. Dr Sarwa Aeez @ Lec. Dr. Shaimma Munshid Email:
8. Course Objectives

Course Objectives : Medical bacteriology is concerned with knowing the different types of bacteria, the shape and naming of all microorganisms, the parts of the microscope and how it can be used to diagnose different types of bacteria, and the classification of bacteria for their shape as rod and spherical as well as according to their interaction with the dye such as negative Gram and Gram-positive, how to grow bacteria in media and how to sterilize. Provides a basic understanding of the shape, anatomy, physiology and genetics of bacteria.	• • ..... • ....

9. Teaching and Learning Strategies

Strategy	Theoretical and practical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	History of microbiology	The importance of microbiology	2	1
Theory exam reports homework	smart board classroom	Edges of surfaces. Capsule. Cell wall of gram negative and gram positive bacteria. cytoplasmic membrane	Anatomy of bacteria	2	2
Theory exam reports homework	smart board classroom	Chemical and physical determinants of growth. Growth and graphics of growth and reproduction of bacteria	Bacterial Physiology	2	3
Theory exam reports homework	smart board classroom	Definition, genetic elements, and mutations (spontaneous genes Transfer, transformation, conjugation, and transduction of genes	Genes	2	4
Theory exam reports homework	smart board classroom	Biotechnology and DNA	=	2	5
Theory exam reports homework	smart board classroom	Spore formation and reproduction	=	2	6
		Exam 1		1,5	7
Theory exam reports homework	smart board classroom	physical and chemical methods	sterilization	2	8

Theory exam reports homework	smart board classroom	Types	Chemotherapy	2	9
Theory exam reports homework	smart board classroom	Bacterial forms pigmentation and division	Bacterial properties	1	10
Theory exam reports homework	smart board classroom	Streptococcus Biogens Streptococcus pneumoniae	genus Staphylococcus	3	11
Theory exam reports homework	smart board classroom	Baslas Anthraces Basslas Stlass Bass Siss	Spore-forming Bacillus aerobic bacteria	1	12
Theory exam reports homework	smart board classroom	Clostridium brazingis Clostridium titani Clostridium botulium	selected	3	13
Theory exam reports homework	smart board classroom	Korani Bacterium Diphtheria Myco Bacterium Tuber Closus	=	2	14
Theory exam reports homework	smart board classroom	Listeria	=	1	15
		Exam2			

Course Description Form

1. Course Name:
Medical microbiology II
2. Course Code:
227
3. Semester / Year:
Second / Second
4. Description Preparation Date:
23/ 1/ 2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Three hours /week (theory) and two hours /week (practical) – 4 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Huda Saleh , Assist. Prof . Dr Maysam Adnan @ Lec.Dr. Shaimma Munshid Email:
8. Course Objectives

Course Objectives : they study of many types of parasites, the shape, where they live, the name of the disease, the life cycle of the parasite, signs and symptoms and discuss the life cycle of the virus, types and stages of infection and the incubation period of the disease, the path of infection, prevention and treatment. It aims to provide students with knowledge about disease development, form, laboratory diagnosis and identification, pathology, clinical manifestations of parasitic and viral diseases and the basic concepts of immunization against these diseases. It also aims to know the methods of specialized and non-specialized immune response.	• ..... • ..... • .....

9. Teaching and Learning Strategies

Strategy	Theoretical and practical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	Introduction to the types of parasites	Introduction	3	1
Theory exam reports homework	smart board classroom	Amoeba plantidium giardia chylomastics	Intestinal protozoa	5	2
Theory exam reports homework	smart board classroom	leishmania Trypanosoma	flagellate	4	3
Theory exam reports homework	smart board classroom	malaria; Toxoplasma	sporophytes	4	4
Theory exam reports homework	smart board classroom	malaria; Toxoplasma	Worms and their division	5	5
Theory exam reports homework	smart board classroom	Ascaris water bag worms	=	5	6
		Exam 1		1,5	7
Theory exam reports homework	smart board classroom	An introduction to a comparison between viruses, bacteria and other microbes	viruses	2	8
Theory exam reports homework	smart board classroom	virus division	=	2	9
Theory exam reports homework	smart board classroom	reproduction	=	2	10
Theory exam reports homework	smart board classroom	Virus isolation, diagnosis and development	=	2	11

Theory exam reports homework	smart board classroom	genetic mutation methods	=	2	12
Theory exam reports homework	smart board classroom	antiviral chemotherapy	=	2	13
Theory exam reports homework	smart board classroom	DNA Viruses	=	2	14
Theory exam reports homework	smart board classroom	RNA Viruses	=	2	15
Theory exam reports homework	smart board classroom	General introduction	immunity	1	16
Theory exam reports homework	smart board classroom	Innate and stimulating immunity	types of immunity	2	17
Theory exam reports homework	smart board classroom	B and T cell antigen properties		3	18
Theory exam reports homework	smart board classroom	Complement. Types of hypersensitivity	terminology in immunity	3	19
Theory exam reports homework	smart board classroom	tumor immunity	Oncology	3	20
		Exam2			

Course Description Form

1. Course Name:
Biochemistry I
2. Course Code:
314
3. Semester / Year:
First / Third
4. Description Preparation Date:
23/1/ 2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Three hours /week (theory) and two hours/week (practical) – 4 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Yaser Ahmed Email:
8. Course Objectives

Course Objectives : It is concerned with knowing the definition of "biochemistry. It explains the specificity of enzymes (biochemical catalysts), the chemistry involved in the work of the enzyme, and how glucose metabolism occurs, which ultimately leads to the generation of large amounts of energy. It describes how metabolism occurs Dietary fats and amino acids, explaining how they can be used for fuel, describing the structure of DNA, and identifying five classes of polymeric biomolecules and their monomeric structure.	• • ..... • ....

9. Teaching and Learning Strategies

Strategy	Theoretical and practical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	Definition and terminology. Protein DNA. Clinical values	Introduction to macromolecules in biochemistry	2	1
Theory exam reports homework	smart board classroom	Synthesis of amino acids. Category. Properties. other shapes	amino acids	3	2
Theory exam reports homework	smart board classroom	Chemical reactions. Ion Zwetter. Flattening drawing. Neutral ion point calculations. Non-standard amino acids. Composition, presence and clinical value	amino acids	3	3
Theory exam reports homework	smart board classroom	Peptide bonds. Resonance and isomer. Physical properties and chemical reactions. Polypeptides are essential in the human body. Installation. Occupation. Clinical value	peptide	3	4
Theory exam reports homework	smart board classroom	Installation and routing. Initial installation. Secondary installation. Triple structure. Quadruple structure partition. Industry. Cell function (enzymes, signal transmission,	protein	3	5

		carrier, structure proteins) protein in nutrition			
Theory exam reports homework	smart board classroom	Imbalance of the nature of the protein determine the order of amino acids. Synthesis of the nitrogenous end of an amino acid and the determination of the s terminus of an amino acid. Administrator's predictions for protein ordering from DNA and RNA	Protein	3	6
		Exam1			7
Theory exam reports homework	smart board classroom	Chemistry and Classification, Importance of Biomedicine, Classification of carbohydrates, stereochemistry of monosaccharides, and metabolism of carbohydrates. Physiologically important monosaccharides, glycosides, disaccharides, disaccharides	carbohydrate	3	8
Theory exam reports homework	smart board classroom	Introduction, Classification of Fats and Fatty Acids (F.A), Nomenclature of F.A, saturated F.A, unsaturated F.A, physical and	Fats	3	9

		physiological properties of F.A, and lipid metabolism. Phospholipids, lipid peroxidation and antioxidants, separation and determination of the proportion of lipids, isogroup lipids			
Theory exam reports homework	smart board classroom	Structures and mechanism, naming and classification, Catalytic mechanisms, thermodynamics , specificity, lock and main model, induced fit model, transition state stabilization, dynamics and function, allosteric modulation. Biological function, cofactors, coenzymes, and involvement in disease	enzymes	3	10
Theory exam reports homework	smart board classroom	For general principles, factors affecting enzyme speed (concentration, pH, temperature, etc.), enzyme reaction with substance (Michaelis-	kinetic	3	11

		Menten kinetics), and kinetic constants. Examples of kinematic questions and solutions			
Theory exam reports homework	smart board classroom	Reversible, competitive, and non-reversible inhibitors Competition, mixed type inhibition, and irreversible inhibition. Kinetics and tendencies for correlation, questions and .solutions	enzyme inhibitors	2	12
Theory exam reports homework	smart board classroom	multiple substrate interactions, Complex triangular mechanisms, ping pong mechanisms, kinetics of N. Michael Menten, kinetics before the steady state, and chemical .mechanisms	Controlling efficacy and use of inhibitors Controlling efficacy and use of inhibitors	2	13
Theory exam reports homework	smart board classroom	Chemical structure of the components of DNA, the nucleic Acid bases, nucleotides and deoxynucleotide s (properties, base pairing, sense and antisense, supercoil and alternative	DNA	3	14

		structures, and quaternary .structures			
Theory exam reports homework	smart board classroom	genes, genetic factors, transcription and Translation and replication. Biochemistry of extracellular and intercellular communication: plasma Membrane structure and function. Biomedical importance, membrane-associated lipid bilayer proteins, membrane protein composition, biostructures of membranes, and homologous structures of membranes	The biological function of DNA	5	15
		Exam2			

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Course Description Form

1. Course Name:
Biochemisty II
2. Course Code:
329
3. Semester / Year:
Second / Third
4. Description Preparation Date:
23/ 1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab

6. Number of Credit Hours (Total) / Number of Units (Total)	
Three hours/ week (theory) and two hours/ week (practical) – 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof . Dr Yaser hmed @ Lec. Dr Omer Salah Email:	
8. Course Objectives	
Course Objectives : It is concerned with the study of bioenergy, the role of ATP, the importance of carbohydrates and their metabolism, the importance of fats and their metabolism, amino acids and proteins and their metabolism process, and plasma proteins. And the diversity of the work of the endocrine system, hormones, enzymes, and enzyme kinetics nucleotide metabolism and DNA structure.	• • •
9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	The role of ATP Oxidation Biology respiratory chain	Bioenergy	3	1
Theory exam reports homework	smart board classroom	glycolysis Citric acid cycle glucose production oxidative phosphorylation	Cellular metabolism of carbohydrates	3	2
Theory exam reports homework	smart board classroom	The pentose phosphate pathway representation of glycogen The uronic acid route Glycose, aminoglycan and glycoprotein	Cellular metabolism of carbohydrates	3	3
Theory exam reports homework	smart board classroom	fatty acid industry	fat representation	3	4
Theory exam reports homework	smart board classroom	Oxidation of fatty acids ketone production	fat representation	3	5
Theory exam reports homework	smart board classroom	Fat transfer and storage	fat representation	3	6
Theory exam reports homework	smart board classroom	Mid-course exam		3	7
Theory exam reports homework	smart board classroom	Non-essential amino acid industry	Representation of proteins and amino acids	3	8
Theory exam reports	smart board classroom	Breaking down the carbonic structure of	Representation of proteins and amino acids	3	9

homework		amino acids Converting amino acids to specific products			
Theory exam reports homework	smart board classroom	nucleotides	large particles	3	10
Theory exam reports homework	smart board classroom	representation of purines and pyridines	large particles	3	11
Theory exam reports homework	smart board classroom	The function and structure of the amino acid	large particles	3	12
Theory exam reports homework	smart board classroom	DNA replication and repair	large particles	3	13
Theory exam reports homework	smart board classroom	Porphyrin and gallbladder tincture		2	14
		final exam			

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Course Description Form .....

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1. Course Name:
Pathophysiology
2. Course Code:
315
3. Semester / Year:
First / Third
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Three hours/ week (theory) and two hours/ week (practical) – 4 units

7. Course administrator's name (mention all, if more than one name)	
Name: Lec. Dr Muthana Hussein	Email:

8. Course Objectives	
Course Objectives :clarifies the basic concepts of diseases at the cellular level related to injury, the body's defense mechanism from disease, mutations, and cellular proliferation. It presents an outline of the main pathological factors that affect the disease process. It describes the effect of abnormal functions on the organs associated with the disease process of the target body systems	• • •

9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	Introduction to the meaning of science	Introduction	1	1
Theory exam reports homework	smart board classroom	Degeneration. necrosis; atrophy; Hypertrophy; Metaplasia and calcification. Inflammation and repair	Cell injury and tissue response	6	2
Theory exam reports homework	smart board classroom	Increased hyponatremia. Hyperkalemia and hypokalemia. Syndrome of inappropriate secretion of ADH. Diabetes insipidus: acid-base metabolism and acid-base .respiration	Disturbance of electrolytes and balance of water, acid and base	4	3
Theory exam reports homework	smart board classroom	congestion; Coagulation. Occlusion and infarction. shock; Cardiovascular disease, heart attack, rheumatic heart disease. heart failure; acute pulmonary edema	Cardiovascular disorders	3	4
Theory exam reports homework	smart board classroom	Hypertension. Secondary hypertension. Malignant hypertension. Reduction of Blood pressure.	=	2	5

		Aneurysms vs. Varicose Veins			
Theory exam reports homework	smart board classroom	For lung infections. tuberculosis; respiratory distress syndrome	Respiratory disorders	1	6
		Exam1		1,5	7
Theory exam reports homework	smart board classroom	Bronchial asthma; Emphysema and bronchiectasis. Cystic fibrosis; Pulmonary embolism. Pulmonary .hypertension	Respiratory disorders	2	8
Theory exam reports homework	smart board classroom	nephrotic syndrome; Glomerulonephritis. Diabetic glomeruli. Glomerular disease, high .blood pressure	Kidney system disorders	2	9
Theory exam reports homework	smart board classroom	Pyelonephritis.. acute kidney failure; Chronic kidney failure	Kidney system disorders	2	10
Theory exam reports homework	smart board classroom	Stomach ulcers, Elison's disease and Crohn's disease	Gastrointestinal and hepatic disorders	2	11
Theory exam reports homework	smart board classroom	Diarrhea; Celiac disease. Hepatitis; primary biliary cirrhosis; liver failure; Cholelithiasis	Gastrointestinal and hepatic disorders	2	12
Theory exam reports homework	smart board classroom	Thyroid hormone deficiency and excess, Kravis'	Thyroid gland dysfunction	2	13

		disease			
Theory exam reports homework	smart board classroom	Kishk's disease. Adrenal insufficiency. adrenal gland aplasia	adrenal gland dysfunction	2	14
Theory exam reports homework	smart board classroom	Diabetes, cellular metabolism disorder, protein and fat disorders	cellular metabolism disorders	3	15
		Exam2			

Course Description Form

1. Course Name:
Public Health
2. Course Code:
415
3. Semester / Year:
First / Fourth
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week (theory) – 2 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Jwad Ali Saleh @ Assist. Prof . Dr Maysam Adnan Email:
8. Course Objectives

Course Objectives : This program allows students to understand the principles of public health and the art of preventing disease, promoting health, and extending life, through an organized effort of society.	• • •
9. Teaching and Learning Strategies	

Strategy	Theoretical lectures Daily assignments

10. Course Structure

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	generic icons	Introduction	2	1
Theory exam reports homework	smart board classroom	The causative agents of infectious diseases	Infectious diseases	1	2
Theory exam reports homework	smart board classroom	Cardiovascular disease	Non-infectious diseases	1	3
Theory exam reports homework	smart board classroom	Stomach and intestine diseases	Infectious and non-communicable diseases	2	4
Theory exam reports homework	smart board classroom	skin diseases	Infectious and non-communicable diseases	1	5
Theory exam reports homework	smart board classroom	Sexually transmitted diseases	Infectious diseases	1	6
		Exam1		1,5	7
Theory exam reports homework	smart board classroom	tumor disease	Oncology	3	8
Theory exam reports homework	smart board classroom	respiratory system diseases	Infectious diseases	2	9
Theory exam reports homework	smart board classroom	Includes maternal injuries and vaccination	family planning	2	10
		Exam2			

Course Description Form

1. Course Name:
Clinical Chemistry
2. Course Code:
514
3. Semester / Year:
First / Fifth
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Three hours/ week (theory) and two hours/ week (practical) – 4 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist Lec . Adnan Mustafa Email:
8. Course Objectives

Course Objectives : Interprets required laboratory tests and interpretation of results, cellular carbohydrate metabolism disorder, plasma lipids and lipoproteins disorder, liver function testing, renal function disorders, plasma enzymes in diagnosis. Hypothalamus, pituitary, plasma proteins, and adrenal glands. Reproductive system. Pregnancy and infertility. Thyroid function tests.	• ..... • ..... • .....

9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Theory exam reports homework	smart board classroom	Request lab tests and interpret results	Request lab tests and interpret results	2	1
Theory exam reports homework	smart board classroom	A look at the natural metabolism of carbohydrates The role of the liver, muscle and adipose tissue High glucose and diabetes low glucose	carbohydrate metabolism disorder	6	2
Theory exam reports homework	smart board classroom	Review of normal fat metabolic pathways Classification of lipid disorder Clinical symptoms of lipids and fat related	Disorder of plasma lipids and lipoproteins	4	3
Theory exam reports homework	smart board classroom	The physiological role of the liver Liver disease: hepatitis, jaundice and cirrhosis of the liver Liver function tests	Liver function test	4	4
Theory exam reports homework	smart board classroom	Kidney physiology Kidney disorders Kidney function assessment: glomerular filtration rate, renal tubular assessment	Kidney function disorder	3	5
Theory exam reports	smart board classroom	Normal distribution of enzymes in	Diagnosis of plasma enzymes	3	6

homework		human tissues, isoenzymes, Factors affecting the measurement of enzymatic activity Clinical application to measure plasma enzymes			
		mid-course exam		1,5	7
Theory exam reports homework	smart board classroom	Normal physiology of the hypothalamus and pituitary gland pituitary gland disorder	Hypothalamus and pituitary gland	4	8
Theory exam reports homework	smart board classroom	The normal physiology of the adrenal gland adrenal gland disorder	Adrenal	3	9
Theory exam reports homework	smart board classroom	The normal physiology of the reproductive system Reproductive system disorder	reproductive system	4	10
Theory exam reports homework	smart board classroom	The natural physiology of pregnancy Hormonal changes associated with infertility	Pregnancy and infertility	6	11
Theory exam reports homework	smart board classroom	The normal physiology of the thyroid gland Thyroid disorder	Thyroid	3	12
Theory exam reports homework	smart board classroom	Plasma protein components Electron separation of plasma proteins	Plasma proteins	3	13
		Final Exam			

Course Description Form

1. Course Name:
Clinical Laboratory Training
2. Course Code:
515
3. Semester / Year:
First / Fifth
4. Description Preparation Date:
23/1/2025
5. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Four hours / week (Practical) – 2 units
7. Course administrator's name (mention all, if more than one name)
Name: Assist Prof. Tafaoul Jaber , Lec. Dr. Sarwa azeez @ Lec. Dr. Omer Salah Email:
8. Course Objectives

Course Objectives : Laboratory training: It shows how to conduct different types of analyzes, discuss the results and write clinical reports according to the data obtained from the evaluation. Training includes hematology, parasitology, bacteriology, biochemistry, quality control, immunology, serology, virology, general urinalysis, and sterilization.	• …… • …… • ……

9. Teaching and Learning Strategies	
Strategy	Theoretical and practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Basics of diagnostic testing, collection and transportation of specimens, venipuncture, urine specimen, and stool specimen	Request lab tests and interpret results	2	1
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Fasting blood test blood sugar after food glucose tolerance	biochemical tests	2	2
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	urea in the blood serum creatinine Clean creatinine uric acid	Kidney function test	2	3
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	blood proteins bilirubin	Liver function test	2	4
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Calcium inorganic phosphate chlorine in serum	biochemical tests	2	5
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Alkaline phosphatase, Acid phosphatase, Alanine Amiotransferase, Aspartate aminotransferas	Diagnosis of plasma enzymes	2	6

		e, Lactate dehydrogenase, Creatine phosphokinase			
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	VDRL, ASO- Titer, Hepatitis tests. C-reactive protein test, Rheumatic factor test, Rosebengal test, Typhoid fever (Widal test), Pregnancy Test	serology tests	2	7
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Amount of blood cells hemoglobin BBC white blood cells blood platelets Coombs test blood tests bleeding time blood cell sedimentation rate	blood tests	2	8
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Collecting a urine sample for the detection of physical and chemical properties	general urine test	2	9
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Implant test, sensitivity and pigmentation method	microbiology test	2	10
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	medium rich middle Media for general use	microbiology test	2	11
Practical exams	Power point slides	Tests for identification of	microbiology test	2	12

Reports discussion oral exam Laboratory Efficiency	Laboratory visit	bacteria, disc diffusion tests of antibiotic susceptibility, selection of drugs for disc testing, bacterial disease and their laboratory diagnosis.			
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Herpes Virus, Arthomyxo. Baromexo. Hypatu. Intestinal parasites Malaria and Toxoplasma parasites	Parasites and viruses	2	13
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	ELISA PCR Electrocardiogram	new technology	2	14
		Final Exam			

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Course Description Form

1. Course Name:
Computer science
2. Course Code:
3. Semester / Year:
First / Second
4. Description Preparation Date:
10/3/ 2024
5. Available Attendance Forms:
Practical lectures in lab
6. Number of Credit Hours (Total) / Number of Units (Total)

Two hours / week – one units
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives : gives students the ability to deal with the concept of computer science, and emphasizes the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist. The course deals with the basic concept of computer and its application in human life and the medical field. Upon completion of the course students will be able to understand computer terms and acronyms used to describe the lecture, and the different programming languages.	• • •

9. Teaching and Learning Strategies	
Strategy	Practical lectures Daily assignments
10. Course Structure	

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Practical exam and class efficacy	Data show + Electronic row display	Graphing apps	Data import	2	1
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	data analysis	2	2
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	How to calculate some statistical values	2	3
Practical exam and class efficacy	Data show + Electronic row display	Common errors in the Excel application	error formulas in excel	2	4
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	Entering data analysis in excel	2	5
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	escriptive statistics	2	6
Practical exam and class efficacy	Data show + Electronic row display	Introduction to Statistics Using Microsoft Excel	ecursive	2	7
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	Correlation	2	8
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	Regression	2	9
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	Single sample t-test	2	11
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	t-test for a pair of data, unsupported t-test	2	10
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	One-way ANOVA test, ANOVA test: two factors without recurrence	2	11
Practical exam and class efficacy	Data show	Practical lessons in chemistry		2	12
Practical exam and class efficacy	Data show	=	Drawing chemical Structure	2	13
Practical exam and	Data show	=	IR , UV	2	14

class efficacy					
Practical exam and class efficacy	Data show	=	-NMR	2	15

Course Description Form

1. Course Name:
Computer science
2. Course Code:
3. Semester / Year:
Second / second
4. Description Preparation Date:
10/3/2024
5. Available Attendance Forms:
Practical lectures in lab
6. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week – one units
7. Course administrator's name (mention all, if more than one name)
Name: ..... mail: .....
8. Course Objectives

Course Objectives : gives students the ability to deal with the concept of computer science, and emphasizes the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist. The course deals with the basic concept of computer and its application in human life and the medical field. Upon completion of the course students will be able to understand computer terms and acronyms used to describe the lecture, and the different programming languages.	• • •
9. Teaching and Learning Strategies	
Strategy	Practical lectures Daily assignments

Evaluation method	Education method	Unit name and/or topic	Required learning outcomes	Hours	Week
Practical exam and class efficacy	Data show	Data Analysis with SPSS General Aspects, Workflow, Critical Issues	SPSS	2	1
Practical exam and class efficacy	Data show	–SPSS Windows available in the program	SPSS general description, functions, menus, directives	2	2
Practical exam and class efficacy	Data show	Data entry and modification, SPSS program dialogs, manual data entry, syntax of files and scripts, output management	Define variables	2	3
Practical exam and class efficacy	Data show	Descriptive data analysis frequencies,	descriptive statistics frequency tables	2	4
Practical exam and class efficacy	Data show	Charts	Graphs	2	5
Practical exam and class efficacy	Data show	Statistical tests	the average	2	6
Practical exam and class efficacy	Data show	=	T-Test	2	7
Practical exam and class efficacy	Data show	=	One-way ANOVA test	2	8
Practical exam and class efficacy	Data show	=	non-parametric tests	2	9
Practical exam and class	Data show	=	normal tests	2	10

Practical exam and class efficacy	Data show	Correlation and regression analysis	Correlation and regression	2	11
Practical exam and class efficacy	Data show	=	Linear correlation and regression	2	12
Practical exam and class efficacy	Data show	=	Multiple Regression (Linear)	2	13
Practical exam and class efficacy	Data show	=	Multivariate analysis	2	14
Practical exam and class efficacy	Data show	Non-parametric tests	test Chi square	2	15
		Exam 2 theoretical and practical			
efficacy					

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

The studying subject which are only theoretical , the degree division of it will be as follows :

Mid-Term Exam: 30 Marks

Final-Term Exam: 70 Marks

The studying subject which are theoretical and practical , the degree division of it will be as follows :

Mid-Term Exam (theoretical) : 20 Marks

Mid-Term Exam (practical) : 20 Marks

Final-Term Exam: 60 Marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer science: first semester, first stage ICDL International Certificate in Computer halls Forms (Prog. Exam) Mathematics and biostatistics: the first semester of

	the first academic year 1. Finney RI, Thomas GB (Eds.); Calculus and Analytical Geometry Daniel WW, Foundation for Analysis in the Health Sciences, 4th ed. halls Forms (breast examination) Human biology: the first semester of the first academic year Johnks and Lnglis (eds.), Textbook of Human Biology, latest edition Medical Physics: 1st semester of the first academic year Physics, Biology and Medical Students, 2nd Edition Histology: 1st semester of the first academic year Basic Histology by Luis Carlos 11th ed. (2005) Human anatomy: the second semester of the year Clinical Anatomy by Regions (Richard S. Snell 8th ed. 2010). Medical Microbiology: 1st semester of the second academic year 1- Lange Medical Microbiology 2- Medical Microbiology I, Seventeenth Edition E. Jawetz, J.L. Melnik, E.A. just 1987 3- Principles of Microbiology by Roland M. Virology and Parasitology: 1st semester of the second academic year Animal agents and vectors of diseases to humans. 5th.Ed. Computer. Beaver & amp; Young. BiochemistryI and II: 1st semester 1st year 3rd academic year 1. Harper's Illustrated Biochemistry, 27th ed. 2006. 2. Lippincott Biochemistry and Photographer, 2011 3. Lehninger Principles of Biochemistry, 2004 Pathophysiology: 3 years / 1stsemester Essentials in Pathophysiology by: Carol Mattson-Borth 2nd Ed. Public Health: 4th year / 1st semester Lucas AO, HM Jill, (Eds.), Short Textbook of Orbital Public Health Medicine, (4th ed.), 2003.

	Clinical Chemistry: 5th year / 1st semester 1- Crook M A. (ed) Clinical Biochemistry and Metabolic Medicine, 8th ed., 2012. Hodder Arnold. 2- Portis CA, Ashwood ER, Bronze D (Eds.) Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 5th ed., 2012, Elsevier. Laboratory Training: Lectures and Guidelines
Main references (sources)	Curriculum books approved by the faculties of pharmacy.
Recommended books and references (scientific journals, reports…)	Related scientific books that can be obtained from international websites
Electronic references, websites	

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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 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 program's main features and 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 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 academic programs and course descriptions 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 of the future of the academic program that is 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: Program Objectives 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 successfully completing the academic program. The learning outcomes of each course must be determined in a way that achieves the program's objectives.

Teaching and learning strategies: These are the strategies used by the faculty members to develop students' teaching and learning. They are plans that are followed to reach the learning goals. They describe all classroom and extracurricular activities that achieve the program's learning outcomes.

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Pharmacy

Scientific Department: Pharmacology and Toxicology

Academic or Professional Program Name: Pharmaceutical Sciences

Final Certificate Name: BSc in pharmacy science

Academic System: Semesters **(Two semesters/year)**

Description Preparation Date: 01/03/2024

File Completion Date: 22/03/2024

Signature:

Head of Department Name:

Assist. Prof. Dr. Khalid S. Saleh

Date: 25/03/2024

Signature:

Scientific Associate Name:

Lect. Dr. Ali Hussain Abbas

Date: 25/03/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Nashwan Ahmed Sumait

Date: 25/03/2024

Signature:

Approval of the Dean

Lect. Dr. Ali Hussain Abbas

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
1st	116	Terminology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2nd	214	Medical physiology I	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2nd	229	Medical physiology II	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3rd	327	Pharmacology I	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4th	411	Pharmacology II	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4th	426	Pharmacology III	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4th	429	General toxicology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5th	516	Clinical toxicology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Course Description Form

1. Course Name:
Pharmacology I
2. Course Code:
327
3. Semester / Year:
2nd Semester / Year 3
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Sinan Al-Mahmood, Email: sinanpharmacy@tu.edu.iq

8. Course Objectives	
Course Objectives	Provides students with principles of pharmacokinetics and pharmacodynamics in wellness promotion and illness prevention and treatment. Express knowledge of pharmacological agents concerning classifications, mechanism of action, routes of administration, doses, and adverse effects, precautions, contraindications & drug-drug interactions.

9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Explain the pharmacological actions of medications on the human body. • Identify the legal, ethical and cultural implications of medications. • Demonstrate the ability to provide important information regarding the adverse drug reactions, administration of drug, drug-drug and drug-nutrient interactions.

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1&2	2 4	General introduction to pharmacology, Pharmacokinetics.	I	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
3&4	4 2	Pharmacodynamics, The Autonomic Nervous System.	I II	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
5&6	6	Cholinergic system.	II	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
7&8	6	Adrenergic system.	II	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
9	2	Principles of Antimicrobial Therapy.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10	4	Cell Wall Inhibitors.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
11	4	Protein Synthesis Inhibitors.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
12	3	Quinolones, Folic Acid Antagonists, and Urinary Tract Antiseptics.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
13	2	Antimycobacteria Drugs.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
14	2	Antifungal.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
14	1	Antiprotozoal.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
15	2	Anthelmintic Drugs.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
15	1	Antiviral.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**45 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ T&F Matching MEQ 15%	MCQ MEQ	70%
1, 2& 3	Practical	20%		
1, 2& 3	Written test	Quiz, MCQ SAQ 5%		10%
Total		40%	60%	100%

12. Learning and teaching resources

Required:

- Whalen, K., Finkel, R. & Panavelil, T. A. (2018). Lippincott Illustrated Reviews: Pharmacology (7th ed.). China: Wolters Kluwer

Additional references supporting the course

Recommended

- Katzung, B., Trevor, A. (2014). Basic and Clinical Pharmacology (13th ed.). New York: McGraw-Hill Education.
- Toy, E., Loose, D., Tischkau, S. A. & Pillai, A. S., (2014). Case files pharmacology (3rd ed.). New York: McGraw-Hill Education.

Prepared by:	Checked by:	Approved by:
Dr. Sinan Mohammed Abdullah Al-Mahmood		

Course Description Form

1. Course Name:
Pharmacology II
2. Course Code:
411
3. Semester / Year:
1st Semester / Year 4
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
4 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Sinan Al-Mahmood, Email: sinanpharmacy@tu.edu.iq

8. Course Objectives

Course Objectives	To introduce the pharmacy students to the general pharmacology of the central nervous system and to the various drug groups used in the treatment of CNS diseases or drugs altering its function. The student will be introduced to the various drugs used in the management of cardiovascular diseases. Moreover, the course will cover the drugs affecting the gastrointestinal and respiratory systems.

9. Teaching and Learning Strategies

Strategy Learning outcome (LO)	• Explain the pharmacological actions of medications on the human body. • Identify the legal, ethical and cultural implications of medications. • Demonstrate the ability to provide important information regarding the adverse drug reactions, administration of drug, drug-drug and drug-nutrient interactions.

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1	2	Introduction to CNS pharmacology.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
1	2	CNS stimulants.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
2	3	Anxiolytic and Hypnotic drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
3	3	General and Local Anesthetics.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
4	3	Antidepressant drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
5	3	Antipsychotic (neuroleptic) drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
6	3	Opioid analgesics and antagonists.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
7	3	Treatment of neurodegenerative diseases.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
8	2	Antiepileptic Drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
9	2	Diuretics.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10	2	The treatment of heart failure (HF).	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10	2	Antiarrhythmic drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
11	2	Antianginal Drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
12	3	Antihypertensive drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
13	3	Drugs affecting the blood.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
14	2	Antihyperlipidemic drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
14	2	Gastrointestinal and antiemetic drugs.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
15	3	Drugs acting on the respiratory system.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**45 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ T&F Matching MEQ 20%	MCQ MEQ	70%
1, 2& 3	Written test	Quiz, MCQ SAQ 10%		10%
Total		30%	70%	100%

12. Learning and teaching resources

Required:

- Whalen, K., Finkel, R. & Panavelil, T. A. (2018). Lippincott Illustrated Reviews: Pharmacology (7th ed.). China: Wolters Kluwer

Additional references supporting the course

Recommended

- Katzung, B., Trevor, A. (2014). Basic and Clinical Pharmacology (13th ed.). New York: McGraw-Hill Education.
- Toy, E., Loose, D., Tischkau, S. A. & Pillai, A. S., (2014). Case files pharmacology (3rd ed.). New York: McGraw-Hill Education.

Prepared by:	Checked by:	Approved by:
Dr. Sinan Mohammed Abdullah Al-Mahmood		

Course Description Form

1. Course Name:
Pharmacology III
2. Course Code:
426
3. Semester / Year:
2nd Semester / Year 4
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
2 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Sinan Al-Mahmood, Email: sinanpharmacy@tu.edu.iq

8. Course Objectives	
Course Objectives	To introduce the pharmacy students to various drug groups affecting endocrine systems and their use in correcting abnormalities in the endocrine functions. Moreover, the course will cover the drugs used in the management of neoplastic diseases, bone disorders, obesity and erectile dysfunction. Inflammatory agents and the anti-inflammatory drugs will also be covered during this course.
9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Explain the pharmacological actions of medications on the human body. • Identify the legal, ethical and cultural implications of medications. • Demonstrate the ability to provide important information regarding the adverse drug reactions, administration of drug, drug-drug and drug-nutrient interactions.

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1&2	3	Hormones of the pituitary and thyroid glands.	V	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
2&3	4	Insulin and oral hypoglycemic drugs.	V	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
4&5	3	Adreno-corticosteroids.	V	A Theoretical lesson using PowerP Autacoids and autacoid antagonists oint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
5&6	3	The gonadal hormones and inhibitors.	V	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
7&8	3	Autacoids and autacoid antagonists	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
8&9	3	Non-steroidal anti-inflammatory drugs (NSAIDs) and other anti- inflammatory agents.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10	2	Drugs used in erectile dysfunction.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
11	2	Drugs used in osteoporosis.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
12	2	Drugs used in the management of obesity.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
13,14 &15	5	Cancer Chemotherapy: Anticancer drugs and immunosuppressants.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**45 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ T&F Matching MEQ 20%	MCQ MEQ	70%
1, 2& 3	Written test	10 Quiz, MCQ SAQ 10%		10%
Total		30%	70%	100%

12. Learning and teaching resources

Required:

- Whalen, K., Finkel, R. & Panavelil, T. A. (2018). Lippincott Illustrated Reviews: Pharmacology (7th ed.). China: Wolters Kluwer

Additional references supporting the course

Recommended

- Katzung, B., Trevor, A. (2014). Basic and Clinical Pharmacology (13th ed.). New York: McGraw-Hill Education.
- Toy, E., Loose, D., Tischkau, S. A. & Pillai, A. S., (2014). Case files pharmacology (3rd ed.). New York: McGraw-Hill Education.

Prepared by:	Checked by:	Approved by:
Dr. Sinan Mohammed Abdullah Al-Mahmood		

Course Description Form

1. Course Name:
Medical Terminology
2. Course Code:
116
3. Semester / Year:
1st semester / Year 1
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
1 Credit
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	In this course, students will learn to pronounce, spell, and define medical and pharmaceutical terms used in healthcare settings. It will use a word-building strategy that helps them discover connections and relationships among word roots, prefixes, and suffixes. They will learn the meaning of each part of a complex medical and pharmaceutical term and be able to put the parts together and define the term.
9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Explain the pharmaceutical and medical terms used during the study. • Preparing the student and making him familiar with all kinds of medical terms used in his medical field. • Demonstrate the ability to provide important information regarding the terms that describe adverse drug reactions, administration of drugs, drug-drug interactions, and drug-nutrient interactions.

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1	1	Basic word roots and common suffixes	Basic word roots and common suffixes	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
2	1	More word roots, suffixes and prefixes related to pharmaceutical sciences (pharmacognosy, clinical pharmacy, pharmaceutics,…etc)	More word roots, suffixes and prefixes related to pharmaceutical sciences (pharmacognosy, clinical pharmacy, pharmaceutics, …etc)	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
3,4	2	Basic anatomical terms and abnormal conditions	Basic anatomical terms and abnormal conditions	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
5	1	The genitals and urinary tract	The genitals and urinary tract	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
6	1	The gastrointestinal tract	The gastrointestinal tract	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
7	1	The heart and cardiovascular system	The heart and cardiovascular system	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
8,9	2	Symptoms, diagnoses, treatments, communication qualifiers, and statistics	Symptoms, diagnoses, treatments, communication qualifiers, and statistics	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10	1	Growth and development, and body orientation	Growth and development, and body orientation	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
11	1	Gynecology, pregnancy, and childbirth	Gynecology, pregnancy, and childbirth	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
12	1	The eye and the respiratory tract	The eye and the respiratory tract	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
13,14	2	The nervous system and behavioral disorders	The nervous system and behavioral disorders	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
15	1	Blood and immunity	Blood and immunity	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**15 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ, T&F, Matching Essay 20%	MCQ, T&F, Matching Essay	70%
1, 2& 3	Written test	Quiz, MCQ & SAQ 10%		10%
Total		30%	70%	100%

12. Learning and teaching resources

Required:
John and Liz Soars, New Headway Plus, Oxford: Oxford

Additional references supporting the course

Recommended

- Medical Terminology for Beginners 2023: The Ultimate Study Guide to Memorize and Understand Medical Terms for a Brilliant Health Care Career.
- Introduction to Medical Terminology, 2nd Edition.

Prepared by:	Checked by:	Approved by:

Course Description Form

1. Course Name:
Physiology I
2. Course Code:
214
3. Semester / Year:
1st / Year 2
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
4 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	To enable students understanding the basic principles of physiological functions of different tissues and organs of the human being, and how to evaluate these functions and correlate them with the normal and abnormal conditions. It also emphasizes on the role of homeostatic and hemodynamic changes in the integration of physiological status.
9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Knowledge and understanding of the physiology of the body cell is the basis for the work of various body systems. • Understand the physiology of the various body systems. • The student's knowledge of the physiology of the body and the functions of the various organs in the body.

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1-2	5	The general and cellular basis of medical physiology.	The general and cellular basis of medical physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
3-7	16	Physiology of nerves and muscles.	Physiology of nerves and muscles.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
8-9	8	Respiratory system Physiology.	Respiratory system Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10-12	8	Renal system Physiology.	Renal system Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
13-15	8	Cardiovascular system Physiology.	Cardiovascular system Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**45 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ, T&F Matching, MEQ, Essay. 15%	MCQ, Essay.	70%
1, 2& 3	Practical	20%		
1, 2& 3	Written test	Quiz, MCQ SAQ 5%		10%
Total		40%	60%	100%

12. Learning and teaching resources

Required:

Textbook of Medical Physiology by Guyton AC; latest edition.

Additional references supporting the course

Recommended

2nd Edition, Essentials of Human Physiology for Pharmacy by Laurie Kelly McCorry Copyright 2008.

Prepared by:	Checked by:	Approved by:

Course Description Form

1. Course Name:
Physiology II
2. Course Code:
229
3. Semester / Year:
2nd Semester / Year 2
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
4 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	To enable students understanding the basic principles of physiological functions of different tissues and organs of the human being, and how to evaluate these functions and correlate them with the normal and abnormal conditions. It also emphasizes on the role of homeostatic and hemodynamic changes in the integration of physiological status.
9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Knowledge and understanding of the physiology of the body cell is the basis for the work of various body systems. • Understand the physiology of the various body systems. • The student's knowledge of the physiology of the body and the functions of the various organs in the body.

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1-3	10	Gastrointestinal Physiology.	Gastrointestinal Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
4-8	15	Circulatory body fluid.	Circulatory body fluid.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
9-15	20	Endocrinology Physiology.	Endocrinology Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**45 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ, T&F, Matching , MEQ Essay. 15%	MCQ, , Essay.	70%
1, 2& 3	Practical	20%		
1, 2& 3	Written test	Quiz, MCQ, SAQ 5%		10%
Total		40%	60%	100%

12. Learning and teaching resources

Required:

Textbook of Medical Physiology by Guyton AC; latest edition.

Additional references supporting the course

Recommended

2nd Edition, Essentials of Human Physiology for Pharmacy by Laurie Kelly McCorry Copyright 2008.

Prepared by:	**Checked by:**	**Approved by:**

Course Description Form

1. Course Name:
General toxicology
2. Course Code:
429
3. Semester / Year:
2nd Semester / Year 4
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	Studying the principle of exposure to different chemicals and environmental factors, their sources, mechanisms of toxicity and their risk to human beings enables students to understand the required measures to protect living organisms against suspected toxic hazards.
9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Students' knowledge of poisoning and the mechanism of its occurrence. • Students' knowledge of children's poisoning - and geriatric patients • Familiarity with cases of drug poisoning of the circulatory system and knowing the toxicity of plants and herbal preparations

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
	3	Introduction: general consideration; host factor, environmental factors of toxic effects.	Introduction: general consideration; host factor, environmental factors of toxic effects.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	3	Carcinogenesis	Carcinogenesis	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	1	Mutagenesis	Mutagenesis	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	16	Target organs and systemic toxicology; Respiratory system, Liver, Kidney, Skin, Nervous system, cardiovascular system, Blood.	Target organs and systemic toxicology; Respiratory system, Liver, Kidney, Skin, Nervous system, cardiovascular system, Blood.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	15	Toxic substances: Food additive and contaminants, Pesticides, Metals, Radiation and radioactive materials, plants, Solvents,	Toxic substances: Food additive and contaminants, Pesticides, Metals, Radiation and radioactive materials, plants, Solvents,	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	7	Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide(H2S).	Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide(H2S).	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**45 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ (30) T&F (30) Matching (20) MEQ (2) 15%	MCQ (30)	70%
1, 2& 3	Practical	20%		
1, 2& 3	Written test	10 Quiz, MCQ SAQ 5%		10%
Total		40%	60%	100%

12. Learning and teaching resources

Required:

Casarett and Doull, Toxicology, the Basic Science of Poisons; latest edition.

Additional references supporting the course

Recommended

Toxicology for the Health and Pharmaceutical Sciences Edited By Antonio Peña-Fernández, Mark D. Evans, Marcus S. Cooke Copyright 2022

Prepared by:	Checked by:	Approved by:

Course Description Form

1. Course Name:
Clinical toxicology
2. Course Code:
516
3. Semester / Year:
1st Semester / Year 5
4. Description Preparation Date:
2023-2024
5. Available Attendance Forms:
Yes
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Credits
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	Studying the principle of exposure to different chemicals and environmental factors, their sources, mechanisms of toxicity and their risk to human beings enables students to understand the required measures to protect living organisms against suspected toxic hazards.
9. Teaching and Learning Strategies	
Strategy Learning outcome (LO)	• Students' knowledge of poisoning and the mechanism of its occurrence. • Students' knowledge of children's poisoning - and geriatric patients • Familiarity with cases of drug poisoning of the circulatory system and knowing the toxicity of plants and herbal preparations

10. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
1-2	3	Initial Evaluation and Management of the Poisoned Patient. Including pediatric poisoning and special consideration in the geriatric patient	Initial Evaluation and Management of the Poisoned Patient. Including pediatric poisoning and special consideration in the geriatric patient	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
2-3	3	Drug Toxicity: Over the counter drugs; caffeine; theophylline; antihistamine and decongestant; non-steroidal anti-inflammatory drugs; vitamins.	Drug Toxicity: Over the counter drugs; caffeine; theophylline; antihistamine and decongestant; non-steroidal anti-inflammatory drugs; vitamins.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
4-9	13	Prescription Medications: Cardiovascular drugs; beta blockers; ACE inhibitors; Digoxin; Calcium channel blocker; Antiarrhythmic agents; hypoglycemic drugs; Opiods; CNS depressants; tricyclic antidepressants; anti-cholinergic phenothiazines; CNS stimulant	Prescription Medications: Cardiovascular drugs; beta blockers; ACE inhibitors; Digoxin; Calcium channel blocker; Antiarrhythmic agents; hypoglycemic drugs; Opiods; CNS depressants; tricyclic antidepressants; anti-cholinergic phenothiazines; CNS stimulant	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
10-11	4	Drug of Abuse: Opioids; Cocaine; phencyclidine; marijuana; Lysergic acid.	Drug of Abuse: Opioids; Cocaine; phencyclidine; marijuana; Lysergic acid.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
12-13	3	Chemical and Environmental Toxins: Hydrocarbones; Household toxins; Antiseptic; Disinfectants; Camphor; moth repellents.	Chemical and Environmental Toxins: Hydrocarbones; Household toxins; Antiseptic; Disinfectants; Camphor; moth repellents.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
14-15	4	Botanicals and plants-derived toxins: Herbal preparation; Toxic plants; Poisonous mushrooms.	Botanicals and plants-derived toxins: Herbal preparation; Toxic plants; Poisonous mushrooms.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**30 hrs**			

11. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
1, 2& 3	Written test	MCQ (30) T&F (30) Matching (20) MEQ (2) 15%	MCQ (30)	70%
1, 2& 3	Practical	20%		
1, 2& 3	Written test	10 Quiz, MCQ SAQ 5%		10%
Total		40%	60%	100%

12. Learning and teaching resources

Required:

Casarett and Doull, Toxicology, the Basic Science of Poisons; latest edition.

Additional references supporting the course

Recommended

Toxicology for the Health and Pharmaceutical Sciences Edited By Antonio Peña-Fernández, Mark D. Evans, Marcus S. Cooke Copyright 2022

Prepared by:	**Checked by:**	**Approved by:**

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 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 staP 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), 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: Tikrit University

Faculty/Institute: College of Pharmacy

Scientific Department: Pharmaceutics Department

Academic or Professional Program Name: Bachelor in Pharmacy Sciences

Final Certificate Name: Bachelor in Pharmacy Sciences

Academic System: Semester system (Two semesters/year)

Description Preparation Date: 01/03/2024

File Completion Date: 28/03/2024

Signature:

Head of Department Name:

Lect. Dr. Ahmed yousif fadhel

Date: 25/03/2024

Signature:

Scientific Associate Name:

Lect. Dr. Ali Hussein Abbas

Date: 25/03/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Nashwan Ahmed Sumait

Signature

Approval of the Dean

Lect. Dr. Ali Hussein Abbas

1. Program Vision

Pharmaceutics is a branch of the main branches of the Faculty of Pharmacy, which is part of the educational process in the college system, which is deals with the formal process that should be taken in order to transformation a new chemical entity compounds into a medication to be used safely and effectively by patients. It is also called the science of dosage form design. There are many chemicals with pharmacological properties, but they need special measures to help them achieve therapeutically relevant amounts at their sites of action. Pharmaceutics helps relate the formulation of drugs to their delivery and disposition in the body.

Pharmaceutics deals with the formulation of a pure drug substance into a dosage form.

2. Program Mission

The mission of the Department of Pharmaceutics and Industrial Pharmacy of knowledge essential to the Pharmaceutical practice. While providing one of the most dynamic programs in the area of drug discovery and development, the faculty introduces and develops skills of critical thinking, problem-solving, and life–long learning in future pharmacists and prepares students to perform a variety of specialized tasks including pre-formulation evaluation, dosage form design, stability testing ,pilot plant scale –up and production.

3. Program Objectives

1- Teaching the students the fundamentals of Pharmaceutics principles and calculations
2- Teaching the students the physico-chemical properties of the drug and excipients used in the dosage form formulation.
3-Teaching the student's basic technology for compounding different pharmaceutical preparation
4-Teaching the students the bio-pharmaceutics and pharmacokinetics of the drug in the body.
5-Teaching the students the manufacturing process of different dosage forms and methods of their evaluations.
6-Teaching the student the principle of dosage form design.
7-Teaching the student the principles of pharmaceutical biotechnology, biopharmaceutical product formulation, and their routes of administration.
8-Teaching the student the fundamentals of training in pharmacy and how to dispense the prescriptions.

9- Supervise the graduation projects.

4. Program Accreditation

None currently available

5. Other external influences
None currently available

6 Program Structure				
Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	10			**Basic Course**
College Requirements				**Basic Course**
Department Requirements				**Basic Course**
Summer Training				
Other				

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
1st 1st semester	Principles of pharmacy practices	112	2	
1st 2nd semester	Pharmaceutical calculation	128	2	2
2nd 1st semester	Physical pharmacy I	213	3	2
2nd 2nd semester	Physical pharmacy II	228	3	2
3rd 1st semester	Pharamceutical technology I	313	3	2
3rd 2nd semester	Pharamceutical Technology II	328	3	2
4th 1st semester	Biopharmaceutics	414	2	2
4th 2nd semester	Industrial pharmacy I	4210	3	2
5th 1st semester	Industrial Pharmacy II	512	3	2
5th 2nd semester	Dosage form design	5212	2	
5th 2nd semester	Pharmaceutical biotechnology	516	1	

8. Expected learning outcomes of the program

A1. Students can acquire knowledge, understanding, principles, theories and basics in pharmaceutics and the pharmaceutical industry.

A2.Students can understand advanced modern scientific topics in the field of pharmaceutics

A3. It enables students to understand the methods of chemical analysis and diagnosis of drug composition in pharmacy practice, methods of examination and diagnosis of physicochemical properties of pharmaceutical forms and its compositions.

A4.To see the most important computer software that is used in the field of drug analysis and design and the foundations of its theoretical applications.

A5.To be able to understand the basics of the work of laboratory devices that are used in drug analysis and diagnosis and the Skills

B1. Describe and analyze the applications of pharmacies and the pharmaceutical industry.

B2. Able to write and discuss methods of analysis and examination of pharmaceutical forms and formulations.

B3. Able to analyze and discuss problems and find successful solutions to them.

B4. Justify, communicate, and discuss concepts, especially those related to pharmaceutics in the field of pharmaceutical sciences.

B5. Through the branch laboratories, the student can install the required pharmaceutical forms, conduct the necessary tests and analyzes, and study their stability

C1- Developing the student's ability to discuss

C2- Actual application with existing capabilities

C3- Developing the student's ability to benefit from the available means

C4- Developing the student's ability to perform daily duties

9. Teaching and Learning Strategies

1- Theoretical lectures within the course.
2- Scientific discussions lectures (researchers and postgraduate students).
3- Small group discussion method.
4- Practical lectures in the laboratories of pharmacies and the pharmaceutical industry.
5- Seminars (scientific seminars) and presentation of the latest scientific developments within the specialism by students.
6- Graduation research projects for fifth stage students.
7- Scientific trips to actual work sites and laboratories in hospitals and health departments, and to see the most important problems and applications in the field of pharmacies and the pharmaceutical industry within the reality of actual work

10. Evaluation methods

Theoretical and practical exams in addition to classroom and extracurricular activities and holding scientific seminars

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

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Lecturer	3				3	
Assistant Lecturer	3				3	

Professional Development

Mentoring new faculty members

- Directing teachers to organize seminars, courses, and give scientific lectures periodically.
- Directing teachers to publish scientific research in their field of specialization in reputable journals
- Directing teachers to participate in local and international scientific conferences

Professional development of faculty members

- Participation in academic courses concerned with various fields of education
- Participation in curriculum development.
- Active participation in scientific conferences
- Motivating the teacher to use various teaching methods for students.development, etc.

12. Acceptance Criterion

Admission is made within the central admission criteria of the Ministry of Higher Education and Scientific Research

13. The most important sources of information about the program

The college website, the college guide, the university website, the college page on social media sites, in addition to professional institutions (the Iraqi Pharmacists Syndicate) and the Ministry of Higher Education and Scientific Research

14. Program Development Plan
- Updating and developing curricula according to the requirements of the labor market - Successfully use contemporary technology applications and master conducting experiments - Providing volunteer activities - Directing students' research towards applied projects that address societal problems

Curriculum Skills Map

please tick in the relevant boxes where individual Program Learning Outcomes are being assessed

Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Program Learning Outcomes															
				Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
1st	112	Principle of Pharmacy	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	128	Pharmaceutical Calculation	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2nd	CO213	Physical Pharmacy I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	CO228	Physical pharmacy II	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3rd	313	Pharmaceutical Technology I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	328	Pharmaceutical Technology II	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4th	414	Biopharmaceutics	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	4210	Industrial Pharmacy I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
5th	512	Industrial Pharmacy II		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5212	Dosage form design	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	516	Pharmaceutical Biotechnology	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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

Course Description Form

1. Course Name:
Principles of pharmacy practices
2. Course Code:
112
3. Semester / Year:
1st semester / 1st year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Ahmed abdalla essa
8. Course Objectives
Course Objectives: Enable the students to interpretation of prescription or medication order, to use the metric and apothecaries system in pharmaceutical calculations to calculate the dose, to use some of fundamental of measurements and calculations and to use calculations related density, specific gravity and specific volume.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation Method
1st	2	Fundamentals of pharmaceutical calculation	Common and Decimal Fractions, Percent Ratio,	white board, handout	Discussions

			Proportion and practice problems.		
2nd	2	Interpenetration of prescription and medical orders	Objectives, Hospital and Other Institutional Medication Order Forms and Use of Roman Numerals on Prescriptions	white board, handout	Discussions
3rd	2	Interpenetration of prescription and medical orders	Use of Abbreviations and Symbols, Practice problems.	Smart board, white board, handout	Discussions
4th	2	International system of units	Objectives. Guidelines for the Correct Use of the SI, Measure of Volume, Measure of Weight	Smart board, white board, handout	
5th	2	International system of units	Fundamental Computations, Practice Problems	Smart board, white board, handout	Discussions
					Mid-term Exam
6th	2	Common system of measurement and intersystem conversion	Apothecaries' Fluid Measure, Apothecaries' Measure of Weight, Avoirdupois Measure	Smart board, white board, handout	Discussions
7th	2	Common system of measurement and intersystem	Intersystem Conversion, Conversion of Liquid Quantities, Conversion of	white board, handout	Discussions

		conversion	Weights ,Practice Problems		
8th	2	Calculation of doses: General consideration	Objectives, Dose Definitions Dose Measurement. General Dose Calculations.	white board, handout	Discussions
9th	2	Calculation of doses: General consideration	General Dose Calculations. Practice Problems	Smart board, white board, handout	Discussions
10th	2	Calculation of doses: Patient parameters	Objectives. Pediatric Patients Geriatric Patients Drug Dosage Based on Age.	Smart board, white board, handout	Discussions
11th	2	Calculation of doses: Patient parameters	Drug Dosage Based on Body Weigh, Drug Dosage Based on Body Surface Area, Practice Problems.	Smart board, white board, handout	Discussions
12th	2	Density, Specific Gravity, and Specific Volume	Objectives, Density. Specific Gravity Density Versus Specific Gravity, Calculating the Specific Gravity of Liquids.	Smart board, white board, handout	Discussions
13th	2	Density, Specific Gravity, and Specific Volume	Use of Specific Gravity in Calculations of Weight and Volume, Calculating Specific Volume, Practice Problems	Smart board, white board, handout	Discussions
14th	2	Reducing and enlarging	Objectives, Formulas That	Smart board, white board,	Discussions

		formulas	Specify Proportional Parts	handout	
15th	2	Reducing and enlarging formulas	Practice Problems	Practice Problems	Discussions

١١. 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

Mid-Term Exam: 40 Marks

Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Pharmaceutical Calculation, Howard C Ansel,13th Edition 2010, Wolters Kluwer Lippincott Williams &Wilkins 2- Martin ´ s physical pharmacy and pharmaceutical sciences, Patrick J. Sinko. Wolters Kluwer., Lippincott Williams &Wilkins. Philadelphia. 2011. 3- Lab manual for physical pharmacy adopted by the department of Pharmaceutics. 4- Lewis W. Dittert, "American pharmacy", Lippincott. Company, 1974. 5- Ansel'sPharmaceutical dosage forms and drug delivery systems 9th edition by Howard C. Ansel. Sinko .Wolters Kluwer, Lippincott Williams &Wilkins. Philadelphia. 2011. 6- Lab manual for pharmaceutical technology by the department of pharmaceutics 7- Aulton's Pharmaceutics: The Design and Manufacture of Medicines, Third edition, Michael E. Aulton (Author). Churchill, Livingstone- Elsevier. 8- Shargel L., Yu AB., (Eds). Applied Biopharmaceutics and Pharmacokinetics, Fifth edition, International Edition 2005 9- Lab manual for biopharmaceutics 10- Theory and practice in industrial pharmacy by Lachmann (2009). 11- Pharmaceutical biotechnology by J.A. Crommelin, Robert D. Syinder. 12- Pharmaceutical biotechnology Fundamentals and

	Applications
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Pharmaceutical calculation
2. Course Code:
128
3. Semester / Year:
2nd semester / 1st year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Name: assit lec. Ahmed abdalla essa
8. Course Objectives
Course Objectives: The use of calculations in pharmacy is varied and broad-based. It encompasse calculations performed by pharmacists in traditional as well as in specialized practice settings and withi operational and research areas in industry, academia, and government. The scope of pharmaceutical calculations includes computations related to: Chemical and physical properties of drug substances and pharmaceutical ingredient; biological activity and rates of drug absorption, bodily distribution, metabolism and excretion; statistical data from basic research and clinical drug studies; pharmaceutical product development and formulation; prescriptions and medication orders including drug dosage, dosage regimens, and patient compliance; pharmacoeconomics; and other areas.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:					
Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	2	Isotonic and buffer solutions	Differentiate between the terms isosmotic, isotonic, hypertonic and hypotonic.	Smart board, white board, handout	Discussions
2nd	2	Isotonic and buffer solutions	Apply physical chemical principles in the calculation of isotonic solutions.	Smart board, white board, handout	Discussions
3rd	2	Isotonic and buffer solutions	Perform the calculations required to prepare isotonic component prescription.	Smart board, white board, handout	Discussions
4th	2	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Calculate the milliequivalent weight from an atomic or formula weight.	Smart board, white board, handout	
5th	2	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Convert between milligrams and milliequivalents.	Smart board, white board, handout	Discussions
					Mid-term Exam

6th	2	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Calculate problems involving milliequivalents.	Smart board, white board, handout	Discussions
7th	2	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Calculate problems involvingmillimoles and milliosmoles.	Smart board, white board, handout	Discussions
8th	2	Altering product strength, use of stock solutions, and problem solving by alligation	Perform calculations for altering product strength by dilution.	Smart board, white board, handout	Discussions
9th	2	Altering product strength, use of stock solutions, and problem solving by alligation	Perform calculations for altering product strength by concentration.	Smart board, white board, handout	Discussions
10th	2	Altering product strength, use of stock solutions, and problem solving by alligation	Perform calculations for preparation and use of stock solutions.	Smart board, white board, handout	Discussions
11th	2	Altering product strength, use of stock solutions, and problem solving by	Apply allegation medial and allegation alternate in problem- solving	Smart board, white board, handout	Discussions

		alligation			
12th	2	Intravenous infusions, Parenteral admixtures, and rate of flow calculations	Perform calculations for adults and paediatric intravenous infusions.	Smart board, white board, handout	Discussions
13th	2	Intravenous infusions, Parenteral admixtures, and rate of flow calculations	Perform calculations for intravenous additives.	Smart board, white board, handout	Discussions
14th	2	Intravenous infusions, Parenteral admixtures, and rate of flow calculations	Perform rate of flow calculations for intravenous fluids.	Smart board, white board, handout	Discussions
15th	2	Intravenous infusions, Parenteral admixtures, and rate of flow calculations	Utilize correctly rate of flow tables and nomograms.	Practice Problems	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Pharmaceutical Calculations 13th Edition Howard C. Ansel
Main references (sources)	
Recommended books and	

references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Physical pharmacy I
2. Course Code:
213
3. Semester / Year:
1st semester / 2nd year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom. .....
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Name: Assit. Lec. Taha abdalkhader basheer
8. Course Objectives
Course Objectives: To understand the application of quantitative and theoretical principles of the physical characters of matter in the practice of pharmacy
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	3	States of Matter	Binding forces between molecules, Gas ,liquid and solid states	Smart board, white board, handout	Discussions
2nd	3	States of Matter	Phase equilibria and phase rule.	Smart board, white board, handout	Discussions
3rd	3	States of Matter	Thermal analysis.	Smart board, white board, handout	Discussions
4th	3	Thermodynamic	Thermodynamic: First law	Smart board, white board, handout	
5th	3	Thermodynamic	Thermodynamic: Second law	Smart board, white board, handout	Discussions
					Mid-term Exam
6th	3	Thermodynamic	third law, free energy	Smart board, white board, handout	Discussions
7th	3	Solutions of nonelectrolytes	properties , ideal and real colligative properties	Smart board, white board, handout	Discussions
8th	3	Solutions of nonelectrolytes	Molecular weight determination	Smart board, white board, handout	Discussions
9th	3	solutions of elecrtrolytes	Properties	Smart board, white board, handout	Discussions
10th	3	solutions of elecrtrolytes	Arrehenius theory	Smart board, white board, handout	Discussions

11th	3	solutions of elecrtrolytes	Ionic strength	Smart board, white board, handout	Discussions
12th	3	solutions of elecrtrolytes	Theory of debye-Huckel	Smart board, white board, handout	Discussions
13th	3	Ionic equlibria	Acid base theory, calculation of pH	Smart board, white board, handout	Discussions
14th	2	Ionic equlibria	The effect of ionic strength	Smart board, white board, handout	Discussions
15th	2	Ionic equlibria	Buffer and isotonic solutions, Buffer and biological systems	Practice Problems	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks	
١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Martin´s physical pharmacy and pharmaceutical sciences, Patrick J. Sinko .Wolters Kluwer. Lippincott Williams &Wilkins. Philadelphia. 2011. Pharmaceutical Calculations 13th Edition Howard C. Ansel
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Physical pharmacy II
2. Course Code:
228
3. Semester / Year:
2nd semester / 2nd year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
7. Course administrator's name (mention all, if more than one name)
Name: Assit. Lec. Taha abdalkhader basheer
8. Course Objectives
Course Objectives: To understand the application of quantitative and theoretical principles of the physical characters of matter in the practice of pharmacy. It aids the pharmacist to predict the solubility, compatibility and the biological activity of drug products. As a result of this knowledge it will help in the development of new drugs and dosage forms as well as in improvement of various modes of administration
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	3	Solubility and distribution	Solubility expression,	Smart board, white board,	Discussions

		phenomena	Solvent –solute interactions, solubility of liquid in liquid	handout	
2nd	3	Solubility and distribution phenomena	Solubility of solids in liquids ,Calculation of solubility of weak electrolytes as influenced by pH	Smart board, white board, handout	Discussions
3rd	3	Solubility and distribution phenomena	Distribution of solutes between immiscible solvents	Smart board, white board, handout	Discussions
4th	3	Kinetics	Rate and order of reactions,	Smart board, white board, handout	
5th	3	Kinetics	Influence of temperature and other factors on reaction rate	Smart board, white board, handout	Discussions
					Mid-term Exam
6th	3	Kinetics	Decomposition of medicinal agents and accelerated stability analysis	Smart board, white board, handout	Discussions
7th	3	Rheology	Newtonian systems, thixotropy	Smart board, white board, handout	Discussions
8th	3	Rheology	Measurement, negative thixotropy	Smart board, white board, handout	Discussions
9th	3	Rheology	Determination of thixotropy	Smart board, white board, handout	Discussions
10th	3	Interfacial	Liquid	Smart board,	Discussions

		phenomena	interfaces, surface free energy	white board, handout	
11th	3	Interfacial phenomena	Measurement of interfacial tension, spreading coefficient	Smart board, white board, handout	Discussions
12th	3	Interfacial phenomena	Surface active agents and wetting phenomena	Smart board, white board, handout	Discussions
13th	3	Colloids	Dispersed systems and its pharmaceutical applications	Smart board, white board, handout	Discussions
14th	3	Colloids	Types of colloidal systems, kinetic properties	Smart board, white board, handout	Discussions
15th	3	Colloids	Optical properties and electrical properties	Practice Problems	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks	
١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Martin´s physical pharmacy and pharmaceutical sciences, Patrick J. Sinko .Wolters Kluwer. Lippincott Williams &Wilkins. Philadelphia. 2011. Pharmaceutical Calculations 13th Edition Howard C. Ansel
Main references (sources)	
Recommended books and references (scientific journals, reports…)	

Electronic references, websites	

Course Description Form

1. Course Name:
Pharmaceutical technology I
2. Course Code:
313
3. Semester / Year:
1st semester / 3rd year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Yousif kamal younis
8. Course Objectives
Course Objectives: To teach theoretical basis for the technology of preparing different dosage forms with respect to their raw materials, compositions, methods of preparations , stability and uses.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	3	Solution & type of solution	Definition of pharmaceutical solution dosage form and differentiation between their types.	Smart board, white board, handout	Discussions
2nd	3	Solubility and factors affecting solubility	Differentiation between the solubility of pharmaceutical ingredients and factors affecting their solubility	Smart board, white board, handout	Discussions
3rd	3	Official solutions	Identification of Official solutions	Smart board, white board, handout	Discussions
4th	3	Aqueous solution &aromatic water	Differentiation between aqueous solutions.	Smart board, white board, handout	
5th	3	Syrups & sugar based syrups	Definition of pharmaceutical syrup dosage form and differentiation between their type.	Smart board, white board, handout	Discussions
					Mid-term Exam
6th	3	clarification	Identification the methods of clarification and the equipment used for clarification	Smart board, white board, handout	Discussions
7th	3	Spirit	Identification the constituents of spirit dosage	Smart board, white board, handout	Discussions

			form and its methods of preparation.		
8th	3	elixir	Identification the constituents of elixir dosage form and its methods of preparation.	Smart board, white board, handout	Discussions
9th	3	Extraction	Knowing the methods of extraction.	Smart board, white board, handout	Discussions
10th	3	maceration	Knowing the methods of maceration	Smart board, white board, handout	Discussions
11th	3	Tinctures	Identification the constituents of Tinctures dosage form and its methods of preparation.	Smart board, white board, handout	Discussions
12th	3	fluid extract	Identification the constituents of fluid extract dosage form and its methods of preparation.	Smart board, white board, handout	Discussions
13th	3	Colloidal dispersion	Knowing the types of colloidal dispersion.	Smart board, white board, handout	Discussions
14th	3	Coarse dispersion	Knowing the types of Coarse dispersion	Smart board, white board, handout	Discussions
15th	3	suspension	Identification the constituents of suspension dosage form and its methods of preparation.	Smart board, white board, handout	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1-Pharmaceutical dosage forms and drug delivery systems by Haward A. Ansel 2. Sprowels American pharmacy. 3-Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3rd ed. Michael E. Aulton (Author) Churchill
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Pharmaceutical technology II
2. Course Code:
328
3. Semester / Year:
2nd semester / 3rd year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units

7. Course administrator's name (mention all, if more than one name)	
Name: Lec. Dr. Yousif kamal younis	
8. Course Objectives	
Course Objectives: To teach theoretical bases for the technology of preparing different dosage forms with respect to their raw materials, compositions, methods of preparation, stability, storage and uses; in addition to define and characterize the possible incompatibilities that may occur in dosage forms.	
9. Teaching and Learning Strategies	
Strategy	- Theoretical lectures - Daily assignments and discussions

11. Course Structure:					
Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	3	Emulsion	Purpose of emulsification; methods of emulsification.	Smart board, white board, handout	Discussions
2nd	3	Emulsion	emulsifying agents	Smart board, white board, handout	Discussions
3rd	3	Emulsion	Required HLB calculation ;Stability of emulsion: coalescence and breaking; flocculation and creaming	Smart board, white board, handout	Discussions
4th	3	Lotions; liniments and collodions	Types of lotion, liniment and collodion	Smart board, white board, handout	
5th	3	Suppository	Types of	Smart board,	Discussions

			suppository bases	white board, handout	
					Mid-term Exam
6th	3	Suppository	Preparation of suppositories	Smart board, white board, handout	Discussions
7th	3	Semisolid dosage forms	Ointments, creams and pastes	Smart board, white board, handout	Discussions
8th	3	Semisolid dosage forms	Types of ointment base	Smart board, white board, handout	Discussions
9th	3	Ophthalmic ointment	Ophthalmic ointment	Smart board, white board, handout	Discussions
10th	3	Powdered dosage forms	Methods of reduction and determination particle size	Smart board, white board, handout	Discussions
11th	3	Powdered dosage forms	Bulk and divided powders	Smart board, white board, handout	Discussions
12th	3	Powders and granules	Advantages of granules	Smart board, white board, handout	Discussions
13th	3	Capsules	Hard and soft gelatin capsules	Smart board, white board, handout	Discussions
14th	2	Capsules	Problems of preparation of solid dosage forms	Smart board, white board, handout	Discussions
15th	2	Incompatibility	Physical, chemical and therapeutic incompatibility	Practice Problems	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1-Pharmaceutical dosage forms and drug delivery systems by Haward A. Ansel 2. Sprowels American pharmacy. 3-Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3rd ed. Michael E. Aulton (Author) Churchill
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Biopharmaceutics
2. Course Code:
414
3. Semester / Year:
1st semester / 4th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units

7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Yousif kamal younis
8. Course Objectives
Course Objectives: The coarse deals with the physical and chemical properties of drug substance, dosage form and the biological effectiveness of the drug or drug product upon administration, including drug availability in the human or animal body from a given dosage form. The pharmacokinetic part of the coarse deals with the time-coarse of the drug in the biological system, and quantification of drug concentration pattern in normal subjects and in certain disease states.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	2	Introduction to Biopharmaceutics	Definition of Biopharmaceutics, one and two compartment models	Smart board, white board, handout	Discussions
2nd	2	Biopharmaceutics aspects of products	Drug absorption; mechanisms of absorption	Smart board, white board, handout	Discussions
3rd	2	Factors affecting drug absorption	Passive diffusion, active transport and facilitated absorption	Smart board, white board, handout	Discussions
4th	2	Physicochemical factors	Dissolution rate; effects of excipients; type of dosage forms	Smart board, white board, handout	
5th	2	Physicochemical	Effect of	Smart board,	Discussion

		factors	particle size, type of excipients and type of dosage forms	white board, handout	s
					Mid-term Exam
6th	2	One compartment open model	One compartment model after oral and IV	Smart board, white board, handout	Discussions
7th	2	Multi compartment models	Two compartment model after oral and IV	Smart board, white board, handout	Discussions
8th	2	Pharmacokinetics of drug absorption.	Zero order drug absorption model and first order drug absorption model.	Smart board, white board, handout	Discussions
9th	2	Intravenous infusion;	Steady-State Drug Concentration (Css) and Time Needed to Reach (Css), loading dose plus IV infusion.	Smart board, white board, handout	Discussions
10th	2	Multiple dosage regimen	Drug accumulation.	Smart board, white board, handout	Discussions
11th	2	Non-linear pharmacokinetics	Reasons for nonlinear pharmacokinetics,saturable enzymatic elimination process	Smart board, white board, handout	Discussions
12th	2	Bioavailability and bioequivalence	Relative and absolute bioavailability	Smart board, white board, handout	Discussions

13th	2	Clearance of drugs from the biological systems.	Renal drug excretion, hepatic elimination	Smart board, white board, handout	Discussions
14th	2	Protein binding of drugs	kinetics of protein binding	Smart board, white board, handout	Discussions
15th	2	Dosage adjustment	Dosage adjustment in renal diseases	Practice Problems	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Shargel L., Yu AB., (5th Edition). Applied Biopharmaceutics and Pharmacokinetics 2. Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3rd Edition Michael E. Aulton (Author). Churchill, Livingstone-Elsevier .....
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Industrial pharmacy I
2. Course Code:
4210

3. Semester / Year:
2nd semester / 4th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Ahmed Yousif Fadhel Email: ahmed82you@gmail.com
8. Course Objectives
Course Objectives: The subjective aim of this course is to teach pharmacy students the steps and lines upon which the preformulating processing of pharmaceutical dosage forms. This fundamental course provides the required principles to integrate knowledge of pharmaceutical technology in preformulating of perfect dosage form. It includes milling, mixing, drying and filtration, besides sterilization to achieve a proper processing of dosage forms.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	3	Sterilization	Describe different sterilization ways and equipment required.	Smart board, white board, handout	Discussions

2nd	3	Preformulation part 1	Steps required changing an active ingredient into suitable dosage form.	Smart board, white board, handout	Discussions
3rd	3	Preformulation part 2	Solubility and stability of active ingredient in its chosen dosage form.	Smart board, white board, handout	Discussions
4th	3	Clarification and Filtration part 1	Factors affecting filtration processes	Smart board, white board, handout	
5th	3	Clarification and Filtration part 2	Selection suitable filter media for suitable filtration process	Smart board, white board, handout	Discussions
					Mid-term Exam
6th	3	Milling part 1	Describe milling, size distribution and its measurement	Smart board, white board, handout	Discussions
7th	3	Milling part 2	Theory of milling, milling equipment, types of milling and mechanisms of size reduction	Smart board, white board, handout	Discussions
8th	3	Milling part 3	Factors influence milling and selection of mill	Smart board, white board, handout	Discussions
9th	3	Mixing part 1	Fluid mixing and their mechanisms and mixers selection.	Smart board, white board, handout	Discussions
10th	3	Mixing part 2	Solid mixing and their mixing	Smart board, white board, handout	Discussions
11th	3	Mixing part 3	Equipment	Smart board,	Discussions

			mixing and mixer selection	white board, handout	
12th	3	Drying part 1	Definition of drying, Purposes of drying, Psychrometry and Theory of drying	Smart board, white board, handout	Discussions
13th	3	Drying part 2	Behavior of solids during drying and classification of dryers	Smart board, white board, handout	Discussions
14th	3	Sterile product part 1	Product development, solvents, non-aq. Solvents and solutes	Smart board, white board, handout	Discussions
15th	3	Sterile product part 2	Containers, filling procedures and packaging	Smart board, white board, handout	Discussions

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks	
١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Theory and practice in industrial pharmacy by Lachmann (2009)
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Industrial pharmacy II
2. Course Code:
512
3. Semester / Year:
1st semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Ahmed Yousif Fadhel Email: ahmed82you@gmail.com
8. Course Objectives
Course Objectives: This course will cover different type of dosage forms and the ways for their manufacturing also the materials included in their production and the quality control for each one of these types.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:					
Week	Hours	Required learning	Unit/Module or Topic Title	Teaching Method	Evaluation method

		outcomes			
1st	3	Tablets introduction	Definition of tablet, History of tablets, Advantages and disadvantages of tablets, Propertie of ideal tablets, Types and classe of tablets.	Smart board, white board, handout	Discussions
2nd	3	tablet continue	Direct compression method for granulation, Dry granulation method, Wet granulation method.	Smart board, white board, handout	Discussions
3rd	3	Evaluation of tablets	Quality Control of Tablets (Pharmacopoeial tests: and Non-pharmacopoeial test: Hardness test, Fraiability test).	Smart board, white board, handout	Discussions
4th	3	Problems of tableting	Instrumental tablet machine (Machines used in production of tablets, Components of tablet machine, Problems of tablet manufacturing)	Smart board, white board, handout	
5th	3	Tablet coating	Tablets Coating: Purposes of tablet coating, Basic apparatus for tablet	Smart board, white board, handout	Discussions

			coating, Components of tablet coating, Tablet Core properties.		
					Mid-term Exam
6th	3	Quality control of tablets	Methods of evaluation of film coats, Sustained release coating, Enteric coating, New and recent techniques in tab. Coating.	Smart board, white board, handout	Discussions
7th	3	Hard gelatin capsule	Hard gelatin capsules: Definition of Hard gelatin capsules, Advantages and Disadvantages of HGC, Materials used for production of HGC	Smart board, white board, handout	Discussions
8th	3	Evaluation of hard gelatin capsule	Finishing (Pan polishing, Cloth dusting, Brushing, Storage)Special Techniques	Smart board, white board, handout	Discussions
9th	3	Soft gelatin capsule	Definition of Soft gelatin capsules, Composition of SGC, Therapeutic application of soft gelatin capsules, Shapes of capsules	Smart board, white board, handout	Discussions

10th	3	Evaluation of soft gelatin capsule	Nature of Capsule shell (Bloom or gel strength, Viscosity, Iron content, Plasticizers and gelatin). The nature of capsule content.	Smart board, white board, handout	Discussions
11th	3	Microecapsulation	Definition of microencapsulation, Applications of microencapsulation, Fundementals	Smart board, white board, handout	Discussions
12th	3	Semisolid preparation-I	Properties of semisolid D.F., Types of conventional semisolid D.F, Routes of penetration, Other routes of skin penetration).	Smart board, white board, handout	Discussions
13th	3	Semisolid preparation-II	Factors in skin penetration, Formulation of Semisolid dosage forms, Ingredients used in preparation of semisolids	Smart board, white board, handout	Discussions
14th	3	Aerosols and its quality control	Introduction to Aerosols, Advantages of Aerosols, Components of Aerosols packages.	Smart board, white board, handout	Discussions
15th	3	Quality control of Aerosols	Stability test and quality control of	Smart board, white board,	Discussions

			aerosols.	handout	

١١. 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 Mid-Term Exam: 40 Marks Final-Term Exam: 60 Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Theory and practice in industrial pharmacy by Lachmann (2009)
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Dosage form design
2. Course Code:
5212
3. Semester / Year:
2nd semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
7. Course administrator's name (mention all, if more than one name)

Name: Lec. Dr. Ahmed Yousif Fadhel Email: ahmed82you@gmail.com	
8. Course Objectives	
Course Objectives: The coarse deals with the principles and factors that influence design dosage form; and the applications of these principles in the practice of pharmaceutical industry.	
9. Teaching and Learning Strategies	
Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:					
Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	2	Introduction to drugs and pharmacy	The development and purpose of the United State Pharmacopeia (USP) and the National Formulary (NF),	Smart board, white board, handout	Discussions
2nd	2	Drug regulation and control	Significant drug regulation and control laws and their impact on pharmacy	Smart board, white board, handout	Discussions
3rd	2	New drug development and approval process	Investigational New Drug (IND) Application from a New Drug Application (NDA)	Smart board, white board, handout	Discussions

4th	2	FDA's Definition of a New Drug	Give examples of the sources of new drug	Smart board, white board, handout	
5th	2	Current good manufacturing practice	the Current Good Manufacturing Practice (cGMP) for finished pharmaceuticals	Smart board, white board, handout	Discussions
					Mid-term Exam
6th	2	Current good compounding practice	extemporaneous compounding	Smart board, white board, handout	Discussions
7th	2	Dosage form Design: Pharmaceutical consideration	The need for the dosage form; preformulation; physical description, microscopic examination	Smart board, white board, handout	Discussions
8th	2	Pharmaceutical consideration	Melting point; phase rule; particle size; polymorphism.	Smart board, white board, handout	Discussions
9th	2	Pharmaceutical consideration	Permeability; pH; partition coefficient; pka; stability; kinetics; shelf life; rate reaction; enhancing stability	Smart board, white board, handout	Discussions
10th	2	Formulation consideration:	Excipients definition and typed; Appearance; palatability;	Smart board, white board, handout	Discussions
11th	2	Formulation consideration:	Flavoring; sweetening; coloring pharmaceuticals; preservatives;	Smart board, white board, handout	Discussions

			sterilization; preservatives selection.		
12th	2	Biopharmaceutical consideration	Principle of drug absorption	Smart board, white board, handout	Discussions
13th	2	Biopharmaceutical consideration	Dissolution of drugs.	Smart board, white board, handout	Discussions
14th	2	Pharmacokinetic considerations	Bioavailability and bioequivalence; FDA requirements, Assessment of bioavailability; bioequivalence among drug products.	Smart board, white board, handout	Discussions
15th	2	Pharmacokinetic considerations	Pharmacokinetic principles: half life; clearance; dosage regimen considerations.	Smart board, white board, handout	Discussions

١١. 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 Mid-Term Exam: 30 Marks Final-Term Exam: 70 Marks	
١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Ansel's pharmaceutical dosage forms and drug delivery 10th Edition by Loyd Allen (Author) 2011
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Pharmaceutical biotechnology
2. Course Code:
516
3. Semester / Year:
2nd semester / 5th year
4. Description Preparation Date:
01/03/2024
5. Available Attendance Forms:
Theoretical lectures in classroom.
6. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Ahmed Yousif Fadhel Email: ahmed82you@gmail.com
8. Course Objectives
Course Objectives: Give an introduction to biotechnology science and types and uses of biotechnology products. The course also shows methods of formulation of biotechnology product and route of administration protein product to body. In addition to studying the pharmacokinetics of peptides and proteins.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

10. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
1st	1	Introduction to	Biotechnology	Smart board,	Discussion

		Biotechnology	Molecular biotechnology Biopharmaceutica Drugs Pharmaceu biotechnology Pharmaceutical Biotechnology Products	white board, handout	s
3rd	3	Formulation of biotechnology product (biopharmaceutica l consideration)-	Microbial consideration Microbial consideration- Sterility-pyrogen viral decontamination	Smart board, white board, handout	Discussion s
7th	3	Excipients of parenteral products-solubility enhancer-anti adsorption agents	components found in parenteral formulations of biotech product 1-Solubility enhancers 2-Anti-adsorption and anti-aggregation agents	Smart board, white board, handout	Discussion s
8th	1	Buffer components-preservatives-osmotic agents	Buffer components Preservatives and Anti-oxidants Osmotic Agents Freeze-Drying of Proteins Importance of Freeze Drying ,Typical excipients in a freeze-dried protein formulation	Smart board, white board, handout	
9th	1	Delivery of protein, route of administration	The parenteral Route of Administration The Oral Route of Administration	Smart board, white board, handout	Discussion s

					Mid-term Exam
10th	1	The potential pros and cons for different relevant routes Approaches to enhance bioavailability of proteins	Protein delivery: Alternative route of proteins administration	Smart board, white board, handout	Discussions
11th	1	Pharmacokinetics of protein therapeutics Absorption of protein therapeutics, Strategies to overcome the obstacles associated with oral delivery of proteins IV versus SC	Pharmacokinetics and Pharmacodynamics of Peptide and Protein Drugs	Smart board, white board, handout	Discussions
12th	1	Distribution Mechanisms and Volumes Pharmacokinetics of proteins Therapeutics Distribution via Receptor-Mediated Uptake	Distribution of protein therapeutics	Smart board, white board, handout	Discussions
13th	1	Gastrointestinal Protein Metabolism	Elimination of Protein Therapeutics Proteolysis	Smart board, white board, handout	Discussions
14th	1	glomerular filtration, Tubular absorption and Postglomerular peritubular	Renal Protein Metabolism and Excretion	Smart board, white board, handout	Discussions
15th	1	Receptor-mediated endocytosis Direct shuttle or	Hepatic Protein Metabolism	Smart board, white board, handout	Discussions

		transcytotic pathway And Receptor-Mediated Protein Metabolism			

١١. 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 Mid-Term Exam: 30 Marks Final-Term Exam: 70 Marks	
١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Pharmaceutical biotechnology by J.A. Crommelin, Robert D. Syinder. 2. Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3rd Edition Michael E. Aulton (Author). Churchill, Livingstone- Elsevier
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

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 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 staP 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, quaJerly), 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: Tikrit
Faculty/Institute: Pharmacy
Scientific Department: Pharmaceutical Chemistry
Academic or Professional Program Name: Sciences in pharmacy
Final Certificate Name: Bachelor in Pharmacy
Academic System: Semester (courses)
Description Preparation Date: 1/ 3/ 2024
File Completion Date: 15/ 3/ 2024

Signature: 
Head of Department Name:
Lect. Dr. Ali H. Mustafa
Date: 16 /3/ 2024


Signature:
Scientific Associate Name:
Lect. Dr. Ali H. Abbas
Date:

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Nashwan Ahmad Ceamid
Date:
Signature: 

Approval of the Dean

Academic Program Description

This academic program description provides a requisite summary of the most important characteristics of the program and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available opportunities. It is accompanied by a description of each course within the program

1. Educational institution	Tikrit university/college of pharmacy
2. Scientific department	Pharmaceutical chemistry
3. Name of Academic Program	Sciences in pharmacy
4. Final certificate name	Bachelor in Pharmacy
5. Learning system : Annual / courses / other	Semester (courses)
6. Accreditation Program approved	ACPE
7. Other external influences	Training courses in hospitals, pharmaceutical industries and private pharmacies.
8. Description creation date	16/4/2024
9. Academic Program Objectives Graduation of qualified pharmacists capable of preparing, diagnosing and studying the chemical and physical properties and biological efficacy of drugs.	
The program is for five years and ten semesters **First stage / first semester / analytical chemistry**: The student studies the basics of analytical chemistry and its divisions, methods of preparation, measurement, concentration, quantitative and volumetric analysis, and spectroscopy. **First stage / second semester / organic chemistry I :** the student studies organic chemistry, its theoretical fundamentals, methods of separation and preparation. **Second stage / first semester / organic chemistry II**: The student studies organic chemical reactions and the mechanisms of reactions. **Second stage / second semester / organic chemistry III:** The student studies the organic cyclic compounds that are used in the synthesis of the drugs.	
Third stage / first semester / inorganic pharmaceutical chemistry: Inorganic Pharmaceutical Chemistry, which is concerned with the preparation of drugs that contain inorganic compounds	

Third stage / second semester / organic pharmaceutical chemistry I: It is concerned with studying the chemical and physical properties of drugs, as well as their disintegration in the body.
Fourth stage / first semester / organic pharmaceutical chemistry II: concerning with studying of nervous system drugs, analgesics and hormones.

Fourth stage / second semester / organic pharmaceutical chemistry III: concerning with studying of the anti-infective and antineoplastic agents.
Fifth stage / first semester / organic pharmaceutical chemistry IV: It studies modern methods of preparing medicines and ways to increase their effectiveness and solve the problems of some medicines.
Fifth stage / second semester /Advanced Pharmaceutical Analysis: It studies the spectroscopic methods necessary for the diagnosis of drugs in the laboratory as well as their follow-up in the body.

10. Outcomes of the program and the Required methods of teaching, learning and assessment

A. Cognitive goals

A1-Introducing the methods of preparing medicinal chemical compounds
A2-Introducing the methods of diagnosing chemical compounds by chemical and spectroscopic methods
A3-Introduction to diagnostic methods, volumetric, quantitative and spectroscopic separation
A4-Study of chemical and physical properties of drugs and drug metabolism
A5- Study of changing the active groups of compounds in order to increase drug efficacy
A 6- Knowing the pharmacological composition, side effects and the mechanism of action of the drug

B. Skillful goals

B1 – Acquisition of drug preparation and manufacturing skills
B2 – Acquiring skills to know the effect of some types of additives on the properties of medicines
B3 -Acquisition of skills to increase the stability of drug forms outside or inside the body

Teaching and learning methods

1- Theoretical lectures
2- Training lectures
3- Scientific research
4- Seminars

Evaluation methods
1- Mid-term and final exams 2- Oral and written exams 3- Lab reports 4- Graduation projects
C- Emotional and Social goals C1-Enhance students' ability to think and reason logically to solve manufacturing problems C2-Actual application with existing capabilities C3- Develop the student's ability to take advantage of the available means C4- Develop the student's ability to perform daily duties and instill the values of scientific honesty and how to deal with the patient
Teaching and learning methods
1- Explanation and clarification 2- Experiments in laboratories 3- Lecture 4- Self-education 5- Visit scientific websites and download equable and recent research
Evaluation methods
Theoretical and practical exams in addition to class activities and scientific seminars

D- General And Qualifying skills (other Skills related to employability and personal development).

1- Activate the student's ability to deal with the Internet
2- Develop the student's ability to deal with modern laboratory equipment
3- Develop the student's ability to deal with multiple means to obtain information accurately
4- Develop the student's ability to dialogue and discussion

11. Program structure			
Educational level	Course or course	Course or course	Credit hours per week

	code	name	theoretical	practical
First/first semester	113	Analytical Chemistry	3	2
First/second semester	210	Organic chemistry I	3	2
Second/first semester	211	Organic chemistry II	3	2
Second/second semester	226	Organic chemistry III	2	2
Third/first semester	311	Inorganic Pharmaceutical Chemistry	2	2
Third/second semester	326	Organic Pharmaceutical Chemistry I	3	2
Fourth/ first semester	412	Organic Pharmaceutical Chemistry II	3	2
Fourth/ second semester	427	Organic Pharmaceutical Chemistry III	3	2
Fifth/first semester	511	Organic Pharmaceutical Chemistry IV	2	--
Fifth/ second semester	521	Advanced pharmaceutical analysis	3	2

12.Planning for personal development
Benefiting from international universities in personal development - increasing knowledge - scientific discussions - cultural events
13. Acceptance Standards (establish Regulations related to college or institute admission)
Admission is made within the central admission of the Ministry of Higher Education and Scientific Research for all of the following: Graduates from the sixth scientific stage of preparatory study, the first students in the Medical Institute and the first students from the first stage of science and veterinary medicine colleges
14.The most important sources of information about the program

The World Health Organization and various scientific sources from books and the Internet, Committee of Deans of Colleges of Pharmacy in Iraq and the college website.

Curriculum Skills Outline																					
Please tick the quadrants corresponding to the individual learning outcomes from the program being evaluated																					
				Learning outcomes required from the program																	
year/level	Course Code	Course Name	Essential or optional	Cognitive goals					Skillful goals					Emotional goals					General and qualifying skills (Other skills related to employability and personal development)				
				A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
First	113	Analytical Chemistry	Essential	√					√					√					√				
	121	organic chemistry I	Essential	√					√					√					√				
Second	211	organic chemistry II	Essential		√					√					√					√			
	226	organic chemistry III	Essential		√					√					√					√			
Third	311	Inorganic Pharmaceutical Chemistry	Essential			√					√					√					√		
	326	Organic Pharmaceutical Chemistry I	Essential			√					√					√					√		
Fourth	412	Organic Pharmaceutical Chemistry II	Essential				√					√					√					√	
	427	Organic	Essential				√					√					√					√	

		Pharmaceutical Chemistry III																					
Fifth	511	Organic Pharmaceutical Chemistry IV	Essential					√					√					√					√
	521	advanced pharmaceutical analysis	Essential					√					√					√					√

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Analytic chemistry/113
Available forms of attendance	Official time
Season/year	First/
Total study hours per week	5
The date the description preparation	

Course objectives

To provide students with a theoretical sound back ground in chemical principals that are essential to practice chemical analysis. It enables students to understand the importance of judging the accuracy and precision of experimental data and techniques of quantitative analysis, and also to show that theory frequently serves as a useful guide to the solution of analytical problems. Laboratory safety rules, glassware laboratory, prepare solutions from solids and liquids, volumetric analysis (Titration), Titration of hydrochloric acid with sodium carbonate solution, Titration of hydrochloric acid with sodium hydroxide solution, Titration of permanganate solution with potassium oxalate, Titration of potassium permanganate solution with ferrous sulfate, Determination of chloride by the Mohr method, Determination of a water hardness.

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques

B - Skillful objectives

B1- Gaining skill in how to deal with chemical compounds
B2- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1-Preparation of different chemical compounds and medicines
C2-Learn about chemical compounds, drugs and their derivatives
C3-Doing chemical analyses

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	Education method	Evaluation method
1	**3**		Review of elementary concept important to analytical chemistry: strong and weak electrolytes, importance weight and concentration	Lectures	Quiz
2	**3**		Review of elementary concept important to analytical chemistry: strong and weak electrolytes, importance weight and concentration	Lectures	Quiz

3	**3**		The evaluation to gravimetric data, definition of term	Lectures	Quiz
4	**3**		The evaluation to gravimetric data, definition of terms.	Lectures	Quiz
5	**3**		An introduction to gravimetric analysis, statistical analysis of data, rejection of data, precipitation method	Lectures	Quiz
6	**3**		An introduction to gravimetric analysis, statistical analysis of data, rejection of data, precipitation methods	Lectures	Quiz
7	**1.5**		**Mid Examination**		
8	**3**		The scope of application of gravimetric analysis , inorganic and organic precipitating agents	Lectures	Quiz
9	**3**		The scope of application of gravimetric analysis , inorganic and organic precipitating agents	Lectures	Quiz
10	**3**		An introduction to volumetric methods of analysis, volumetric calculations acid-base equilibria and PH calculations	Lectures	Quiz
11	**3**		An introduction to volumetric methods of analysis, volumetric calculations acid-base equilibria and PH calculations	Lectures	Quiz
12	**3**		Theory of neutralization titrations of complex systems	Lectures	Quiz

13	**3**		Theory of neutralization titrations of complex systems	Lectures	Quiz
14	**3**		Calculation of PH in complex system	Lectures	Quiz
15	**3**		Calculation of PH in complex system	Lectures	Quiz
16	**3**		**Final Examination**		

Resources	
1. Required course books	1. Fundamentals of Analytical chemistry by Skoog and West, latest edition. 2-Chemical Analysis in the Laboratory A Basic Guide, by I. Mueller-Harvey and RM Baker, latest edition.
2. Main references (sources)	2.Modern Pharmaceutical Drug Analysis, by L. Zechmeister, latest edition.
a. Recommended books and references (scientific journals, reports)	
b. Electronic references, websites	

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Organic Chemistry I/210

Available forms of attendance	Official time
Season/year	First stage – second semester/
Total study hours per week	5
Date of preparation of the description	

Course objectives

To teach students the principles and basics of organic chemistry, which includes classes of hydrocarbon compounds such as (Alkanes, alkenes, alkynes, cycloalkanes, alkyl halides, alcohols and ethers, stereochemistry) This includes studying the properties of these compounds, their pharmaceutical importance, methods of preparation and then their reactions.

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques

B - Skillful objectives

B 1- Gaining skill in preparing compounds and medicines
B2- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1-Preparation of different chemical compounds and medicines
C2-Learn about chemical compounds, drugs and their derivatives
C3-Doing chemical analyses

D - General and rehabilitative skills (Other skills related to

employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	education method	Evaluation method
1	**3**		Introduction	Lectures	Quiz
2	**3**		Methane	Lectures	Quiz
3	**3**		Alkanes	Lectures	Quiz
4	**3**		Cycloalkanes	Lectures	Quiz
5	**3**		Alkenes I	Lectures	Quiz
6	**3**		Alkenes II	Lectures	Quiz
7	**3**		Alkynes	Lectures	Quiz
8	**3**		Dienes	Lectures	Quiz
9	**3**		Stereochemistry I	Lectures	Quiz
10	**3**		Stereochemistry II	Lectures	Quiz
11	**3**		Alcohols	Lectures	Quiz
12	**3**		Alcohols I	Lectures	Quiz
13	**3**		Ethers	Lectures	Quiz
14	**3**		Alkyl halides I	Lectures	Quiz
15	**3**		Alkyl halides II	Lectures	Quiz
16	**3**		**Final examination**		

Resources

1. Required course books	Morrison and RN Boyd "Organic Chemistry" latest edition
2. Main references (sources)	John McMurry "Organic Chemistry" latest edition
a. Recommended books and references (scientific journals, reports)	
b. Electronic references, websites	

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Organic chemistry II/211
Available forms of attendance	Official time
Season/year	Second stage – first semester/
Total study hours per week	5
Date of preparation of the description	

Course objectives
Be able to explain the reactivity of substituted aromatic compounds. Be looking at the relationship between aromatic structure and reactivity To enable students to understand the chemistry of carbon, classification, properties and reactions of organic compounds It includes understanding the basic structure and properties of Benzene, Aromatic compounds, Carboxylic acids, Functional derivatives of carboxylic acids, Aldehydes, Ketones, Phenols and

Amines, in addition to the principles and application of these compounds

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4- Know the methods used to prepare medicines

B - Skillful objectives

B 1- Gaining skill in preparing compounds and medicines
B2- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1-Preparation of different chemical compounds and medicines
C2-Learn about chemical compounds, drugs and their derivatives
C3-Doing chemical analyses

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning	The name of the unit or topic	Education method	Evaluation method

		outcomes			
1	**3**	Synthesis	Benzene and aromatic compounds (Theory)	Lectures	Quiz
2	**3**	Reaction	Electrophilic Aromatic Substitution	Lectures	Quiz
3	**3**	Synthesis and reaction	Phenols I	Lectures	Quiz
4	**3**	Synthesis and reaction	Phenols II	Lectures	Quiz
5	**3**	Synthesis and reaction	Carboxylic acids I	Lectures	Quiz
6	**3**	Synthesis and reaction	carboxylic acids II	Lectures	Quiz
7	**3**	Synthesis and reaction	Functional Derivatives of Carboxylic acids I	Lectures	Quiz
8	**1.5**		**Mid Examination**		
9	**3**	Synthesis and reaction	Functional Derivatives of Carboxylic acids II	Lectures	Quiz
10	**3**	Synthesis and reaction	Aldehydes I	Lectures	Quiz
11	**3**	Synthesis and reaction	Aldehydes II	Lectures	Quiz
12	**3**	Synthesis and reaction	Ketones	Lectures	Quiz
13	**3**	Synthesis and reaction	Amines I	Lectures	Quiz
14	**3**	Synthesis and reaction	Amines II	Lectures	Quiz
15	**3**		**Final Examination**		

Resources	
1. Required course books	Morrison and RN Boyd "Organic Chemistry" latest edition

2. Main references (sources)	John McMurry "Organic Chemistry" latest edition
a. Recommended books and references (scientific journals, reports)	
b. Electronic references, websites	

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Organic chemistry III /226
Available forms of attendance	Official time
Season/year	Second stage – second semester /
Total study hours per week	4
Date of preparation of the description	

Course objectives

To teach students the principles of heterocyclic chemistry including the fundamental principles and the features, classes and reactions of heterocyclic compounds; it enable students to apply these principles in complicated reactions that involve heteroatoms.

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4- Know the methods used to prepare medicines

B - Skillful objectives

B 1- Gaining skill in preparing compounds and medicines
B2- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1-Preparation of different chemical compounds and medicines
C2-Learn about chemical compounds, drugs and their derivatives
C3-Doing chemical analyses

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	Education method	Evaluation method
1	**2**		Heterocyclic system: Classes of heterocyclic systems; general structures; properties; Occurrence in	Lectures	Quiz

			nature and in medicinal products. I (Theory)		
2	**2**		Heterocyclic system: Classes of heterocyclic systems; general structures; properties; Occurrence in nature and in medicinal products. II	Lectures	Quiz
3	**2**	Synthesis and reaction	Five-membered ring heterocyclic compounds: Pyrrole; furan and thiophene. I	Lectures	Quiz
4	**2**	Synthesis and reaction	Five-membered ring heterocyclic compounds: Pyrrole; furan and thiophene. II	Lectures	Quiz
5	**2**	Synthesis and reaction	Source of pyrrole, furan and thiophene.	Lectures	Quiz
6	**2**	Synthesis and reaction	Source of pyrrole, furan and thiophene. II	Lectures	Quiz
7	**2**	Synthesis and reaction	Electrophilic substitution in Pyrrole, furan and thiophene: Reactivity and orientation. I	Lectures	Quiz
8	**1.5**		**Mid Examination**		
9	**2**	Synthesis and reaction	Electrophilic substitution in Pyrrole, furan and thiophene: Reactivity and orientation. II	Lectures	Quiz
10	**2**	Synthesis and reaction	Six-membered ring heterocyclic compounds: Structure & reactions of pyridine. I	Lectures	Quiz
11	**2**	Synthesis and reaction	Six-membered ring heterocyclic compounds: Structure & reactions of pyridine. II	Lectures	Quiz
12	**2**	Synthesis and reaction	Saturated five membered heterocyclic compounds	Lectures	Quiz
13	**2**	Synthesis and reaction	Saturated five membered	Lectures	Quiz

			heterocyclic compounds II		
14	**2**	Synthesis and reaction	Heterocyclic of five & six member rings with two & three heteroatoms	Lectures	Quiz
15	**3**		**Final Examination**		

Resources	
1. Required course books	Morrison and RN Boyd "Organic Chemistry" latest edition
2. Main references (sources)	John McMurry "Organic Chemistry" latest edition
a. Recommended books and references (scientific journals, reports)	
b. Electronic references, websites	

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Inorganic pharmaceutical chemistry/311
Available forms of attendance	Official time
Season/year	Third stage – first semester/ 2020-2021

Total study hours per week	4
Date of preparation of the description	

Course objectives

The study of inorganic chemical compounds and their uses in medical diagnosis and treatment

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4- Know the methods used to prepare medicines

B - Skillful objectives

B 1- Gaining skill in preparing compounds and medicines
B2- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1-Preparation of different chemical compounds and medicines
C2-Learn about chemical compounds, drugs and their derivatives
C3-Doing chemical analyses

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure					
Week	**Hours**	**Required learning outcomes**	**The name of the unit or topic**	**Education method**	**Evaluation method**
1	**2**	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
2	**2**	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
3	**2**	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
4	**2**	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
5	**2**	Definition and application in the medical and pharmaceutical field	Gastrointestinal agents	Lectures	Quiz
6	**2**	Definition and application in the medical and pharmaceutical field	Protective adsorbents	Lectures	Quiz
7	**2**	Definition and application in the medical and pharmaceutical field	Topical agents	Lectures	Quiz
8	**1.5**		**Mid Examination**		
9	**2**	Definition and application in the medical and pharmaceutical field	Dental agents	Lectures	Quiz

10	**2**	Definition and application in the medical and pharmaceutical field	Dental agents	Lectures	Quiz
11	**2**	Definition and application in the medical and pharmaceutical field	Radiopharmaceutical preparations	Lectures	Quiz
12	**2**	Definition and application in the medical and pharmaceutical field	Radiopharmaceutical preparations	Lectures	Quiz
13	**2**	Definition and application in the medical and pharmaceutical field	Radio opaque and contrast media	Lectures	Quiz
14	**2**	Definition and application in the medical and pharmaceutical field	Dental agents	Lectures	Quiz
15	**3**		**Final Examination**		

Resources	
1. Required course books	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceutical Chemistry latest edition.
2. Main references (sources)	Inorganic Medicinal and Pharmaceutical Chemistry by block, Roche Soine and Wilson, Latest addition
a. Recommended books and references (scientific journals, reports)	Faye's Principles of Medicinal Chemistry by David A. Williams and Thomas L. Lemke, latest edition.
b. Electronic references, websites	Google for searching topics about practical pharmaceutical chemistry

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Organic pharmaceutical chemistry I/326
Available forms of attendance	Official time
Season/year	Third stage – second semester/
Total study hours per week	5
Date of preparation of the description	

Course objectives

1. Knowing the biological activity, if any, of the chemical composition.

2. Knowing and studying the effective groups of the drugs included in the study.

3. A link between the chemical composition and biological activity of drugs

4. Learn about some types of drugs, including methods of preparation and characterization.

5. Explain how to avoid unwanted side effects from the studied drugs.

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment

A3- Learning using different scientific techniques
A4-Know the factors that affect the stability, solubility and absorption of drugs
A5- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A6- Know the methods used to prepare medicines

B - Skillful objectives

B1-Gaining skill in preparing compounds and medicines
B2-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1- Knowing how to design drugs and chemical compounds
C2- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C3- Learn laboratory analysis methods to know the composition of chemical compounds
C4- Preparing different medicines

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	Education method	Evaluation method
1	**3**	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 monooxygenases in	Lectures	Quiz

			oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reactions		
2	**3**	Definition and application in the medical and pharmaceutical field	Drug distribution.	Lectures	Quiz
3	**3**	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reactions	Lectures	Quiz
4	**3**	Definition and application in the medical and pharmaceutical field	Acid –base properties	Lectures	Quiz
5	**3**	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reactions	Lectures	Quiz
6	**3**	Definition and application in the medical and pharmaceutical field	QSAR models.	Lectures	Quiz
7	**3**	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450	Lectures	Quiz

			monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reaction		
8	**3**	Definition and application in the medical and pharmaceutical field	Molecular modeling (computer aided drug design) and Drug receptor interaction: force involved	Lectures	Quiz
9	**3**	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reaction	Lectures	Quiz
10	**3**	Definition and application in the medical and pharmaceutical field	Steric features of drugs.	Lectures	Quiz
11	**3**	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reaction	Lectures	Quiz
12	**3**	Definition and application in the medical and pharmaceutical field	Optical isomerism and biological activity and Calculated conformation	Lectures	Quiz
13	**3**	Definition and application in the medical and	Three- dimensional quantitative structure activity relationships	Lectures	Quiz

		pharmaceutical field	and databases and isosterism		
14	**3**	Definition and application in the medical and pharmaceutical field	Drug-receptor interaction and subsequent events	Lectures	Quiz
15	**3**	Definition and application in the medical and pharmaceutical field	factors affecting drug metabolism.	Lectures	Quiz
16	**3**		**Final Examination**		

Resources	
1. Required course books	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, latest edition.
2. Main references (sources)	Inorganic Medicinal and Pharmaceutical Chemistry by block, Roche Soine and Wilson, Latest addition
a. Recommended books and references (scientific journals, reports)	Faye's Principles of Medicinal Chemistry by David A. Williams and Thomas L. Lemke, latest edition.
b. Electronic references, websites	Google for searching topics about practical pharmaceutical chemistry

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry

Course name/code	Organic pharmaceutical chemistry II/412
Available forms of attendance	Official time
Season/year	Fourth stage – first semester/
Total study hours per week	5
Date of preparation of the description	

Course objectives

The first course discusses different drugs affecting adrenergic and cholinergic receptors, CNS depressant and CNS stimulant. Analgesics either those having narcotic action or those of non-narcotic activity as well as non-steroidal anti-inflammatory agents and drugs used for the treatment of gout will be studied. Moreover, the drugs acting as H1 and H2 antagonists are presented. Steroidal and non-steroidal hormones. The chemical structure, the mechanism of action and structure activity relationship of such a group of the studied drugs will be illustrated.

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4-Know the factors that affect the stability, solubility and absorption of drugs
A5- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A6- Know the methods used to prepare medicines

B - Skillful objectives

B1-Gaining skill in preparing compounds and medicines
B2-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment

3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1- Knowing how to design drugs and chemical compounds
C2- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C3- Learn laboratory analysis methods to know the composition of chemical compounds
C4- Preparing different medicines

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	Education method	Evaluation method
1	**3**		Cholinergic receptors and their subtypes. stereochemistry and structure activity relationships (SAR); products.	Lectures	Quiz
2	**3**		Cholinesterase inhibitors structure-activity relationships (SAR).Solanaceous alkaloid and analogues, synthetic cholinergic blocking agents, products	Lectures	Quiz
3	**3**		Ganglionic blocking agents (neuromuscular blocking agents.	Lectures	Quiz
4	**3**		Structure and Physicochemical Properties, Biosynthesis Storage, Release, Uptake, and Metabolism	Lectures	Quiz
5	**3**		α-Adrenergic Receptors β-Adrenergic Receptors Drugs Affecting Catecholamine Biosynthesis	Lectures	Quiz

6	**3**		Drugs Affecting Catecholamine Storage and Release, Direct-Acting Sympathomimetic endogenous catecholamines (SAR)	Lectures	Quiz
7	**3**		α-adrenergic receptor agonists. β-adrenergic receptor agonists, and Indirect-Acting Sympathomimetic. α - blockers	Lectures	Quiz
8	**1.5**		**Mid Examination**		
9	**3**		Nonselective α-blockers, Irreversible α-blockers, Selective α 1-blockers.βblockers, nonselective βblockers.	Lectures	Quiz
10	**3**		Structure–Activity 3 10 Relationships Of NSAIDs, Mechanism of Action and NSAID Induced Side Effects, enzymatic structure of Cyclooxygenases, classes of COX inhibitor	Lectures	Quiz
11	**3**		SAR of morphine meperidine, type molecules, methadone, type molecules, N-methyl benzomorphans, antagonist type analgesics in benzomorphans	Lectures	Quiz
12	**3**		Endogenous opioids, structure-activity relationships (SAR), Products and. Antitussive agents..	Lectures	Quiz
13	**3**		CNS depressant; Benzodiazepines and related compounds. Analeptics, central sympathomimetic agents, methyl xanthine. Barbiturates. Mechanism of action of Antipsychotics.	Lectures	Quiz
14	**3**		Anticonvulsants, clinically important anticonvulsants. Biological Activities of Mineralocorticoids and Glucocorticoids, Steroids	Lectures	Quiz

			Sex Hormones, progestin's and androgens		
15	**3**		**Final examination**		

Resources	
1. Required course books	Wilson and Griswold's Textbook of Organic Medicinal and. Pharmaceutical Chemistry, latest edition. Faye's Principles of Medicinal Chemistry by David A. Williams and Thomas L. Lemke, latest edition.
2. Main references (sources)	
a. Recommended books and references (scientific journals, reports)	
b. Electronic references, websites	

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Organic pharmaceutical chemistry III/427
Available forms of attendance	Official time
Season/year	Fourth stage – second semester/
Total study hours per week	5
Date of preparation of the description	

Course objectives

This course discusses antibiotics, antiviral, antifungal and anti-neoplastic agents. The role of medicinal chemistry in the discovery and development of synthetic therapeutic agents. It also enables students to understand the concept of structure activity

relationships and its application in design and synthesis of new chemotherapeutic agents and hormone derivatives with potential biological activity.

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4-Know the factors that affect the stability, solubility and absorption of drugs
A5- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A6- Know the methods used to prepare medicines

B - Skillful objectives

B1-Gaining skill in preparing compounds and medicines
B2-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1- Knowing how to design drugs and chemical compounds
C2- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C3- Learn laboratory analysis methods to know the composition of chemical compounds
C4- Preparing different medicines

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	education method	Evaluation method
1	**3**	Definition and application in the medical and pharmaceutical field	β-lactam antibiotics. The penicillin's, Chemical Classification, β-lactam inhibitors.	Lectures	Quiz
2	**3**	Definition and application in the medical and pharmaceutical field	Cephalosporin's, Monobactams. Chemical classification, SAR. Mechanism of action, Microbial resistance and commercial production	Lectures	Quiz
3	**3**	Definition and application in the medical and pharmaceutical field	Amino glycosides & chloramphenicol. Chemical classification, SAR. Mechanism of action, Microbial resistance and commercial production	Lectures	Quiz
4	**3**	Definition and application in the medical and pharmaceutical field	Tetracycline's; macrolides chemical classification ,SAR Mechanism of action, Microbial resistance and commercial production	Lectures	Quiz
5	**3**	Definition and application in the medical and pharmaceutical field	Lincomycines & polypeptides. Chemical classification, SAR Mechanism of action, Microbial resistance and commercial production.	Lectures	Quiz
6	**3**	Definition and application in the medical and pharmaceutical field	sulfonamides; products; sulfones. SAR, Mechanism of action, Microbial resistance and commercial production	Lectures	Quiz
7	**3**	Definition and application in the medical and pharmaceutical field	Antiviral agents, The classification and biochemistry of viruses. Target for prevention of viral infection. Antiviral drugs. Chemical structures of some antiviral nucleoside and nucleotide analogs.	Lectures	Quiz

8	**1.5**		**Mid Examination**		
9	**3**	Definition and application in the medical and pharmaceutical field	Anti-fungal agents, Biochemical targets for antifungal chemotherapy. Classification of antifungal drugs and SAR.	Lectures	Quiz
10	**3**	Definition and application in the medical and pharmaceutical field	Anti-neoplastic agents; alkylating agents; Introduction, drug classes, Anti metabolites Introduction, drug classes.	Lectures	Quiz
11	**3**	Definition and application in the medical and pharmaceutical field	Antibiotics; Plant products; miscellaneous compounds	Lectures	Quiz
12	**3**	Definition and application in the medical and pharmaceutical field	Plant products: Vinca Alkaloids, Hormones and their antagonist	Lectures	Quiz
13	**3**	Definition and application in the medical and pharmaceutical field	Future Anti neoplastic agents	Lectures	Quiz
14	**3**	Definition and application in the medical and pharmaceutical field	Monoclonal ; antibody Gene therapy of cancer	Lectures	Quiz
15	**3**		**Final Examination**		

Resources	
1. Required course books	Wilson and Griswold's Textbook of Organic Medicinal and. Pharmaceutical Chemistry, latest edition. Faye's Principles of Medicinal Chemistry by David A. Williams and Thomas L. Lemke, latest edition.
2. Main references (sources)	
a. Recommended books and references (scientific journals, reports)	
b. Electronic references, websites	

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research
Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Pharmaceutical Organic Chemistry IV / 511
Available forms of attendance	Official time
Season/year	Fifth stage – first semester/
Total study hours per week	2
Date of preparation of the description	

Course objectives

To give the student knowledge and experience in prodrug as part of their medicinal and pharmaceutical field as well as combinatorial chemistry

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4-Know the factors that affect the stability, solubility and absorption of drugs
A5- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A6- Know the methods used to prepare medicines

B - Skillful objectives

B1-Gaining skill in preparing compounds and medicines
B2-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1- Knowing how to design drugs and chemical compounds
C2- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C3- Learn laboratory analysis methods to know the composition of chemical compounds
C4- Preparing different medicines

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	Education method	Evaluation method
1	**2**		Introduction in prodrug	Lectures	Quiz
2	**2**		Functional Groups in Prodrugs	Lectures	Quiz
3	**2**		Amines	Lectures	Quiz
4	**2**		BIOPRECURSOR PRODRUGS	Lectures	Quiz
5	**2**		CHEMICAL DELIVERY SYSTEMS	Lectures	Quiz
6	**2**		Polymeric prodrug	Lectures	Quiz
7	**2**		Design and synthesis of polymeric prodrug	Lectures	Quiz

8	**1.5**		**Mid Examination**		
9	**2**		Combinatorial Chemistry	Lectures	Quiz
10	**2**		Peptides and Peptoids	Lectures	Quiz
11	**2**		SUPPORTS AND LINKERS	Lectures	Quiz
12	**2**		Soluble polymers	Lectures	Quiz
13	**2**		Detection, purification, analysis	Lectures	Quiz
14	**2**		Mass spectrometry	Lectures	Quiz
15	**2**		"Binary" approach	Lectures	Quiz
16	**2**		HIGH-THROUGHPUT SCREENING	Lectures	Quiz

Resources	
1. Required course books	1.Wilson and Gisvold's textbook of organic medicinal and pharmaceutical chemistry: Delgado, JN, 1 remers WA, (Eds);10thed, 2004
2. Main references (sources)	Organic Chemistry by McMurry; latest edition.
a. Recommended books and references (scientific journals, reports)	
b. electronic references, websites	Google for searching topics about practical pharmaceutical chemistry

COURSE DESCRIPTION FORM

Course description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made maximum use of the available learning opportunities. It must be linked to the description of the program;

Educational institution	Ministry of Higher Education and Scientific Research

Scientific department	College of Pharmacy - Pharmaceutical Chemistry
Course name/code	Advanced Pharmaceutical Analysis / 521
Available forms of attendance	Official time
Season/year	Fifth stage – second semester /
Total study hours per week	5
Date of preparation of the description	

Course objectives

Advanced Pharmaceutical Analysis: study spectroscopic methods and their use in identifying organic compounds

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A1- How to deal with chemical compounds
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4-Know the factors that affect the stability, solubility and absorption of drugs
A5- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A6- Know the methods used to prepare medicines

B - Skillful objectives

B1-Gaining skill in preparing compounds and medicines
B2-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B3- Gaining skill in how to deal with chemical compounds
B4- Skill in writing scientific reports

Teaching and learning methods

1- Lectures
2- Perform practical experiments
3- Reading textbooks
4- Conducting scientific discussions

Evaluation methods

1- Oral and written exams
2- Practical exams after each experiment
3- Mid-term exam (theory)
4- Final exam (theory)

C- Emotional goals

C1- Knowing how to design drugs and chemical compounds
C2- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C3- Learn laboratory analysis methods to know the composition of chemical compounds
C4- Preparing different medicines

D - General and rehabilitative skills (Other skills related to employability and personal development)

D1-Doing scientific experiments
D2-Acquiring the skill of preparing medicines
D3-Giving students confidence by presenting scientific research
D4-Acquiring the skill of identifying and classifying drugs

Course Structure

Week	Hours	Required learning outcomes	The name of the unit or topic	Education method	Evaluation method
1	**3**		UV / visible spectroscopy; Sample handling and instrumentation; Characteristic absorption of organic compounds;	Lectures	Quiz
2	**3**		Rules for calculation of lambda max and application; Application of UV/visible; spectroscopy; Conjugated system.	Lectures	Quiz
3	**3**		Infrared spectroscopy (theory and H-bonding effect)	Lectures	Quiz
4	**3**		Sampling techniques and interpretation of spectra; Characteristic group frequencies of organic compound	Lectures	Quiz
5	**3**		Application of IR spectroscopy; Problems and solutions.	Lectures	Quiz
6	**3**		Introduction, the nature of NMR absorption, chemical shifts and factors affecting them.	Lectures	Quiz
7	**3**		Introduction, the nature of NMR absorption, chemical	Lectures	Quiz

			shifts and factors affecting them.		
8	**3**		Introduction, the nature of NMR absorption, chemical shifts and factors affecting them. Information obtained from	Lectures	Quiz
9	**3**		Information obtained from NMR spectra, more complex spin-spin splitting patterns, application of H1-NMR spectroscopy	Lectures	Quiz
10	**3**		Information obtained from NMR spectra, more complex spin-spin splitting patterns, application of H1-NMR spectroscopy	Lectures	Quiz
11	**3**		C13-NMR spectroscopy: introduction and characteristics, DEPT C13-NMR spectroscopy.	Lectures	Quiz
12	**3**		Introduction and interpreting mass spectrum	Lectures	Quiz
13	**3**		Interpreting Mass spectra fragmentation patterns, Mass behavior of some common functional groups.	Lectures	Quiz
14	**3**		Interpreting Mass spectra fragmentation patterns, Mass behavior of some common functional groups.	Lectures	Quiz
15	**3**		Applications of mass spectroscopy for pharmaceutical analysis.	Lectures	Quiz
16	**3**		**Final examination**		

Resources	
1. Required course books	1.Spectrometric Identification of Organic Compounds by Silverstein, Basler and Morrill, latest edition. Organic Chemistry by McMurry; latest edition.
2. Main references (sources)	Modern Pharmaceutical Drug Analysis, by L. Zechmeister, latest edition.

a. Recommended books and references (scientific journals, reports)	Pharmaceutical Analysis Edited by DAVID C. LEE GlaxoSmithKline Steven age, UK and MICHAEL L. WEBB GlaxoSmithKline Steven age, UK.
b. Electronic references, websites	Google for searching topics about practical pharmaceutical chemistry