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

٢٠٢٦

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 ٣/٢٩٠٦ on ٣/٥/٢٠٢٣ 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: ٠١/٠١/٢٠٢٦

File Completion Date: ١٥/٠١/٢٠٢٦

Signature:

Head of Department Name:

Prof. Dr. Mohanad Yasir Radeef

Date: ٠١/٠١/٢٠٢٦

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Omar Hussain Ahmed

Date: ٠١/٠١/٢٠٢٦

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: ٠١/٠١/٢٠٢٦

Signature:

Approval of the Dean

Asst. Prof. Dr. Omar Salih Hasan

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A١	A٢	A٣	A٤	B١	B٢	B٣	B٤	C١	C٢	C٣	C٤
١st	١١٦	Terminology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٢nd	٢١٤	Medical physiology I	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٢nd	٢٢٩	Medical physiology II	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٣rd	٣٢٧	Pharmacology I	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٤th	٤١١	Pharmacology II	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٤th	٤٢٦	Pharmacology III	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٤th	٤٢٩	General toxicology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
٥th	٥١٦	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:
٣٢٧
3. Semester / Year:
٢nd Semester / Year ٣
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٣ Credits
٧. 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.

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١&٢	٢ ٤	General introduction to pharmacology, Pharmacokinetics.	I	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٣&٤	٤ ٢	Pharmacodynamics, The Autonomic Nervous System.	I II	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٥&٦	٦	Cholinergic system.	II	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٧&٨	٦	Adrenergic system.	II	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٩	٢	Principles of Antimicrobial Therapy.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٠	٤	Cell Wall Inhibitors.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١١	٤	Protein Synthesis Inhibitors.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٢	٣	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
١٣	٢	Antimycobacteria Drugs.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٤	٢	Antifungal.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٤	١	Antiprotozoal.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٥	٢	Anthelmintic Drugs.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٥	١	Antiviral.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**٤٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ T&F Matching MEQ ١٥٪	MCQ MEQ	٧٠٪
١, ٢& ٣	Practical	٢٠٪		
١, ٢& ٣	Written test	Quiz, MCQ SAQ ٥٪		١٠٪
Total		٤٠٪	٦٠٪	١٠٠٪
١٢. 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:
٤١١
3. Semester / Year:
١st Semester / Year ٤
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٤ Credits
٧. 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.

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١	٢	Introduction to CNS pharmacology.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١	٢	CNS stimulants.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٢	٣	Anxiolytic and Hypnotic drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٣	٣	General and Local Anesthetics.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٤	٣	Antidepressant drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٥	٣	Antipsychotic (neuroleptic) drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٦	٣	Opioid analgesics and antagonists.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٧	٣	Treatment of neurodegenerative diseases.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٨	٢	Antiepileptic Drugs.	III	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٩	٢	Diuretics.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٠	٢	The treatment of heart failure (HF).	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٠	٢	Antiarrhythmic drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١١	٢	Antianginal Drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٢	٣	Antihypertensive drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٣	٣	Drugs affecting the blood.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٤	٢	Antihyperlipidemic drugs.	IV	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٤	٢	Gastrointestinal and antiemetic drugs.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٥	٣	Drugs acting on the respiratory system.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**٤٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ T&F Matching MEQ ٢٠٪	MCQ MEQ	٧٠٪
١, ٢& ٣	Written test	Quiz, MCQ SAQ ١٠٪		١٠٪
Total		٣٠٪	٧٠٪	١٠٠٪

١٢. 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:
٤٢٦
3. Semester / Year:
٢nd Semester / Year ٤
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٢ Credits
٧. 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.

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١&٢	٣	Hormones of the pituitary and thyroid glands.	V	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٢&٣	٤	Insulin and oral hypoglycemic drugs.	V	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٤&٥	٣	Adreno-corticosteroids.	V	A Theoretical lesson using PowerP Autacoids and autacoid antagonists oint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٥&٦	٣	The gonadal hormones and inhibitors.	V	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٧&٨	٣	Autacoids and autacoid antagonists	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٨&٩	٣	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
١٠	٢	Drugs used in erectile dysfunction.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١١	٢	Drugs used in osteoporosis.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٢	٢	Drugs used in the management of obesity.	VII	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٣,١٤ &١٥	٥	Cancer Chemotherapy: Anticancer drugs and immunosuppressants.	VI	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**٤٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ T&F Matching MEQ ٢٠٪	MCQ MEQ	٧٠٪
١, ٢& ٣	Written test	١٠ Quiz, MCQ SAQ ١٠٪		١٠٪
Total		٣٠٪	٧٠٪	١٠٠٪

١٢. 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:
١١٦
3. Semester / Year:
١st semester / Year ١
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
١ Credit
٧. Course administrator's name (mention all, if more than one name)
Name: Rabie A. Salih 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.

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١	١	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
٢	١	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
٣,٤	٢	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
٥	١	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
٦	١	The gastrointestinal tract	The gastrointestinal tract	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٧	١	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
٨,٩	٢	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
١٠	١	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
١١	١	Gynecology, pregnancy, and childbirth	Gynecology, pregnancy, and childbirth	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٢	١	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
١٣,١٤	٢	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
١٥	١	Blood and immunity	Blood and immunity	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**١٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ, T&F, Matching Essay ٢٠٪	MCQ, T&F, Matching Essay	٧٠٪
١, ٢& ٣	Written test	Quiz, MCQ & SAQ ١٠٪		١٠٪
Total		٣٠٪	٧٠٪	١٠٠٪

١٢. Learning and teaching resources

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

Additional references supporting the course

Recommended

- Medical Terminology for Beginners ٢٠٢٣: The Ultimate Study Guide to Memorize and Understand Medical Terms for a Brilliant Health Care Career.
- Introduction to Medical Terminology, ٢nd Edition.

Prepared by:	**Checked by:**	**Approved by:**
Rabie A. Salih		

Course Description Form

1. Course Name:
Physiology I
2. Course Code:
٢١٤
3. Semester / Year:
١st / Year ٢
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٤ Credits
٧. Course administrator's name (mention all, if more than one name)
Name: Khalid S. Salih 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.

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١-٢	٥	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
٣-٧	١٦	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
٨-٩	٨	Respiratory system Physiology.	Respiratory system Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٠-١٢	٨	Renal system Physiology.	Renal system Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
١٣-١٥	٨	Cardiovascular system Physiology.	Cardiovascular system Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**٤٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ, T&F Matching, MEQ, Essay. ١٥٪	MCQ, Essay.	٧٠٪

١, ٢& ٣	Practical	٢٠٪		
١, ٢& ٣	Written test	Quiz, MCQ SAQ ٥٪		١٠٪
Total		٤٠٪	٦٠٪	١٠٠٪

١٢. Learning and teaching resources

Required:

Textbook of Medical Physiology by Guyton AC; latest edition.

Additional references supporting the course

Recommended

٢nd Edition, Essentials of Human Physiology for Pharmacy by Laurie Kelly McCorry Copyright ٢٠٠٨.

Prepared by:	Checked by:	Approved by:
Khalid S. Salih		

Course Description Form

1. Course Name:
Physiology II
2. Course Code:
٢٢٩
3. Semester / Year:
٢nd Semester / Year ٢
4. Description Preparation Date:
٢٠٢٤-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٤ Credits
٧. Course administrator's name (mention all, if more than one name)
Name: **Khalid S. Salih** 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.

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١-٣	١٠	Gastrointestinal Physiology.	Gastrointestinal Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٤-٨	١٥	Circulatory body fluid.	Circulatory body fluid.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
٩-١٥	٢٠	Endocrinology Physiology.	Endocrinology Physiology.	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**٤٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ, T&F, Matching , MEQ Essay. ١٥٪	MCQ, , Essay.	٧٠٪
١, ٢& ٣	Practical	٢٠٪		
١, ٢& ٣	Written test	Quiz, MCQ, SAQ ٥٪		١٠٪
Total		٤٠٪	٦٠٪	١٠٠٪

١٢. Learning and teaching resources

Required:

Textbook of Medical Physiology by Guyton AC; latest edition.

Additional references supporting the course

Recommended

٢nd Edition, Essentials of Human Physiology for Pharmacy by Laurie Kelly McCorry Copyright ٢٠٠٨.

Prepared by:	**Checked by:**	**Approved by:**
Khalid S. Salih		

Course Description Form

1. Course Name:
General toxicology
2. Course Code:
٤٢٩
3. Semester / Year:
٢nd Semester / Year ٤
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٣ Credits
٧. Course administrator's name (mention all, if more than one name)
Name: Nihad Hussein Ahmed 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

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
	٣	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
	٣	Carcinogenesis	Carcinogenesis	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	١	Mutagenesis	Mutagenesis	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
	١٦	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
	١٥	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
	٧	Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide(H^2S).	Environmental toxicology: Air pollution, water and soil pollutants, Gases (Tear gas, Pepper spray), CO, Cyanide(H^2S).	A Theoretical lesson using PowerPoint and students discussion	MCQ, MEQ, T&F, Matching, Assignment and Essay
Total		**٤٥ hrs**			

١١. Course evaluation				
LO	**Method**	**Mid**	**Final**	**Total**
١, ٢& ٣	Written test	MCQ (٣٠) T&F (٣٠) Matching (٢٠) MEQ (٢) ١٥٪	MCQ (٣٠)	٧٠٪
١, ٢& ٣	Practical	٢٠٪		
١, ٢& ٣	Written test	١٠ Quiz, MCQ SAQ ٥٪		١٠٪
Total		٤٠٪	٦٠٪	١٠٠٪

١٢. 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 ٢٠٢٢

Prepared by:	**Checked by:**	**Approved by:**
Nihad Hussein Ahmed		

Course Description Form

1. Course Name:
Clinical toxicology
2. Course Code:
٥١٦
3. Semester / Year:
١st Semester / Year ٥
4. Description Preparation Date:
٢٠٢٥-٢٠٢٦
٥. Available Attendance Forms:
Yes
٦. Number of Credit Hours (Total) / Number of Units (Total)
٣ Credits
٧. Course administrator's name (mention all, if more than one name)
Name: Nihad Hussein Ahmed 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

١٠. Course structure					
week	**Hours**	**Require learning outcomes**	**Unit or subject name**	**Learning method**	**Evaluation methods**
١-٢	٣	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
٢-٣	٣	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
٤-٩	١٣	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
١٠-١١	٤	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
١٢-١٣	٣	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
١٤-١٥	٤	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		**٣٠ hrs**			

١١. Course evaluation

LO	Method	Mid	Final	Total
١, ٢& ٣	Written test	MCQ (٣٠) T&F (٣٠) Matching (٢٠) MEQ (٢) ١٥٪	MCQ (٣٠)	٧٠٪
١, ٢& ٣	Practical	٢٠٪		
١, ٢& ٣	Written test	١٠ Quiz, MCQ SAQ ٥٪		١٠٪
Total		٤٠٪	٦٠٪	١٠٠٪

١٢. 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 ٢٠٢٢

Prepared by:	Checked by:	Approved by:
Nihad Hussein Ahmed		

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

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 ٣/٢٩٠٦ on ٣/٥/٢٠٢٣ 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:

٢٥/٠١/٢٠٢٦

File Completion Date: ٢٥/٠١/٢٠٢٦

Signature:

Head of Department Name:

Lect. Dr. Alaa Abdulelah Abdulqader

Date: ٢٥/٠١/٢٠٢٦

Signature:

Scientific Associate Name:

Assist. Prof .Dr.Omar Hussein Ahmed

Date: ٢٥/٠١/٢٠٢٦

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: ٢٧/٠١/٢٠٢٦

Signature

Approval of the Dean

Asst. Prof. Dr. Omar Saleh Aldulaimy

١. 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 deals with the formal process that should be taken in order to transformation of 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.

٢. Program Mission

The mission of the Department of Pharmaceutics and Industrial Pharmacy of knowledge essential to 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.

٣. Program Objectives

١- Teaching the students the fundamentals of Pharmaceutics principles and calculations
٢- Teaching the students the physico-chemical properties of the drug and excipients used in the dosage form formulation.
٣-Teaching the student's basic technology for compounding different pharmaceutical preparation
٤-Teaching the students the biopharmaceutics and pharmacokinetics of the drug in the body.
٥-Teaching the students the manufacturing process of different dosage forms and methods of their evaluations.
٦-Teaching the student the principle of drug delivery system design.
٧-Teaching the student the principles of pharmaceutical biotechnology, biopharmaceutical product formulation, and their routes of administration.
٨-Teaching the student the fundamentals of training in pharmacy and how to dispense the prescriptions.
٩- Supervise the graduation projects.

٤. Program Accreditation

None currently available

٥. Other external influences

None currently available

٦ Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	١٠			**Basic Course**
College Requirements				**Basic Course**
Department Requirements				**Basic Course**
Summer Training				

٧. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
١st ٢nd semester	Pharmaceutical calculation	١٢٨	٢	٢
٢nd ١st semester	Physical pharmacy I	٢١٣	٣	٢
٢nd ٢nd semester	Physical pharmacy II	٢٢٨	٣	٢
٣rd ١st semester	Pharmaceutical technology I	٣١٣	٣	٢
٣rd ٢nd semester	Pharmaceutical and cosmetic preparations	٣٢٨	٣	٢
٤th ١st semester	Biopharmaceutics	٤١٤	٢	٢
٤th ٢nd semester	Industrial pharmacy I	٤٢١٠	٣	٢
٥th ١st semester	Industrial Pharmacy II	٥١٢	٣	٢
٥th ٢nd semester	Drug delivery system design	٥٢١٢	٢	
٥th ٢nd semester	Pharmaceutical biotechnology	٥١٦	١	

٨. Expected learning outcomes of the program

A١. Students can acquire knowledge, understanding, principles, theories and basics in pharmaceutics and the pharmaceutical industry.

A٢. Students can understand advanced modern scientific topics in the field of pharmaceutics

A٣. 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.

A٤. 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.

A٥. To be able to understand the basics of the work of laboratory devices that are used in drug analysis and diagnosis and the Skills

B١. Describe and analyze the applications of pharmacies and the pharmaceutical industry.

B٢. Able to write and discuss methods of analysis and examination of pharmaceutical forms and formulations.

B٣. Able to analyze and discuss problems and find successful solutions to them.

B٤. Justify, communicate, and discuss concepts, especially those related to pharmaceutics in the field of pharmaceutical sciences.

B٥. Through the branch laboratories, the student can install the required pharmaceutical forms, conduct the necessary tests and analyzes, and study their stability

C١- Developing the student's ability to discuss
C٢- Actual application with existing capabilities
C٣- Developing the student's ability to benefit from the available means
C٤- Developing the student's ability to perform daily duties

٩. Teaching and Learning Strategies

١- Theoretical lectures within the course.
٢- Scientific discussions lectures (researchers and postgraduate students).
٣- Small group discussion method.
٤- Practical lectures in the laboratories of pharmacies and the pharmaceutical industry.
٥- Seminars (scientific seminars) and presentations of the latest scientific developments within the specialism by students.
٦- Graduation research projects for fifth stage students.
٧- 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

١٠. Evaluation methods

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

include notes whether the course is basic or optional.

١١. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Lecturer	٤				٣	
Assistant Lecturer	٣				٣	

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

١٢. Acceptance Criterion

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

١٣. 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

١٤. 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			
				A١	A٢	A٣	A٤	B١	B٢	B٣	B٤	C١	C٢	C٣	C٤	D١	D٢	D٣	D٤
	١٢٨	Pharmaceutical Calculation	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
٢nd	CO٢١٣	Physical Pharmacy I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	CO٢٢٨	Physical pharmacy II	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
٣rd	٣١٣	Pharmaceutical Technology I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٣٢٨	Pharmaceutical and cosmetic preparations	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
٤th	٤١٤	Biopharmaceutics	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٤٢١٠	Industrial Pharmacy I	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
٥th	٥١٢	Industrial Pharmacy II		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٥٢١٢	Drug delivery system design	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٥١٦	Pharmaceutical Biotechnology	C	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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

Course Description Form

Course Description Form

1. Course Name:
Pharmaceutical calculation
2. Course Code:
١٢٨
3. Semester / Year:
٢nd semester / ١st year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. Course administrator's name (mention all, if more than one name)
Name: assit lec. Ahmed abdalla essa .....
8. Course Objectives
Course Objectives: Understand the fundamental principles of pharmaceutical measurements and mathematical operations. • Develop skills in interpreting prescriptions and medication orders accurately and safely. • Apply the metric system in pharmaceutical calculations, including dose determinations for different patient needs. • Perform calculations for adjusting formulas, including reduction and enlargement methods. • Calculate percentage strength, ratio strength, density, and specific gravity/volume for various pharmaceutical preparations.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٢	Isotonic and buffer solutions	Differentiate between the terms isosmotic, isotonic, hypertonic and hypotonic.	Smart board, white board, handout	Discussions
٢nd	٢	Isotonic and buffer solutions	Apply physical chemical principles in the calculation of isotonic solutions.	Smart board, white board, handout	Discussions
٣rd	٢	Isotonic and buffer solutions	Perform the calculations required to prepare isotonic component prescription.	Smart board, white board, handout	Discussions
٤th	٢	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Calculate the milliequivalent weight from an atomic or formula weight.	Smart board, white board, handout	
٥th	٢	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Convert between milligrams and milliequivalents.	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٢	Electrolyte solutions: Milliequivalents, millimoles, and milliosmoles	Calculate problems involving milliequivalents.	Smart board, white board, handout	Discussions
٧th	٢	Electrolyte	Calculate	Smart board,	Discussions

		solutions: Milliequivalents, millimoles, and milliosmoles	problems involvingmillimoles and milliosmoles.	white board, handout	
٨th	٢	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
٩th	٢	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
١٠th	٢	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
١١th	٢	Altering product strength, use of stock solutions, and problem solving by alligation	Apply allegation medial and allegation alternate in problem- solving	Smart board, white board, handout	Discussions
١٢th	٢	Intravenous infusions, Parenteral admixtures, and rate of flow	Perform calculations for adults and paediatric intravenous infusions.	Smart board, white board, handout	Discussions

		calculations			
١٣th	٢	Intravenous infusions, Parenteral admixtures, and rate of flow calculations	Perform calculations for intravenous additives.	Smart board, white board, handout	Discussions
١٤th	٢	Intravenous infusions, Parenteral admixtures, and rate of flow calculations	Perform rate of flow calculations for intravenous fluids.	Smart board, white board, handout	Discussions
١٥th	٢	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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Pharmaceutical Calculations ١٣th 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:
٢١٣
3. Semester / Year:
١st semester / ٢nd year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. Course administrator's name (mention all, if more than one name)
Name: Assit. Lec. Taha abdalkhader basheer .....
8. Course Objectives
Course Objectives: Understand the states of matter, molecular interactions, and phase equilibria, including the phase rule and thermal analysis techniques. • Analyze the properties of non-electrolyte solutions, including colligative behavior and methods for molecular weight determination. • Study the behavior of electrolyte solutions, applying theories of dissociation, ionic strength, and colligative property expressions. • Explore solubility and distribution phenomena, focusing on solute-solvent interactions and partitioning between immiscible phases. • Apply principles of ionic equilibria, acid-base theories, pH calculations, and the effect of ionic strength on solution behavior. • Understand the formulation and function of buffered and isotonic solutions in maintaining pH and physiological compatibility.
9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٣	States of Matter	Binding forces between molecules, Gas ,liquid and solid states	Smart board, white board, handout	Discussions
٢nd	٣	States of Matter	Phase equilibria and phase rule.	Smart board, white board, handout	Discussions
٣rd	٣	States of Matter	Thermal analysis.	Smart board, white board, handout	Discussions
٤th	٣	Nonelectrolytes (Chapter ٥)	Physical properties of substances • Types of solutions	Smart board, white board, handout	
٥th	٣	Thermodynamic	Thermodynamic: Second law	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٣	Thermodynamic	third law, free energy	Smart board, white board, handout	Discussions
٧th	٣	Solutions of nonelectrolytes	properties , ideal and real colligative properties	Smart board, white board, handout	Discussions
٨th	٣	Solutions of nonelectrolytes	Molecular weight determination	Smart board, white board, handout	Discussions
٩th	٣	solutions of elecrtrolytes	Properties	Smart board, white board, handout	Discussions
١٠th	٣	solutions of elecrtrolytes	Arrehenius theory	Smart board, white board, handout	Discussions

١١th	٣	solutions of elecrtrolytes	Ionic strength	Smart board, white board, handout	Discussions
١٢th	٣	solutions of elecrtrolytes	Theory of debye-Huckel	Smart board, white board, handout	Discussions
١٣th	٣	Ionic equlibria	Acid base theory, calculation of pH	Smart board, white board, handout	Discussions
١٤th	٢	Ionic equlibria	The effect of ionic strength	Smart board, white board, handout	Discussions
١٥th	٢	Ionic equlibria	Buffer and isotonic solutions, Buffer and biological systems	Practice Problems	Discussions

١١. Course Evaluation	
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ 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. ٢٠١١. Pharmaceutical Calculations ١٣th 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:
٢٢٨
3. Semester / Year:
٢nd semester / ٢nd year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec. Amina Mustafa
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

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٢	complexation (chapter ١٠)	Classification of complexes	Smart board, white board,	Discussions

			Metal complexes	handout	
٢nd	٢	complexation	Organic molecular complexes	Smart board, white board, handout	Discussions
٣rd	٣	Diffusion (Chapter ١١)	Introduction • Steady state diffusion • Fick's first law of diffusion • Fick's second law Fick's second law	Smart board, white board, handout	Discussions
٤th	٣	Diffusion (Chapter ١١	• Diffusion through membranes • Permeability Lag time • Apparatus and methods for assessing drug diffusion Lag time •	Smart board, white board, handout	
					Mid-term Exam
٥th	٣	Chemical kinetics and stability (Chapter ١٤)	Introduction • Rates, orders and molecularity of reactions	Smart board, white board, handout	Discussions
٦th	٣	Chemical kinetics and stability (Chapter ١٤)	Temperature effects • Other factors effects Stability of pharmaceuticals • Accelerated stability and stress testing		Mid-term Exam

٧th	٣	Rheology	Newtonian systems, thixotropy	Smart board, white board, handout	Discussions
٨th	٣	Rheology	Measurement, negative thixotropy	Smart board, white board, handout	Discussions
٩th	٣	Interfacial phenomena	Liquid interfaces, surface free energy	Smart board, white board, handout	Discussions
١٠th	٣	Interfacial phenomena	Measurement of interfacial tension, spreading coefficient	Smart board, white board, handout	Discussions
١١th	٣	Colloids	Dispersed systems and its pharmaceutical applications	Smart board, white board, handout	Discussions
١٢th	٣	Colloids	Types of colloidal systems, kinetic properties	Smart board, white board, handout	Discussions
١٣th	٣	Micrometrics (Chapter ١٩)	Particle size and size distribution • Methods of determining particle size	Practice Problems	Discussions
١٤th	٣	Pharmaceutical polymers (Chapter ٢١)	Introduction (history, general concepts, synthesis) • Copolymers and polymer blends • Thermoplastic and thermoset polymers		

١٥th		Pharmaceutical polymers (Chapter ٢١)	Polymer properties (crystalline and amorphous polymers, thermal transitions, glass transition temperature, plasticized polymers, molecular weight, mechanical properties, • Polymers for pharmaceutical applications • Polymers in drug delivery		

١١. Course Evaluation	
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ 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. ٢٠١١. Pharmaceutical Calculations ١٣th 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:
٣١٣
3. Semester / Year:
١st semester / ٣rd year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. 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

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٣	Solution & type of	Definition of pharmaceutical	Smart board, white board,	Discussions

		solution	solution dosage form and differentiation between their types.	handout	
٢nd	٣	Solubility and factors affecting solubility	Differentiation between the solubility of pharmaceutical ingredients and factors affecting their solubility	Smart board, white board, handout	Discussions
٣rd	٣	Official solutions	Identification of Official solutions	Smart board, white board, handout	Discussions
٤th	٣	Aqueous solution &aromatic water	Differentiation between aqueous solutions.	Smart board, white board, handout	
٥th	٣	Syrups & sugar based syrups	Definition of pharmaceutical syrup dosage form and differentiation between their type.	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٣	clarification	Identification the methods of clarification and the equipment used for clarification	Smart board, white board, handout	Discussions
٧th	٣	Spirit	Identification the constituents of spirit dosage form and its methods of preparation.	Smart board, white board, handout	Discussions
٨th	٣	elixir	Identification the constituents of elixir dosage	Smart board, white board, handout	Discussions

			form and its methods of preparation.		
٩th	٣	Extraction	Knowing the methods of extraction.	Smart board, white board, handout	Discussions
١٠th	٣	maceration	Knowing the methods of maceration	Smart board, white board, handout	Discussions
١١th	٣	Tinctures	Identification the constituents of Tinctures dosage form and its methods of preparation.	Smart board, white board, handout	Discussions
١٢th	٣	fluid extract	Identification the constituents of fluid extract dosage form and its methods of preparation.	Smart board, white board, handout	Discussions
١٣th	٣	Colloidal dispersion	Knowing the types of colloidal dispersion.	Smart board, white board, handout	Discussions
١٤th	٣	Coarse dispersion	Knowing the types of Coarse dispersion	Smart board, white board, handout	Discussions
١٥th	٣	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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

Mid-Term Exam: ٤٠ Marks

Final-Term Exam: ٦٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	١-Pharmaceutical dosage forms and drug delivery systems by Haward A. Ansel ٢. Sprowels American pharmacy. ٣-Aulton's Pharmaceutics: The Design and Manufacture of Medicines, ٣rd 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 and Cosmetic Preparations
2. Course Code:
٣٢٨
3. Semester / Year:
٢nd semester / ٣rd year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Yousif kamal younis
8. Course Objectives
Course Objectives: Understand the principles, preparation, and stability of pharmaceutical emulsions, including surfactant systems and microemulsions. • Study the formulation,

compounding, and use of semisolid dosage forms such as ointments, creams, gels, and dermatologic preparations. • Explore the design and clinical applications of suppositories, vaginal inserts, and medication sticks, including manufacturing and quality control. • Learn the physicochemical and therapeutic considerations for selecting appropriate bases and packaging for topical and rectal formulations. • Examine the formulation strategies and clinical uses of cosmetic products, including sunscreens, exfoliants, and anti-aging preparations. • Apply knowledge of formulation science to ensure safety, effectiveness, and patient acceptability of pharmaceutical and cosmetic products.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

١١. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٣	Emulsion	Purpose of emulsification; methods of emulsification.	Smart board, white board, handout	Discussions
٢nd	٣	Emulsion	emulsifying agents	Smart board, white board, handout	Discussions
٣rd	٣	Emulsion	Required HLB calculation ;Stability of emulsion: coalescence and breaking; flocculation and creaming	Smart board, white board, handout	Discussions
٤th	٣	Ointments, creams and	Ointments • Ointment bases	Smart board, white board,	

		gels (Chapter ١٠) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; ١١th edition, ٢٠١٧)collodions	• Selection of the appropriate base • Compendial requirements for ointments • Preparation of ointments • Creams • Preparation of creams	handout	
٥th	٣	Ointments, creams and gels (Chapter ١٠)	Gels: preparation, packaging and storage • Miscellaneous semisolid preparations: pastes, plasters, and glycerogelatins • Packaging semisolid preparations • Examples of ointments, creams and gels • Features and uses of dermatologic preparations • Features and uses of ophthalmic ointments and gels	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٣	Ointments, creams and gels (Chapter ١٠)	Features and uses of nasal ointments and gels • Features	Smart board, white board, handout	Discussions

			and uses of rectal preparations • Features and uses of vaginal preparations • Drug release from semisolid dosage forms		
٧th	٣	Suppositories, inserts and sticks (Chapter ١٢) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; ١١th edition, ٢٠١٧)	Suppositories • Uses and applications • Some factors of drug absorption from rectal suppositories • Suppository bases • Formulation variables • Preparation of suppositories (dose replacement calculations)	Smart board, white board, handout	Discussions
٨th	٣	Suppositories, inserts and sticks (Chapter ١٢) (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; ١١th edition, ٢٠١٧)	Manufacturing suppositories • Quality control • Packaging and storage ٩ Page ١٤ of ٢٦ • Stability • Rectal suppositories (with examples)	Smart board, white board, handout	Discussions
٩th	٣	supp	Urethral suppositories (with examples) • Vaginal inserts • Vaginal inserts	Smart board, white board, handout	Discussions

			(tablets) • Medication sticks • Special types of suppositories • Clinical considerations		
١٠th	٣	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; ٢٠٠٦)	Introduction • Cosmetic formulation of skin care products (Chapter ١)	Smart board, white board, handout	Discussions
١١th	٣	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; ٢٠٠٦)	• Toners and astringents (Chapter ٥)	Smart board, white board, handout	Discussions
١٢th	٣	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman;	• Antiperspirants (Chapter ٨)	Smart board, white board, handout	Discussions

		Taylor and Francis Group; ٢٠٠٦)			
١٣th	٣	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; ٢٠٠٦)es	• Sunscreens (Chapter ٩)	Smart board, white board, handout	Discussions
١٤th	٣	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; ٢٠٠٦)	• Anti-aging skin care formulations (Chapter ١١)	Smart board, white board, handout	Discussions
١٥th	٣	Cosmetic Formulations (Cosmetic Formulation of Skin Care Products; by Zoe Diana Draelos and Lauren A. Thaman; Taylor and Francis Group; ٢٠٠٦)	Topical exfoliation—clinical effects and formulating considerations (Chapter ١٥)	Practice Problems	Discussions

١١. Course Evaluation
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	١-Pharmaceutical dosage forms and drug delivery systems by Haward A. Ansel ٢. Sprowels American pharmacy. ٣-Aulton's Pharmaceutics: The Design and Manufacture of Medicines, ٣rd 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:
٤١٤
3. Semester / Year:
١st semester / ٤th year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.

٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. 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

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٢	Introduction to Biopharmaceutics	Definition of Biopharmaceutics, one and two compartment models	Smart board, white board, handout	Discussions
٢nd	٢	Biopharmaceutics aspects of products	Drug absorption; mechanisms of absorption	Smart board, white board, handout	Discussions
٣rd	٢	Factors affecting drug absorption	Passive diffusion, active transport and facilitated absorption	Smart board, white board, handout	Discussions
٤th	٢	Physicochemical factors	Dissolution rate; effects of	Smart board, white board,	

			excipients; type of dosage forms	handout	
٥th	٢	Physicochemical factors	Effect of particle size, type of excipients and type of dosage forms	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٢	One compartment open model	One compartment model after oral and IV	Smart board, white board, handout	Discussions
٧th	٢	Multi compartment models	Two compartment model after oral and IV	Smart board, white board, handout	Discussions
٨th	٢	Pharmacokinetics of drug absorption.	Zero order drug absorption model and first order drug absorption model.	Smart board, white board, handout	Discussions
٩th	٢	Intravenous infusion;	Steady-State Drug Concentration (Css) and Time Needed to Reach (Css), loading dose plus IV infusion.	Smart board, white board, handout	Discussions
١٠th	٢	Multiple dosage regimen	Drug accumulation.	Smart board, white board, handout	Discussions
١١th	٢	Non-linear pharmacokinetics	Reasons for nonlinear pharmacokinetics,saturable enzymatic elimination process	Smart board, white board, handout	Discussions

١٢th	٢	Bioavailability and bioequivalence	Relative and absolute bioavailability	Smart board, white board, handout	Discussions
١٣th	٢	Clearance of drugs from the biological systems.	Renal drug excretion, hepatic elimination	Smart board, white board, handout	Discussions
١٤th	٢	Protein binding of drugs	kinetics of protein binding	Smart board, white board, handout	Discussions
١٥th	٢	Dosage adjustment	Dosage adjustment in renal diseases	Practice Problems	Discussions

١١. Course Evaluation
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	١. Shargel L., Yu AB., (٥th Edition). Applied Biopharmaceutics and Pharmacokinetics ٢. Aulton's Pharmaceutics: The Design and Manufacture of Medicines, ٣rd Edition Michael E. Aulton (Author). Churchill, Livingstone-Elsevier
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

١. Course Name:
Industrial pharmacy I

2. Course Code:
٤٢١٠
3. Semester / Year:
٢nd **semester /** ٤th **year**
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Ahmed Yousif Fadhel Email: ahmed٨٢you@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

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٣	Sterilization	Describe different sterilization ways and equipment required.	Smart board, white board, handout	Discussions

٢nd	٣	Preformulation part ١	Steps required changing an active ingredient into suitable dosage form.	Smart board, white board, handout	Discussions
٣rd	٣	Preformulation part ٢	Solubility and stability of active ingredient in its chosen dosage form.	Smart board, white board, handout	Discussions
٤th	٣	Clarification and Filtration part ١	Factors affecting filtration processes	Smart board, white board, handout	
٥th	٣	Clarification and Filtration part ٢	Selection suitable filter media for suitable filtration process	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٣	Milling part ١	Describe milling, size distribution and its measurement	Smart board, white board, handout	Discussions
٧th	٣	Milling part ٢	Theory of milling, milling equipment, types of milling and mechanisms of size reduction	Smart board, white board, handout	Discussions
٨th	٣	Milling part ٣	Factors influence milling and selection of mill	Smart board, white board, handout	Discussions
٩th	٣	Mixing part ١	Fluid mixing and their mechanisms and mixers selection.	Smart board, white board, handout	Discussions
١٠th	٣	Mixing part ٢	Solid mixing and their mixing	Smart board, white board, handout	Discussions
١١th	٣	Mixing part ٣	Equipment	Smart board,	Discussions

			mixing and mixer selection	white board, handout	
١٢th	٣	Drying part ١	Definition of drying, Purposes of drying, Psychrometry and Theory of drying	Smart board, white board, handout	Discussions
١٣th	٣	Drying part ٢	Behavior of solids during drying and classification of dryers	Smart board, white board, handout	Discussions
١٤th	٣	Sterile product part ١	Product development, solvents, non-aq. Solvents and solutes	Smart board, white board, handout	Discussions
١٥th	٣	Sterile product part ٢	Containers, filling procedures and packaging	Smart board, white board, handout	Discussions

١١. Course Evaluation
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Theory and practice in industrial pharmacy by Lachmann (٢٠٠٩)
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:
٥١٢
3. Semester / Year:
١st semester / ٥th year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Alaa Abdulelah Email:.
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

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

		outcomes			
١st	٣	Tablets introduction	Definition of tablet, History of tablets, Advantages and disadvantages of tablets, Properties of ideal tablets, Types and classes of tablets.	Smart board, white board, handout	Discussions
٢nd	٣	tablet continue	Direct compression method for granulation, Dry granulation method, Wet granulation method.	Smart board, white board, handout	Discussions
٣rd	٣	Evaluation of tablets	Quality Control of Tablets (Pharmacopoeial tests: and Non-pharmacopoeial test: Hardness test, Fraiability test).	Smart board, white board, handout	Discussions
٤th	٣	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	
٥th	٣	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
٦th	٣	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
٧th	٣	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
٨th	٣	Evaluation of hard gelatin capsule	Finishing (Pan polishing, Cloth dusting, Brushing, Storage)Special Techniques	Smart board, white board, handout	Discussions
٩th	٣	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

١٠th	٣	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
١١th	٣	Microecapsulation	Definition of microencapsulation, Applications of microencapsulation, Fundementals	Smart board, white board, handout	Discussions
١٢th	٣	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
١٣th	٣	Semisolid preparation-II	Factors in skin penetration, Formulation of Semisolid dosage forms, Ingredients used in preparation of semisolids	Smart board, white board, handout	Discussions
١٤th	٣	Aerosols and its quality control	Introduction to Aerosols, Advantages of Aerosols, Components of Aerosols packages.	Smart board, white board, handout	Discussions
١٥th	٣	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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٤٠ Marks Final-Term Exam: ٦٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Theory and practice in industrial pharmacy by Lachmann (٢٠٠٩)
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:
Drug delivery system design
2. Course Code:
٥٢١٢
3. Semester / Year:
٢nd semester / ٥th year
4. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. Course administrator's name (mention all, if more than one name)

Name: Lec. Dr. Alaa Abdulelah
Email: ahmed٨٢you@gmail.com

8. Course Objectives

Course Objectives:

By the end of this course, students will be able to: • Explain the process of new drug development, including drug discovery, preclinical evaluation, early formulation studies, and regulatory submission of INDs, NDAs, and ICH guidelines. • Explore the principles and applications of pharmaceutical nanotechnology, including the design and use of liposomes, dendrimers, micelles, solid nanoparticles, and lipid-based delivery systems in modern therapeutics. • Describe the anatomical and physiological considerations for non-oral routes of drug delivery, including nasal, ocular, transdermal, and pulmonary routes. • Analyze formulation challenges and strategies for improving drug solubility, permeability, bioavailability, and patient adherence across various advanced delivery systems. • Evaluate the design, function, and clinical considerations of innovative delivery platforms such as patches, inhalers, eye drops, and nanoparticle-based systems.

9. Teaching and Learning Strategies

Strategy	- Theoretical lectures - Daily assignments and discussions

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	٢	Chapter ٢ (Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; ١١th edition, ٢٠١٧)	The development and purpose of the United State Pharmacopeia (USP) and the National Formulary (NF),	Smart board, white board, handout	Discussions

٢nd	٢	Drug regulation and control	Significant drug regulation and control laws and their impact on pharmacy	Smart board, white board, handout	Discussions
٣rd	٢	New drug development and approval process	Investigational New Drug (IND) Application from a New Drug Application (NDA)	Smart board, white board, handout	Discussions
٤th	٢	Pharmaceutical Nanotechnology and Nanomedicines		Smart board, white board, handout	
٥th	٢	nanotechnology	the Current Good Manufacturing Practice (cGMP) for finished pharmaceuticals	Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	٢	Pharmaceutical Nanotechnology and Nanomedicines		Smart board, white board, handout	Discussions
٧th	٢	Nasal Drug Delivery		Smart board, white board, handout	Discussions
٨th	٢	Nasal Drug Delivery	.	Smart board, white board, handout	Discussions
٩th	٢	Ocular Drug Delivery Chapter ٤١(Aulton's Pharmaceutics; The Design and Manufacture of Medicines; ٦th edition, ٢٠٢٢)		Smart board, white board, handout	Discussions

١٠th	٢	Ocular Drug Delivery:	;	Smart board, white board, handout	Discussions
١١th	٢	Transdermals and Transdermal Drug Delivery Systems:		Smart board, white board, handout	Discussions
١٢th	٢	Transdermals and Transdermal Drug Delivery Systems		Smart board, white board, handout	Discussions
١٣th	٢	Pulmonary Drug Delivery		Smart board, white board, handout	Discussions
١٤th	٢	Pulmonary Drug Delivery		Smart board, white board, handout	Discussions
١٥th		exam			

١١. Course Evaluation
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٣٠ Marks Final-Term Exam: ٧٠ Marks

١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Ansel's pharmaceutical dosage forms and drug delivery ١٠th Edition by Loyd Allen (Author) ٢٠١١
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Course Description Form

1. Course Name:

Pharmaceutical biotechnology
٢. Course Code:
٥١٦
٣. Semester / Year:
٢nd semester / ٥th year
٤. Description Preparation Date:
٢٥/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. Course administrator's name (mention all, if more than one name)
Name: asst. lec Taha Abdulqader Email:
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

١٠. Course Structure:

Week	Hours	Required learning outcomes	Unit/Module or Topic Title	Teaching Method	Evaluation method
١st	١	Introduction to Molecular Biotechnology (Central dogma,	Biotechnology Molecular biotechnology	Smart board, white board, handout	Discussions

		from DNA to therapeutic protein; key milestones; overview of biotech drug types (proteins, genes, antibodies) Chapter ١	Biopharmaceutica Drugs Pharmaceu biotechnology Pharmaceutical Biotechnology Products		
٢nd	١	Biophysical and Biochemical Characteristics of Proteins (Structure-function relationship; protein folding and domains; post-translational modifications; physicochemical properties of therapeutic proteins) Chapter ٢	Microbial consideration Microbial consideration-Sterility-pyrogen viral decontamination	Smart board, white board, handout	Discussions
٣rh	١	Protein Stability and Characterization (Degradation Chapter ٣	pathways (oxidation, deamidation, aggregation); analytical techniques (SDS-PAGE, SEC, DSC, ELISA); stability testing)	Smart board, white board, handout	Discussions
٤th	١	Production and Purification of Recombinant Proteins (Host cell systems (bacterial, yeast, mammalian); upstream/downstream processes; fermentation		Smart board, white board, handout	

		basics; protein purification (affinity, ion exchange, HIC) Chapter ٤			
٥th	١	Formulation of Biologics (Formulation challenges for proteins; excipients (buffers, surfactants); lyophilization; pH and ionic strength considerations) Chapter ٥		Smart board, white board, handout	Discussions
					Mid-term Exam
٦th	١	Pharmacokinetics and Pharmacodynamics of Biologics (Absorption routes (SC, IM, IV); limited permeability and bioavailability; FcRn recycling; nonlinear kinetics; basic PD mechanisms(		Smart board, white board, handout	Discussions
٧th	١	Immunogenicity of Therapeutic Proteins (Causes (aggregation, impurities, glycosylation); immune responses (ADA formation); prediction models; mitigation strategies) Chapter	Pharmacokinetics and Pharmacodynamics of Peptide and Protein Drugs	Smart board, white board, handout	Discussions

		٧			
٨th	١	Monoclonal Antibodies- Structure and Applications Chapter ٨	(Antibody structure and isotypes; hybridoma and recombinant techniques; clinical applications (oncology, autoimmune, transplant); humanization techniques)	Smart board, white board, handout	Discussions
٩th	١	Gene Therapy and Advanced Therapies Chapters ١٥, ١٦, ١٧	(Principles of gene therapy; vectors (viral, non viral); ATMP classification; CAR-T cells; stem cell therapies; clinical and regulatory challenges)	Smart board, white board, handout	Discussions
١٠th	١	Biosimilars: Concepts and Development (Regulatory definitions; comparability exercises; analytical and clinical similarity; interchangeability and switching; real-world case examples) Chapter ١٢		Smart board, white board, handout	Discussions
١١th	١	Vaccines (live, killed, recombinant, mRNA);	Hepatic Protein Metabolism	Smart board, white board, handout	Discussions

		adjuvants; cold chain requirements; immune response mechanisms; new technologies) Chapter ١٤			
١٢th		Monoclonal Antibodies in Cancer and Inflammatory (Diseases Case studies (trastuzumab, rituximab, adalimumab); mechanisms (ADCC, CDC, cytokine inhibition); tumor targeting; immunomodulation) Chapter ٢٣, ٢٦			
١٣th		Hematopoietic and Endocrine Biologics (Erythropoietin, G-CSF, insulin, hGH production, mechanisms of action, clinical uses; dosing and administration forms) Chapters ١٨, ٢٠, ٢٤			
١٤th		Interferons and Interleukins (IFN-α, IFN-β, IL-٢, IL-٦ inhibitors-mechanisms, clinical indications (MS, hepatitis, cancer,			

		autoimmune); side effects and resistance mechanisms) Chapter ٢٧			

١١. Course Evaluation	
Distributing the score out of ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc Mid-Term Exam: ٣٠ Marks Final-Term Exam: ٧٠ Marks	
١٢. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	١. Pharmaceutical biotechnology by J.A. Crommelin, Robert D. Syinder. ٢. Aulton's Pharmaceutics: The Design and Manufacture of Medicines, ٣rd Edition Michael E. Aulton (Author). Churchill, Livingstone- Elsevier
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references, websites	

Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University: Tikrit University
College: College of Pharmacy
Department: Department of Pharmacognosy
Date of Form Completion: 20/1/2026

Dean's Assistant for Scientific Affairs
Asisst.prof..Dr.Omar Hussein Ahmed
Date:20/1/2026
Signature

Head of Department
Prof.Dr.jwad A.salih
Date:20/1/2026
Signature

Quality Assurance and University Performance Manager: Nashwan A. Smeet
Date:20/1/2026
Signature

Dean's approval
Asisst.prof.dr. Omar S. Hasan

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Program Specification provides a concise summary of the main features of the program and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the program.

1. Teaching Institution	Tikrit University
2. University Department/Centre	College of pharmacy
3. Program Title	pharmacognosy
4. Title of Final Award	BSc in pharmacy science
5. Modes of Attendance offered	Semesters
6. Accreditation	
7. Other external influences	Committee of Deans Colleges of Pharmacy
8. Date of production/revision of this specification	23/06/2021
9. Aims of the Program	
1- provide the student with basic information about pharmacognosy & phytochemistry.	
2- Teaching the students nomenclature, chemistry, taxonomy, medicinal importance, structure activity relationship SAR, method for extraction, characterization and detection of active ingredient in medicinal plants.	
3-Teaching the basic of complementary and alternative medicine, pharmacologically active compound which came from natural origin mainly plant origin.	
4-Teaching the type of secondary metabolite as glycosides, Phenolic, terpenoidal	

compound, vitamins and lipid are all discussed in details.
5-Teaching the students the basic methods of extraction of secondary metabolite from medicinal plant.
6-Teaching the student the principle of chromatographic techniques used for separation and identification of active ingredients .
7- Supervise the graduation projects.

10. Learning Outcomes, Teaching, Learning and Assessment Methods
A. Knowledge and Understanding A1. Provide the student with knowledge on the most common medicinal plant A2. Knowing the principle of extracting , separating and identification of active phytochemicals in the plants A3. Have information on the common herbal supplement in the local pharmacy and their uses A4. Know the toxic plant A5. Have knowledge on the secondary metabolites in medicinal plants A6. Have knowledge on the chemistry of the secondary metabolites in the plant
B. Subject-specific skills B1. Perform extraction of several plant B2. Prepare thin layer chromatography for identification and separation of secondary metabolites B3. Purification of plant extract by liquid-liquid partitioning B4. Make laboratory tests for identifying secondary metabolites in extract of plant
Teaching and Learning Methods
1- Lectures by using the smart boards, white boards , 2- Demonstrating scientific videos 3- laboratory work 4- Writing scientific reports 5- Project and giving presentations on specific topics 6- Training in pharmacy 7- Scientific poster
Assessment methods
1- Quizzes 2- Oral discussions 3- Mid-term exams 4- Small group assignments 5- Final exam
C. Thinking Skills C1. Discussions within small groups C2. Presentations C3. Small projects
Teaching and Learning Methods
D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Using online resources D2. Literature survey

11. Program Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
2nd		Pharmacognosy I	3 hr. Theory +1hr practical	Bachelor Degree Requires (x) credits
3rd		Pharmacognosy II	2 hr. Theory + 1 hr. practical	
		Pharmacognosy III	2 hr. Theory +1 hr.practical	

13. Personal Development Planning

Certain modules within the program are related to personal development planning. Students will also be given the opportunity and encouraged to engage in vocationally relevant qualifications. Work-based elements are embedded throughout a range of modules, which allow the student to reflect on their vocational development.

14. Admission criteria

Central Acceptance through the Ministry of Higher Education and Scientific Research / Iraq and according to the student grades.

15. Key sources of information about the programme

Robbers JE, Speedie MK, Tyler VE (Eds.); Pharmacognosy and Pharmacobiotechnology; the latest edition.

Michael Heinrich, Joanne Barnes; Fundamentals of Pharmacognosy & Phytotherapy.

Trease and Evans Pharmacognosy; 15th ed., 2000.

Curriculum Skills Map																		
please tick in the relevant boxes where individual Program Learning Outcomes are being assessed																		
				Program Learning Outcomes														
Year / Level	Course Code	CourseTitle	Core (C) Title or Option(O)	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	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmer specification.

1. Teaching Institution	Tikrit University
2. University Department/Centre	College of Pharmacy
3. Course title/code	Pharmacognosy I
4. Programmer(s) to which it contributes	Part of BSc / Pharmacy
5. Modes of Attendance offered	Semesters
6. Semester/Year	$2^{nd}/2^{nd}$ year
7. Number of hours tuition (total)	3hr theory, 1hr practical /semester
8. Date of production/revision of this specification	23/06/2021
9. Aims of the Course	
This course provide the student with knowledge on nomenclature and taxonomy of medicinal plant, extraction methods, separation of phytochemical by various chromatographic technics and the concept of quality control of herbal product , the student also should have basic knowledge of plant tissue culture and its applications	

10· Learning Outcomes, Teaching ,Learning and Assessment Method
A. Knowledge and Understanding A1. conduct various extraction methods according to phytochemical type A2. Conduct basic qualitative and quantitative analysis of medicinal compounds in herbal drugs and preparations.. A3. know the type of separation techniques.. A4. recognize the best method for extraction, characterization, detection of active ingredient in medicinal plants. A5. Recognize and define medicinal plants..
B. Subject-specific skills B1. Solving practice problems B2 Writing scientific reports B3. Homework
Teaching and Learning Methods
Lectures by using the smart board and white board
Assessment methods
1- Quizzes 2- Oral discussions 3- Mid-term exams 4- Final exam
C. Thinking Skills C1. Discussions within groups . C2. Presentations.
Teaching and Learning Methods
Lectures by using the smart board, white board and lab work

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Using online resources
D2. Literature survey

11. Course Structure:

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	3	General Introduction	Introduction on pharmacognosy	white board, handout	Discussions
2nd	1	Drugs from natural sources, crud drugs official and non-official drugs	Recognize approved Medicinal plant	white board, handout	Discussions
2nd	2	Classification of natural products	Recognize various type of classification of medicinal plants	Smart board, white board, handout	Discussions
3rd	2	Plant nomenclature and taxonomy	Define nomenclature system of plant	Smart board, white board, handout	
4th	3	Production of crude drugs: Cultivation, collection, drying and storage	Various steps of phytochemical production	Smart board, white board, handout	Discussions
					Mid-term Exam
5th	1	Deterioration of crude natural products	Define factors affecting drug deterioration	Smart board, white board, handout	Discussions
5th	3	Chemistry of natural drug products	Define chemical type of phytochemicals in plant	white board, handout	Discussions
6th	4	Quality control: Evaluation of natural products ; macroscopical evaluation;	Provide knowledge on quality control of phytochemical	white board, handout	Discussions

		physical evaluation; chemical evaluation; biological evaluation; spectroscopical evaluation	products		
7th	4	Phytochemical investigation of herbal products: Extraction of the plant material; Separation and isolation of constituents; characterization of the isolated compounds	Separation and identification of active phytochemical in plant parts	white board, handout	Discussions
8th.9th,10th,11th.	15	Separation technique: Introduction; Mechanisms of separation and classification based on the type of technique; paper chromatography; Thin layer chromatography; Ion-exchange chromatography; Gel filtration chromatography; Column chromatography; Gas chromatography; HPLC; Electrophoresis; Affinity chromatography.	Provide knowledge on various chromatographic method	Smart board, white board, handout	Discussions
12th	3	Traditional plant medicines as a	Separation of pharmacologicall	Smart board, white board,	Discussions

		source of new drugs. Bioassay-guided fractionation	y active ingredients based on its activity	handout	
13th	4	Tissue culture of medicinal plant: Introduction and history; laboratory of the plant tissue culture; aseptic techniques Application of the plant tissue culture; environmental and biological control; plant growth regulators.	Production of high quality plant and phytochemicals by plant tissue culture	Smart board, white board, handout	Discussions

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Trease and Evans Pharmacognosy; 15th ed., 2000.
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmer specification.

1. Teaching Institution	Tikrit University
2. University Department/Centre	College of Pharmacy
3. Course title/code	PharmacognosyII
4. Programmer(s) to which it contributes	Part of BSc / Pharmacy
5. Modes of Attendance offered	Semesters
6. Semester/Year	1sem. /2nd year
7. Number of hours tuition (total)	2hr theory, 1hr practical /semester
8. Date of production/revision of this specification	23/06/2021
9. Aims of the Course	
The course provides a brief introduction to plant systematics. Significant poisonous and medicinal plants, together with natural medicines, will be discussed. Important classes of compounds (secondary metabolites) in and from nature will be emphasised, and stress will be put on classification, nomenclature, structure, biosynthesis, occurrence, analysis and pharmaceutical perspectives. Practical exercises demonstrate different techniques within natural product chemistry	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A-Knowledge and understanding:

A1- Recognize and define medicinal natural glycoside according to their chemical structure.

A2- Associate medicinal compounds with their natural sources.

A3- Conduct basic qualitative and quantitative analysis of glycoside and fatty acid in herbal drugs and preparations..

A4- know the medicinal importance of herbal supplement in pharmacy

A5- recognize the best method for extraction, characterization, detection of active ingredient in medicinal plants.

A6- recognize the common plant of proven medicinal importance

B. Subject-specific skills

B1. Solving special problems

B2. Giving presentations on specific topics

B3. Writing scientific reports

B4. Small group assignments

Teaching and Learning Methods

Lectures by using the smart board, white board and lab work

Assessment methods

1- Quizzes

2- Oral discussions

3- Mid-term exams

4- Final exam

C. Thinking Skills

C1. Discussions within small groups

C2. Presentations

C3. Small projects.

Teaching and Learning Methods

Lectures by using the smart board, white board and lab work

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

D1. Using online resources

D2. Literature survey

11. Course Structure:					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	2	Introduction: General biosynthesis pathways of secondary metabolites	Understanding biosynthetic pathways of various secondary metabolites	Smart board, white board, handout	Discussions
2nd	2	Carbohydrates	Over view of pharmaceutically important plant derived carbohydrate	Smart board, white board, handout	Discussions
3rd,4th	5	Glycosides: Biosynthesis, physical and chemical properties; cardiac glycosides; saponin glycosides; anthraquinone glycosides; flavonoid glycosides; cyanophore glycosides	Understanding cardio active glycoside saponin, anthraquinone and flavonoids as medicinal importance, SAR, mechanism of action and the plant containing it.	Smart board, white board, handout	Discussions
5th,6th	5	Glycosides: Isothiocyanate glycosides; aldehyde glycosides; alcoholic glycosides; phenolic glycosides; lactone glycosides; coumarins and chromones	Over view of various type of glycosides and the important medicinal plant containing them.	Smart board, white board, handout	
7th	2	Resins and resin combination; tannins	Identifying resin and plant containing resin	Smart board, white board, handout	Discussions

			and the chemistry of resin Identifying tannins and tannins type, chemistry and medicinal importance		
					Mid-term Exam
8th	2	Lipids: fixed oils and waxes	Over view on lipid as natural molecule and its chemistry and application in pharmaceutical science..	Smart board, white board, handout	Discussions
9th	2	Volatile oils: Introduction; chemistry of volatile oils; biosynthesis of 3 volatile oils; hydrocarbons as volatile oils; alcohols as volatile oils ; aldehydes as volatile oils	Identifying the extraction method of volatile oil and the physicochemical properties, pharmaceutical importance and chemistry based classification	Smart board, white board, handout	Discussions
10th	2	Ketones as volatile oils; Phenols as volatile oils; Oxides as volatile oils; Ester as volatile oils; Phenolic ethers as volatile oils	Continuing the physicochemical properties, pharmaceutical importance and chemistry based classification.	Smart board, white board, handout	Discussions
11th	2	Vitamins and Amino acids.	Medicinal importance, dosage, source and deficiency of vitamin and amino acid	Smart board, white board, handout	Discussions
12th	2	Non- medicinal toxic plants	Identifying Non-medicinal toxic plants	Smart board, white board, handout	Discussions

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Reference text: Robbers JE, Speedie MK, Tyler VE (Eds.); Pharmacognosy and Pharmacobiotechnology; the latest edition
Special requirements (include for example workshops, periodicals, IT software, websites)	Workshops
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmer specification.

1. Teaching Institution	Tikrit University
2. University Department/Centre	College of Pharmacy
3. Course title/code	pharmacognosyIII
4. Programmer(s) to which it contributes	Part of BSc / Pharmacy

5. Modes of Attendance offered	Semesters
6. Semester/Year	2sem./ 3rd year
7. Number of hours tuition (total)	2hr theory, 1hr practical /semester
8. Date of production/revision of this specification	23/06/2021
9. Aims of the Course	
The course provides the students on type of alkaloids and their medicinal importance and toxicity , classification of alkaloids based on chemical nature and pharmacological action, also this course provide knowledge on various phytochemical products	

10· Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1. Recognize and define various type of alkaloids according to their chemical structure. A2. Associate alkaloid to their pharmacological action A3. Conduct extraction of alkaloid by various methods A4. know the medicinal importance of herbal supplement in pharmacy. A5. recognize the best method for extraction, characterization, detection of alkaloids in medicinal plant A6. recognize the side effect of some alkaloid rich plants.
B. Subject-specific skills B1. Solving special problems B2. Giving presentations on specific topics B3. Writing scientific reports B4. Small group assignments
Teaching and Learning Methods
Lectures by using the smart board and white board
Assessment methods
1- Quizzes 2- Oral discussions 3- Mid-term exams 4- Final exam

C. Thinking Skills C1. Discussions within groups. C2. Presentations.
C. Thinking Skills C1. Discussions within small groups C2. Presentations C3. Small projects
Teaching and Learning Methods
Lectures by using the smart board, white board and lab work

D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Using online resources D2. Literature survey

11. Course Structure:					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st,2nd	5	Alkaloids: Introduction ; Physical and chemical properties; pyridine, Piperidine alkaloids; tropane alkaloids	Recognize plants containing pyridine, piperidine alkaloids; tropane alkaloids and their medicinal importance	Smart board, white board, handout	Discussions
3rd,4th	5	Alkaloids: Quinoline tropan alkaloids; iso-quinoline alkaloids ; imidazole alkaloids; indole alkaloids	Define and recognize plant containing various class of alkaloids and their medicinal importance.	Smart board, white board, handout	Discussions
5th,6th,7th	5	Alkaloids: Steroidal alkaloids; lupinane	Define and recognize plant	Smart board, white board,	

		alkaloids; alkaloidal amines; purine alkaloids.	containing various class of alkaloids and their medicinal importance	handout	
8th,9th	6	Antibiotics:Natural sources;biosynthetic pathways, isolation and purification..	Provide knowledge on antibiotics and their discovery and uses	Smart board, white board, handout	Discussions
					Mid-term Exam
10th,11th, 12th,13th, 14th	10	phytotherapy :Introduction , principles,medicinal plants in selected health care systems.Important natural products & phytomecines used in pharmacy & medicine	Systematic classification of phytochemical supplements in local pharmacy and their medicinal importance and possible side effects	Smart board, white board, handout	Discussions

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Robbers JE, Speedie MK, Tyler VE (Eds.); Pharmacognosy and Pharmacobiotechnology; the latest edition. Michael Heinrich, Joanne Barnes; Fundamentals of Pharmacognosy & Phytotherapy
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

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

٢٠٢٥

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 ٣/٢٩٠٦ on ٣/٥/٢٠٢٣ 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:٢٣/١/٢٠٢٦

File Completion Date:٢٧/١/٢٠٢٦

Signature:

Head of Department Name:

Lec. Dr. Salma Anwer Abdullah

Date:٢٧/١/٢٠٢٦

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Omar Hussein Ahmed

Date:٢٧/١/٢٠٢٦

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:٢٧/١/٢٠٢٦

Signature:

Approval of the Dean

Asst. Prof. Dr. Omar Saleh Hassan

١. Program Vision

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

١- It aspires to be progenitor in term of academic level and scientific creativity of student.
٢- 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 .

٢. Program Mission

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

Implementation of modern scientific developments to sustain comprehensive .

٣. Program Objectives

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

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

٤. Program Accreditation

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

None currently available

٥. Other external influences

Is there a sponsor for the program?

None currently available

٦ Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	٣	٥	٢,٧٪	Basic Course

College Requirements	٦١	١٨٠	٩٧,٣٪	Basic Course
Department	---	---	---	Basic Course
Requirements	---	---	---	Pass
Summer Training	---	---	---	---

٧. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First year / first semester	١١١	Human anatomy and histology	٢	٢
First year / first semester	١١٥	Mathematics and medical statistics	٣	-
First year / first semester	١٢٩	Medical physics	٢	٢
First year / first semester		Democracy and Human rights	٢	-
First year / second semester	١٢٧	Physiology	٣	٢
First year / second semester	١١٤	Computer science	١	٢
First year / second semester	١٢٧١	Arabic	٢	-
Second year / first semester	٢١٢	Medical Microbiology I	٣	٢
Second year / first semester	١١٤	Computer science	-	٢
Second year / first semester		Baath regime crimes in Iraq	٢	-
Second year / second semester		Arabic	٢	-
Second year / second semester	٢٢٧	Medical microbiology II	٣	٢
Third year / first semester	٣١٤	Biochemistry I	٣	٢
Third year / first semester	٣١٥	Pathophysiology	٣	٢
Third year / second semester	٣٢٩	Bio-chemistry II	٣	٢
Fourth year / first semester	٤١٥	Public health	٢	-
Fifth year / first semester	٥١٤	Clinical chemistry	٣	٢
Fifth year / first semester	٥٢١	Clinical Laboratory training	-	٤
Fifth year / second semester		Hospital Training	-	٤

٨. Expected learning outcomes of the program

A١- Follow up on developments in techniques used in clinical chemistry as well as in molecular diagnostics
A٢- It provides students with the knowledge, skills and efforts required to work in diagnosing diseases through laboratory tests
A٣- Understand the basics of biochemistry.

Skills

B ٣- Diagnosing diseases by detecting the causative factors.

B٤- Use appropriate antibiotics in treatment according to the laboratory result report.

B ٥- Emphasis on the knowledge and skills required to efficiently perform the duties and responsibilities of a pharmacist

B٩- Upon completing the course, students will be able to understand the applications of statistics

Ethics

C١. Develop the student's ability to discuss
C٢. Actual application with existing capabilities
C٣. Develop the student's ability to take advantage of the available means
C٤. Develop the student's ability to perform daily duties

٩. Teaching and Learning Strategies

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

١٠. Evaluation methods

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

١١. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	**Lecturer**
Assistant professor	٢	١			٣	
Lecturer	٦	١			٤	
Assistance lectures	١٠	٣			١٠	

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.

١٢. Acceptance Criterion

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

١٣. 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

١٤. 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 anatomy and histology	١١١	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Medical Physics		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Mathematic and Statistics	١١٥	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Democracy and human rights		Basic	√	√	√	√	√	√	√	√	√	√	√	√
First year / second semester	Physiology		**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
	Computer Science		**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
	Arabic		**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
Second year / first semester	Medical microbiology I	٢١٢	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Computer Science		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Baath Regime Crimes in Iraq		Basic	√	√	√	√	√	√	√	√	√	√	√	√
Second year / second semester	Medical microbiology II	٢٢٧	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Arabic		Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Biochemistry I	٣١٤	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Third year / first semester	Pathology	٣١٥	Basic	√	√	√	√	√	√	√	√	√	√	√	√

Third year / second semester	Biochemistry II	٣٢٩	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Fourth year / first semester	Public health	٤١٥	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Fifth year / first semester	Clinical Chemistry	٥١٤	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	Clinical laboratory training	٥١٥	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Fifth year / second semester	Hospital Training		Basic	√	√	√	√	√	√	√	√	√	√	√	√

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

Course Description Form

1. Course Name:
Human anatomy and histology
2. Course Code:
١١١
3. Semester / Year:
First / First
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two hours /week (theory) and two hours/ week (practical) – ٣ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof Heba Hazem , Lec.Dr. Muthana Hussein
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	٢	١
Theory exam reports homework	smart board classroom	cell division	The Cell	٢	٢
Theory exam reports homework	smart board classroom	Type . Occupation . distribution	Texture. Bone. cartilage	٢	٣
Theory exam reports homework	smart board classroom	Central and Peripheral	Nervous system	٢	٤
Theory exam reports homework	smart board classroom	vitamins and minerals	nutrition	٢	٥
Theory exam reports homework	smart board classroom	The mouth. Esophagus. stomach	Digestive	٢	٦
		Exam ١			٧
Theory exam reports homework	smart board classroom	Small and large intestine	Digestive	٢	٨
Theory exam reports homework	smart board classroom	types of glands	Excretory and respiratory system	٢	٩
Theory exam reports homework	smart board classroom	Chromosomes and semi-lethal genes	human genetics	٢	١٠
Theory exam reports	smart board classroom	Layers Occupation. Glands. the	Skin	٢	١١

homework		disease			
Theory exam reports homework	smart board classroom smart board classroom	Part of the rotating device. Arteries, veins, and blood composition	Rotary system	٢	١٢
Theory exam reports homework	smart board classroom	Inflammation and immunity to diseases	Immunity	٢	١٣
		Exam ٢			

Course Description Form

1. Course Name:
Mathematic and Medical Statistics
2. Course Code:
١١٥
3. Semester / Year:
First / First
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours / week (theory) – ٣ units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Raghad Adnan , Asst.Lec. Omar Adil
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	٣	١
Theory exam reports homework	smart board classroom	Functions and inclination	Functions and fees. Mutual slope functions and line equations	٣	٢
Theory exam reports homework	smart board classroom	Determinants and integration	Determinant and Integration Determinant Theorems and Conditions of Integration	٣	٣
Theory exam reports homework	smart board classroom	Derivative and Trigonometric Functions	Line tangent deviation and derivatives. Discrimination rules	٣	٤
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	٣	٥
Theory exam reports homework	smart board classroom	...	Properties of specific integrals. exercise	٣	٦
		Exam ١			٧
Theory exam reports homework	smart board classroom	General concept of statistics possibility	Biostatistics: General Concepts of Statistics; Statistical methods Probability concepts: properties of probability	٣	٨
Theory exam reports homework	smart board classroom	Poisson distribution	The probability distribution of a discrete variable. binomial distribution,	٣	٩

			Poisson distribution		
Theory exam reports homework	smart board classroom	.....	Continue Probability Distribution and Normal Distribution, Review Questions and Exercises	٣	١٠
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	٣	١١
Theory exam reports homework	smart board classroom	skew and volatility	Deviations and difference: deviation. Dispersion and contrast. standard deviation and variance	٣	١٢
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	٣	١٣
Theory exam reports homework	smart board classroom	Statistics tests	T-test, Z-test, chi-test and ANOVA	٣	١٤
Theory exam reports homework	smart board classroom	.....	Statistics application in the medical field. Review questions .and exercises	٣	١٥
		exam ٢			

Course Description Form

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

3. Semester / Year:
second / First
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week – one units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec . Dalal Aaleh , Assist Lec. Maha safer @ Assist Lec. Yaser Khider Asst.Lec. Omar Khalil
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	٢	١
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	file ، Home	٢	٢
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Insert tab	٢	٣
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Layout Tab	٢	٤
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	References Tab	٢	٥
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Mailings Tab	٢	٦
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	Review Tab	٢	٧
Practical exam and class efficacy	Data show +Classroom	Microsoft word and Doc google	View Tab	٢	٨
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Introduction to Microsoft PowerPoint (File and Home Tab , Insert tab	٢	٩
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Design	٢	١٠
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Transition Tab	٢	١١

Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Animation Tab	٢	١٢
Practical exam and class efficacy	Data show +Classroom	Microsoft PowerPoint and Slide google	Slide View	٢	١٣
		Exam ١ theoretical and practical			
Course Structure: Computer Science, ١st year / ٢nd semester					
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Introduction to Microsoft Excel	٢	١
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Insert	٢	٢
Practical exam and class efficacy	Data show + Electronic classroom			٢	٣
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Page Layout	٢	٤
Practical exam and class efficacy	Data show + Electronic classroom			٢	٥
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	Formula	٢	٦
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	formula errors in Excel	٢	٧
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet		٢	٨
Practical exam and class efficacy	Data show + Electronic classroom		Data Analysis	٢	٩
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	How to add Data Analysis	٢	١٠
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	T-test one sample	٢	١١
Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	T-test paired	٢	١٢

Practical exam and class efficacy	Data show + Electronic classroom	Microsoft Excel and Google Sheet	T- test Independent	٢	١٣
		Exam ٢ theoretical and practical			

Course Description Form

1. Course Name:
Physiology
2. Course Code:
١٢٧
3. Semester / Year:
Second / First
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
٣ hours/ week (theory) and ٢ hours / week (practical) – ٢ units
.....
٧. Course administrator's name (mention all, if more than one name)
Name: Asst.Prof.Dr. Heba Hazem , Lec.Dr Muthana Hussein Asst.Lec. Reeham Hassan .....
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	١	١
Theory exam reports homework	smart board classroom	Location of the lymphatic system (lymphatic capillary)	Circulatory system	١	٢
Theory exam reports homework	smart board classroom	Location (thymus gland, spleen and lymph nodes)	Lymphatic tissue	١	٣
Theory exam reports homework	smart board classroom	Lymphatic nodules and tonsils	Lymphatic tissue	١	٤
Theory exam reports homework	smart board classroom	Central and Peripheral Nervous System	Nervous system	١	٥
Theory exam reports homework	smart board classroom	Connecting part (nose, nasopharynx, trachea, bronchi and bronchioles) lung breathing (part	Respiratory system	٢	٦
		Exam ١		١,٥	٧
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	٣	٨

		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	١	٩
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	٢	١٠
Theory exam reports homework	smart board classroom	Location of the ovary, oviduct, uterus and vagina	female reproductive system	٢	١١
Theory exam reports homework	smart board classroom	The site of (kidneys and nephrons), the site of (ureters, bladder and .urethra)	Urinary tract	١	١٢
		Final exam			١٣

Course Description Form

1. Course Name:
Physiology
2. Course Code:
١٢٧١
3. Semester / Year:
First / First
4. Description Preparation Date:

٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week (theory) and Two hours / week (practical) – ٣ units
٧. Course administrator's name (mention all, if more than one name)
Name: Asst.Prof.Dr Heba Hazem , Lec.Dr. Muthana Hussein , Asst.Lec. Reham Hassan
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	١	١
Theory exam reports homework	smart board classroom	Location of the lymphatic system (lymphatic capillary)	Circulatory System	١	٢
Theory exam reports homework	smart board classroom	Location (thymus gland, spleen and lymph (nodes	lymphatic tissue	١	٣
Theory exam reports homework	smart board classroom	Lymphatic nodules and tonsils	lymphatic tissue	١	٤
Theory exam reports homework	smart board classroom	Central and Peripheral Nervous System by Location	Nervous system	٣	٥
Theory exam reports homework	smart board classroom	Connecting part (nose,nasopharnx, trachea, bronchi and bronchioles) Lung breathing part	Nervous system	٣	٦
		Exam ١		١,٥	٧
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	٣	٨

		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	١	٩
Theory exam reports homework	smart board classroom	General physiological histological structure of the pituitary gland	glandular system	٢	١٠
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	٢	١١
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	٢	١٢
Theory exam reports homework	smart board classroom	Thick and thin skin	The Skin	١	١٣
Theory exam reports homework	smart board classroom	General structure of the ovary, oviduct, uterus and vagina follicle growth steps ovulation	The female reproductive system	٣	١٤
Theory	smart board	Structure	Urinary tract	٢	١٥

exam reports homework	classroom	(ureters, bladder and urethra) Nephron tissue filtration, absorption and excretion Structure and function of the kidneys and nephrons			
		Final exam			١٦

Course Description Form

1. Course Name:
Medical Physics
2. Course Code:
١٢٩
3. Semester / Year:
First / First
4. Description Preparation Date:
٢٣/ ١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week (theory) / ٣ units .....
٧. Course administrator's name (mention all, if more than one name)
Name: Asst.Prof.Dr Adnan Mahmood , Asst.Lec. Ahmed Amer
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	٢	١
Theory exam reports homework	smart board classroom	the pressure; temperature in medicine	the pressure; Temperature in medicine and thermometers	٢	٢
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	٢	٣
Theory exam reports homework	smart board classroom	heat and energy; Effort	Heat and energy; voltage and forms of mechanical action; Energy; ١st law of thermodynamics. Boyles and Charles Law	٢	٤
Theory exam reports homework	smart board classroom	Randomness and enthalpy	The second law of thermodynamics. Inverse and inverse randomness and enthalpy	٢	٥
Theory exam reports homework	smart board classroom	Thermal theory	Infrared and thermal theory	٢	٦
		Exam ١			٧
Theory exam reports	smart board classroom	The concept of internal energy	Internal energy. Heat capacity and adiabatic process.	٢	٨

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	٢	٩
Theory exam reports homework	smart board classroom	radiation effect	The effect of radiation on the transfer of heat in the human body	٢	١٠
Theory exam reports homework	smart board classroom	Radiation concept	Infrared and ultraviolet indication	٢	١١
Theory exam reports homework	smart board classroom	medical app	The medical and biological effect of radiation	٢	١٢
Theory exam reports homework	smart board classroom	Electromagnetic radiation concept	Electromagnetic radiation	٢	١٣
Theory exam reports homework	smart board classroom	X-ray concept	X-ray production and X-ray spectrum	٢	١٤
Theory exam reports homework	smart board classroom	Radiation absorption	X-ray absorption	٢	١٥
		Exam ٢			

Course Description Form

1. Course Name:
Medical microbiology I
2. Course Code:
٢١٢
3. Semester / Year:
First / Second
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours / week (theory) and two hours / week (practical)- ٤ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Huda Saleh , Asst.Prof.Dr Maysam Adnan , Lec. Dr. Shaimma Munshid
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	٢	١
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	٢	٢
Theory exam reports homework	smart board classroom	Chemical and physical determinants of growth. Growth and graphics of growth and reproduction of bacteria	Bacterial Physiology	٢	٣
Theory exam reports homework	smart board classroom	Definition, genetic elements, and mutations (spontaneous genes Transfer, transformation, conjugation, and transduction of genes	Genes	٢	٤
Theory exam reports homework	smart board classroom	Biotechnology and DNA	=	٢	٥
Theory exam reports homework	smart board classroom	Spore formation and reproduction	=	٢	٦
		Exam ١		١,٥	٧
Theory exam reports homework	smart board classroom	physical and chemical methods	sterilization	٢	٨

Theory exam reports homework	smart board classroom	Types	Chemotherapy	٢	٩
Theory exam reports homework	smart board classroom	Bacterial forms pigmentation and division	Bacterial properties	١	١٠
Theory exam reports homework	smart board classroom	Streptococcus Biogens Streptococcus pneumoniae	genus Staphylococcus	٣	١١
Theory exam reports homework	smart board classroom	Baslas Anthraces Basslas Stlass Bass Siss	Spore-forming Bacillus aerobic bacteria	١	١٢
Theory exam reports homework	smart board classroom	Clostridium brazingis Clostridium titani Clostridium botulium	selected	٣	١٣
Theory exam reports homework	smart board classroom	Korani Bacterium Diphtheria Myco Bacterium Tuber Closus	=	٢	١٤
Theory exam reports homework	smart board classroom	Listeria	=	١	١٥
		Exam٢			

Course Description Form

1. Course Name:
Medical microbiology II
2. Course Code:
٢٢٧
3. Semester / Year:
Second / Second
4. Description Preparation Date:
٢٣/ ١/ ٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours /week (theory) and two hours /week (practical) – ٤ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Huda Saleh , Asst.Prof.Dr Maysam Adnan , Lec. Dr. Shaimma Munshid
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	٣	١
Theory exam reports homework	smart board classroom	Amoeba plantidium giardia chylomastics	Intestinal protozoa	٥	٢
Theory exam reports homework	smart board classroom	leishmania Trypanosoma	flagellate	٤	٣
Theory exam reports homework	smart board classroom	malaria; Toxoplasma	sporophytes	٤	٤
Theory exam reports homework	smart board classroom	malaria; Toxoplasma	Worms and their division	٥	٥
Theory exam reports homework	smart board classroom	Ascaris water bag worms	=	٥	٦
		Exam ١		١,٥	٧
Theory exam reports homework	smart board classroom	An introduction to a comparison between viruses, bacteria and other microbes	viruses	٢	٨
Theory exam reports homework	smart board classroom	virus division	=	٢	٩
Theory exam reports homework	smart board classroom	reproduction	=	٢	١٠
Theory exam reports homework	smart board classroom	Virus isolation, diagnosis and development	=	٢	١١

Theory exam reports homework	smart board classroom	genetic mutation methods	=	٢	١٢
Theory exam reports homework	smart board classroom	antiviral chemotherapy	=	٢	١٣
Theory exam reports homework	smart board classroom	DNA Viruses	=	٢	١٤
Theory exam reports homework	smart board classroom	RNA Viruses	=	٢	١٥
Theory exam reports homework	smart board classroom	General introduction	immunity	١	١٦
Theory exam reports homework	smart board classroom	Innate and stimulating immunity	types of immunity	٢	١٧
Theory exam reports homework	smart board classroom	B and T cell antigen properties		٣	١٨
Theory exam reports homework	smart board classroom	Complement. Types of hypersensitivity	terminology in immunity	٣	١٩
Theory exam reports homework	smart board classroom	tumor immunity	Oncology	٣	٢٠
		Exam٢			

Course Description Form

1. Course Name:
Biochemistry I
2. Course Code:
٣١٤
3. Semester / Year:
First / Third
4. Description Preparation Date:
٢٣/١/ ٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours /week (theory) and two hours/week (practical) – ٤ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Yaser Ahmed ، Assist. Prof . Dr Tafaoul Jaber ، Lec.Dr Salma Anwer
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	٢	١
Theory exam reports homework	smart board classroom	Synthesis of amino acids. Category. Properties. other shapes	amino acids	٣	٢
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	٣	٣
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	٣	٤
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	٣	٥

		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	٣	٦
		Exam١			٧
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	٣	٨
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	٣	٩

		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	٣	١٠
Theory exam reports homework	smart board classroom	For general principles, factors affecting enzyme speed (concentration, pH, temperature, etc.), enzyme reaction with substance (Michaelis-	kinetic	٣	١١

		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	٢	١٢
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	٢	١٣
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	٣	١٤

		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	٥	١٥
		Exam٢			

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Course Description Form

1. Course Name:
Biochemistry II
2. Course Code:
٣٢٩
3. Semester / Year:
Second / Third
4. Description Preparation Date:
٢٣/ ١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab

٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours/ week (theory) and two hours/ week (practical) – ٤ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Yaser Ahmed , Assist. Prof.Dr. Tafaoul Jaber , Lec.Dr. Omar Salah
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	٣	١
Theory exam reports homework	smart board classroom	glycolysis Citric acid cycle glucose production oxidative phosphorylation	Cellular metabolism of carbohydrates	٣	٢
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	٣	٣
Theory exam reports homework	smart board classroom	fatty acid industry	fat representation	٣	٤
Theory exam reports homework	smart board classroom	Oxidation of fatty acids ketone production	fat representation	٣	٥
Theory exam reports homework	smart board classroom	Fat transfer and storage	fat representation	٣	٦
Theory exam reports homework	smart board classroom	Mid-course exam		٣	٧
Theory exam reports homework	smart board classroom	Non-essential amino acid industry	Representation of proteins and amino acids	٣	٨
Theory exam reports	smart board classroom	Breaking down the carbonic structure of	Representation of proteins and amino acids	٣	٩

homework		amino acids Converting amino acids to specific products			
Theory exam reports homework	smart board classroom	nucleotides	large particles	٣	١٠
Theory exam reports homework	smart board classroom	representation of purines and pyridines	large particles	٣	١١
Theory exam reports homework	smart board classroom	The function and structure of the amino acid	large particles	٣	١٢
Theory exam reports homework	smart board classroom	DNA replication and repair	large particles	٣	١٣
Theory exam reports homework	smart board classroom	Porphyrin and gallbladder tincture		٢	١٤
		final exam			

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Course Description Form .....

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1. Course Name:
Pathophysiology
2. Course Code:
٣١٥
3. Semester / Year:
First / Third
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours/ week (theory) and two hours/ week (practical) – ٤ units

V. Course administrator's name (mention all, if more than one name)	
Name: Asst.Prof.Dr. Heba Hazem , Lec. Dr Muthana Hussein	
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	١	١
Theory exam reports homework	smart board classroom	Degeneration. necrosis; atrophy; Hypertrophy; Metaplasia and calcification. Inflammation and repair	Cell injury and tissue response	٦	٢
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	٤	٣
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	٣	٤
Theory exam reports homework	smart board classroom	Hypertension. Secondary hypertension. Malignant hypertension. Reduction of Blood pressure.	=	٢	٥

		Aneurysms vs. Varicose Veins			
Theory exam reports homework	smart board classroom	For lung infections. tuberculosis; respiratory distress syndrome	Respiratory disorders	١	٦
		Exam١		١,٥	٧
Theory exam reports homework	smart board classroom	Bronchial asthma; Emphysema and bronchiectasis. Cystic fibrosis; Pulmonary embolism. Pulmonary .hypertension	Respiratory disorders	٢	٨
Theory exam reports homework	smart board classroom	nephrotic syndrome; Glomerulonephritis. Diabetic glomeruli. Glomerular disease, high .blood pressure	Kidney system disorders	٢	٩
Theory exam reports homework	smart board classroom	Pyelonephritis.. acute kidney failure; Chronic kidney failure	Kidney system disorders	٢	١٠
Theory exam reports homework	smart board classroom	Stomach ulcers, Elison's disease and Crohn's disease	Gastrointestinal and hepatic disorders	٢	١١
Theory exam reports homework	smart board classroom	Diarrhea; Celiac disease. Hepatitis; primary biliary cirrhosis; liver failure; Cholelithiasis	Gastrointestinal and hepatic disorders	٢	١٢
Theory exam reports homework	smart board classroom	Thyroid hormone deficiency and excess, Kravis'	Thyroid gland dysfunction	٢	١٣

		disease			
Theory exam reports homework	smart board classroom	Kishk's disease. Adrenal insufficiency. adrenal gland aplasia	adrenal gland dysfunction	٢	١٤
Theory exam reports homework	smart board classroom	Diabetes, cellular metabolism disorder, protein and fat disorders	cellular metabolism disorders	٣	١٥
		Exam٢			

Course Description Form

1. Course Name:
Public Health
2. Course Code:
٤١٥
3. Semester / Year:
First / Fourth
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week (theory) – ٢ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof . Dr Jwad Ali Saleh , Assist. Prof . Dr Maysam Adnan
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	٢	١
Theory exam reports homework	smart board classroom	The causative agents of infectious diseases	Infectious diseases	١	٢
Theory exam reports homework	smart board classroom	Cardiovascular disease	Non-infectious diseases	١	٣
Theory exam reports homework	smart board classroom	Stomach and intestine diseases	Infectious and non-communicable diseases	٢	٤
Theory exam reports homework	smart board classroom	skin diseases	Infectious and non-communicable diseases	١	٥
Theory exam reports homework	smart board classroom	Sexually transmitted diseases	Infectious diseases	١	٦
		Exam١		١,٥	٧
Theory exam reports homework	smart board classroom	tumor disease	Oncology	٣	٨
Theory exam reports homework	smart board classroom	respiratory system diseases	Infectious diseases	٢	٩
Theory exam reports homework	smart board classroom	Includes maternal injuries and vaccination	family planning	٢	١٠
		Exam٢			

Course Description Form

1. Course Name:
Clinical Chemistry
2. Course Code:
٥١٤
3. Semester / Year:
First / Fifth
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three hours/ week (theory) and two hours/ week (practical) – ٤ units
٧. Course administrator's name (mention all, if more than one name)
Name: Asst.Prof.Dr Tafaoul Jaber , Lec.Dr. Salma Anwer , Lec.Dr. Omar Salah , Assist Lec. Adnan Mustafa
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	٢	١
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	٦	٢
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	٤	٣
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	٤	٤
Theory exam reports homework	smart board classroom	Kidney physiology Kidney disorders Kidney function assessment: glomerular filtration rate, renal tubular assessment	Kidney function disorder	٣	٥
Theory exam reports	smart board classroom	Normal distribution of enzymes in	Diagnosis of plasma enzymes	٣	٦

homework		human tissues, isoenzymes, Factors affecting the measurement of enzymatic activity Clinical application to measure plasma enzymes			
		mid-course exam		١,٥	٧
Theory exam reports homework	smart board classroom	Normal physiology of the hypothalamus and pituitary gland pituitary gland disorder	Hypothalamus and pituitary gland	٤	٨
Theory exam reports homework	smart board classroom	The normal physiology of the adrenal gland adrenal gland disorder	Adrenal	٣	٩
Theory exam reports homework	smart board classroom	The normal physiology of the reproductive system Reproductive system disorder	reproductive system	٤	١٠
Theory exam reports homework	smart board classroom	The natural physiology of pregnancy Hormonal changes associated with infertility	Pregnancy and infertility	٦	١١
Theory exam reports homework	smart board classroom	The normal physiology of the thyroid gland Thyroid disorder	Thyroid	٣	١٢
Theory exam reports homework	smart board classroom	Plasma protein components Electron separation of plasma proteins	Plasma proteins	٣	١٣
		Final Exam			

Course Description Form

1. Course Name:
Clinical Laboratory Training
2. Course Code:
٥١٥
3. Semester / Year:
First / Fifth
4. Description Preparation Date:
٢٣/١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Four hours / week (Practical) – ٢ units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist Prof. Tafaoul Jaber , Lec. Dr. Omar Salah
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	٢	١
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Fasting blood test blood sugar after food glucose tolerance	biochemical tests	٢	٢
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	٢	٣
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	blood proteins bilirubin	Liver function test	٢	٤
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Calcium inorganic phosphate chlorine in serum	biochemical tests	٢	٥
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	٢	٦

		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	٢	٧
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	٢	٨
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	٢	٩
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	Implant test, sensitivity and pigmentation method	microbiology test	٢	١٠
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	medium rich middle Media for general use	microbiology test	٢	١١
Practical exams	Power point slides	Tests for identification of	microbiology test	٢	١٢

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	٢	١٣
Practical exams Reports discussion oral exam Laboratory Efficiency	Power point slides Laboratory visit	ELISA PCR Electrocardiogram	new technology	٢	١٤
		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:
١٠/٣/ ٢٠٢٦
٥. Available Attendance Forms:
Practical lectures in lab
٦. Number of Credit Hours (Total) / Number of Units (Total)

Two hours / week – one units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec . Dalal Aaleh , Assist Lec. Maha safer @ Assist Lec. Yaser Khider Asst.Lec. Omar Khalil
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	٢	١
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	data analysis	٢	٢
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	How to calculate some statistical values	٢	٣
Practical exam and class efficacy	Data show + Electronic row display	Common errors in the Excel application	error formulas in excel	٢	٤
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	Entering data analysis in excel	٢	٥
Practical exam and class efficacy	Data show + Electronic row display	Introduction to statistics using microsoft excel	escriptive statistics	٢	٦
Practical exam and class efficacy	Data show + Electronic row display	Introduction to Statistics Using Microsoft Excel	ecursive	٢	٧
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	Correlation	٢	٨
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	Regression	٢	٩
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	Single sample t-test	٢	١١
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	t-test for a pair of data, unsupported t-test	٢	١٠
Practical exam and class efficacy	Data show	Introduction to Statistics Using Microsoft Excel	One-way ANOVA test, ANOVA test: two factors without recurrence	٢	١١
Practical exam and class efficacy	Data show	Practical lessons in chemistry		٢	١٢
Practical exam and class efficacy	Data show	=	Drawing chemical Structure	٢	١٣
Practical exam and	Data show	=	IR , UV	٢	١٤

class efficacy					
Practical exam and class efficacy	Data show	=	-NMR	٢	١٥

Course Description Form

1. Course Name:
Computer science
2. Course Code:
3. Semester / Year:
Second / second
4. Description Preparation Date:
١٠/٣/٢٠٢٤
٥. Available Attendance Forms:
Practical lectures in lab
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two hours / week – one units
٧. Course administrator's name (mention all, if more than one name)
Name: Lec . Dalal Aaleh , Assist Lec. Maha safer @ Assist Lec. Yaser Khider Asst.Lec. Omar Khalil
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	٢	١
Practical exam and class efficacy	Data show	–SPSS Windows available in the program	SPSS general description, functions, menus, directives	٢	٢
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	٢	٣
Practical exam and class efficacy	Data show	Descriptive data analysis frequencies,	descriptive statistics frequency tables	٢	٤
Practical exam and class efficacy	Data show	Charts	Graphs	٢	٥
Practical exam and class efficacy	Data show	Statistical tests	the average	٢	٦
Practical exam and class efficacy	Data show	=	T-Test	٢	٧
Practical exam and class efficacy	Data show	=	One-way ANOVA test	٢	٨
Practical exam and class efficacy	Data show	=	non-parametric tests	٢	٩
Practical exam and class	Data show	=	normal tests	٢	١٠

Practical exam and class efficacy	Data show	Correlation and regression analysis	Correlation and regression	٢	١١
Practical exam and class efficacy	Data show	=	Linear correlation and regression	٢	١٢
Practical exam and class efficacy	Data show	=	Multiple Regression (Linear)	٢	١٣
Practical exam and class efficacy	Data show	=	Multivariate analysis	٢	١٤
Practical exam and class efficacy	Data show	Non-parametric tests	test Chi square	٢	١٥
		Exam ٢ theoretical and practical			
efficacy					

١١. Course Evaluation

Distributing the score out of ١٠٠ 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: ٣٠ Marks

Final-Term Exam: ٧٠ Marks

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

Mid-Term Exam (theoretical) : ٢٠ Marks

Mid-Term Exam (practical) : ٢٠ Marks

Final-Term Exam: ٦٠ Marks

١٢. 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 ١. Finney RI, Thomas GB (Eds.); Calculus and Analytical Geometry Daniel WW, Foundation for Analysis in the Health Sciences, ٤th 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: ١st semester of the first academic year Physics, Biology and Medical Students, ٢nd Edition Histology: ١st semester of the first academic year Basic Histology by Luis Carlos ١١th ed. (٢٠٠٥) Human anatomy: the second semester of the year Clinical Anatomy by Regions (Richard S. Snell ٨th ed. ٢٠١٠). Medical Microbiology: ١st semester of the second academic year ١- Lange Medical Microbiology ٢- Medical Microbiology I, Seventeenth Edition E. Jawetz, J.L. Melnik, E.A. just ١٩٨٧ ٣- Principles of Microbiology by Roland M. Virology and Parasitology: ١st semester of the second academic year Animal agents and vectors of diseases to humans. ٥th.Ed. Computer. Beaver & amp; Young. BiochemistryI and II: ١st semester ١st year ٣rd academic year ١. Harper's Illustrated Biochemistry, ٢٧th ed. ٢٠٠٦. ٢. Lippincott Biochemistry and Photographer, ٢٠١١ ٣. Lehninger Principles of Biochemistry, ٢٠٠٤ Pathophysiology: ٣ years / ١stsemester Essentials in Pathophysiology by: Carol Mattson-Borth ٢nd Ed. Public Health: ٤th year / ١st semester Lucas AO, HM Jill, (Eds.), Short Textbook of Orbital Public Health Medicine, (٤th ed.), ٢٠٠٣.

	Clinical Chemistry: ٥th year / ١st semester ١- Crook M A. (ed) Clinical Biochemistry and Metabolic Medicine, ٨th ed., ٢٠١٢. Hodder Arnold. ٢- Portis CA, Ashwood ER, Bronze D (Eds.) Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, ٥th ed., ٢٠١٢, 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 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 ٣/٢٩٠٦ on ٣/٥/٢٠٢٣ 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: ١٣/ ٢/ ٢٠٢٦

File Completion Date: ١٣/ ٢/ ٢٠٢٦

Signature:

Head of Department Name:

Lect. Dr. Yahya Saad Yaseen

Date: ١٣ /٢/ ٢٠٢٦

Signature:

Scientific Associate Name:

Asst. prof *Dr.Omar Hussein Ahmed*

Date: ١٣/٢/٢٠٢٦

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:١٨/٢/٢٠٢٦

Signature:

Approval of the Dean

Asst. prof. Dr. Omar Salih Hassan

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

١. Educational institution	Tikrit university/college of pharmacy
٢. Scientific department	Pharmaceutical chemistry
٣. Name of Academic Program	Sciences in pharmacy
٤. Final certificate name	Bachelor in Pharmacy
٥. Learning system: Annual / courses / other	Semester (courses)
٦. Accreditation Program approved	ACPE
٧. Other external influences	Training courses in hospitals, pharmaceutical industries and private pharmacies.
٨. Description creation date	٢٠٢٦
٩. 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.

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

A. Cognitive goals

A١-Introducing the methods of preparing medicinal chemical compounds
A٢-Introducing the methods of diagnosing chemical compounds by chemical and spectroscopic methods
A٣-Introduction to diagnostic methods, volumetric, quantitative and spectroscopic separation
A٤-Study of chemical and physical properties of drugs and drug metabolism
A٥- Study of changing the active groups of compounds in order to increase drug efficacy
A ٦- Knowing the pharmacological composition, side effects and the mechanism of action of the drug

B. Skillful goals

B١ – Acquisition of drug preparation and manufacturing skills
B٢ – Acquiring skills to know the effect of some types of additives on the properties of medicines
B٣ -Acquisition of skills to increase the stability of drug forms outside or inside the body

Teaching and learning methods

١- Theoretical lectures
٢- Training lectures
٣- Scientific research
٤- Seminars

Evaluation methods
١- Mid-term and final exams ٢- Oral and written exams ٣- Lab reports ٤- Graduation projects
C- Emotional and Social goals C١-Enhance students' ability to think and reason logically to solve manufacturing problems C٢-Actual application with existing capabilities C٣- Develop the student's ability to take advantage of the available means C٤- 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
١- Explanation and clarification ٢- Experiments in laboratories ٣- Lecture ٤- Self-education ٥- 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).

١- Activate the student's ability to deal with the Internet
٢- Develop the student's ability to deal with modern laboratory equipment
٣- Develop the student's ability to deal with multiple means to obtain information accurately
٤- Develop the student's ability to dialogue and discussion

١١. Program structure

Educational level	Course or course	Course or course	Credit hours per week

	code	name	theoretical	practical
First/first semester	١١٣	Analytical Chemistry	٣	٢
First/second semester	٢١٠	Organic chemistry I	٣	٢
Second/first semester	٢١١	Organic chemistry II	٣	٢
Second/second semester	٢٢٦	Organic chemistry III	٢	٢
Third/first semester	٣١١	Inorganic Pharmaceutical Chemistry	٢	٢
Third/second semester	٣٢٦	Organic Pharmaceutical Chemistry I	٣	٢
Fourth/ first semester	٤١٢	Organic Pharmaceutical Chemistry II	٣	٢
Fourth/ second semester	٤٢٧	Organic Pharmaceutical Chemistry III	٣	٢
Fifth/first semester	٥١١	Organic Pharmaceutical Chemistry IV	٢	--
Fifth/ second semester	٥٢١	Advanced pharmaceutical analysis	٣	٢

١٢. Planning for personal development

Benefiting from international universities in personal development - increasing knowledge - scientific discussions - cultural events

١٣. 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

١٤. 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)				
				A١	A٢	A٣	A٤	A٥	B١	B٢	B٣	B٤	B٥	C١	C٢	C٣	C٤	C٥	D١	D٢	D٣	D٤	D٥
First	١١٣	Analytical Chemistry	Essential	√					√					√					√				
	١٢١	organic chemistry I	Essential	√					√					√					√				
Second	٢١١	organic chemistry II	Essential		√					√					√					√			
	٢٢٦	organic chemistry III	Essential		√					√					√					√			
Third	٣١١	Inorganic Pharmaceutical Chemistry	Essential			√					√					√					√		
	٣٢٦	Organic Pharmaceutical Chemistry I	Essential			√					√					√					√		
Fourth	٤١٢	Organic Pharmaceutical Chemistry II	Essential				√					√					√					√	
	٤٢٧	Organic	Essential				√					√					√					√	

		Pharmaceutical Chemistry III																					
Fifth	٥١١	Organic Pharmaceutical Chemistry IV	Essential					√					√					√					√
	٥٢١	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/١١٣
Available forms of attendance	Official time
Season/year	First/ ٢٠٢٥-٢٠٢٦
Total study hours per week	٥
The date the description preparation	٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques

B - Skillful objectives

B١- Gaining skill in how to deal with chemical compounds
B٢- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١-Preparation of different chemical compounds and medicines
C٢-Learn about chemical compounds, drugs and their derivatives
C٣-Doing chemical analyses

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٣		Review of elementary concept important to analytical chemistry: strong and weak electrolytes, importance weight and concentration	Lectures	Quiz
٢	٣		Review of elementary concept important to analytical chemistry: strong and weak electrolytes, importance weight and concentration	Lectures	Quiz

٣	٣		The evaluation to gravimetric data, definition of term	Lectures	Quiz
٤	٣		The evaluation to gravimetric data, definition of terms.	Lectures	Quiz
٥	٣		An introduction to gravimetric analysis, statistical analysis of data, rejection of data, precipitation method	Lectures	Quiz
٦	٣		An introduction to gravimetric analysis, statistical analysis of data, rejection of data, precipitation methods	Lectures	Quiz
٧	١,٥		**Mid Examination**		
٨	٣		The scope of application of gravimetric analysis , inorganic and organic precipitating agents	Lectures	Quiz
٩	٣		The scope of application of gravimetric analysis , inorganic and organic precipitating agents	Lectures	Quiz
١٠	٣		An introduction to volumetric methods of analysis, volumetric calculations acid-base equilibria and PH calculations	Lectures	Quiz
١١	٣		An introduction to volumetric methods of analysis, volumetric calculations acid-base equilibria and PH calculations	Lectures	Quiz
١٢	٣		Theory of neutralization titrations of complex systems	Lectures	Quiz

١٣	٣		Theory of neutralization titrations of complex systems	Lectures	Quiz
١٤	٣		Calculation of PH in complex system	Lectures	Quiz
١٥	٣		Calculation of PH in complex system	Lectures	Quiz
١٦	٣		**Final Examination**		

Resources	
١. Required course books	١. Fundamentals of Analytical chemistry by Skoog and West, latest edition. ٢-Chemical Analysis in the Laboratory A Basic Guide, by I. Mueller-Harvey and RM Baker, latest edition.
٢. Main references (sources)	٢.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/٢١٠

Available forms of attendance	Official time
Season/year	First stage – second semester/٢٠٢٠-٢٠٢١
Total study hours per week	٥
Date of preparation of the description	١٣/٢/٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques

B - Skillful objectives

B ١- Gaining skill in preparing compounds and medicines
B٢- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١-Preparation of different chemical compounds and medicines
C٢-Learn about chemical compounds, drugs and their derivatives
C٣-Doing chemical analyses

D - General and rehabilitative skills (Other skills related to

employability and personal development)

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٣		Introduction	Lectures	Quiz
٢	٣		Methane	Lectures	Quiz
٣	٣		Alkanes	Lectures	Quiz
٤	٣		Cycloalkanes	Lectures	Quiz
٥	٣		Alkenes I	Lectures	Quiz
٦	٣		Alkenes II	Lectures	Quiz
٧	٣		Alkynes	Lectures	Quiz
٨	٣		Dienes	Lectures	Quiz
٩	٣		Stereochemistry I	Lectures	Quiz
١٠	٣		Stereochemistry II	Lectures	Quiz
١١	٣		Alcohols	Lectures	Quiz
١٢	٣		Alcohols I	Lectures	Quiz
١٣	٣		Ethers	Lectures	Quiz
١٤	٣		Alkyl halides I	Lectures	Quiz
١٥	٣		Alkyl halides II	Lectures	Quiz
١٦	٣		**Final examination**		

Resources

١. Required course books	Morrison and RN Boyd "Organic Chemistry" latest edition
٢. 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/٢١١
Available forms of attendance	Official time
Season/year	Second stage – first semester/ ٢٠٢٠-٢٠٢١
Total study hours per week	٥
Date of preparation of the description	١٣/٢/٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤- Know the methods used to prepare medicines

B - Skillful objectives

B ١- Gaining skill in preparing compounds and medicines
B٢- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١-Preparation of different chemical compounds and medicines
C٢-Learn about chemical compounds, drugs and their derivatives
C٣-Doing chemical analyses

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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			
١	٣	Synthesis	Benzene and aromatic compounds (Theory)	Lectures	Quiz
٢	٣	Reaction	Electrophilic Aromatic Substitution	Lectures	Quiz
٣	٣	Synthesis and reaction	Phenols I	Lectures	Quiz
٤	٣	Synthesis and reaction	Phenols II	Lectures	Quiz
٥	٣	Synthesis and reaction	Carboxylic acids I	Lectures	Quiz
٦	٣	Synthesis and reaction	carboxylic acids II	Lectures	Quiz
٧	٣	Synthesis and reaction	Functional Derivatives of Carboxylic acids I	Lectures	Quiz
٨	١,٥		**Mid Examination**		
٩	٣	Synthesis and reaction	Functional Derivatives of Carboxylic acids II	Lectures	Quiz
١٠	٣	Synthesis and reaction	Aldehydes I	Lectures	Quiz
١١	٣	Synthesis and reaction	Aldehydes II	Lectures	Quiz
١٢	٣	Synthesis and reaction	Ketones	Lectures	Quiz
١٣	٣	Synthesis and reaction	Amines I	Lectures	Quiz
١٤	٣	Synthesis and reaction	Amines II	Lectures	Quiz
١٥	٣		**Final Examination**		

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

٢. 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 /٢٢٦
Available forms of attendance	Official time
Season/year	Second stage – second semester /٢٠٢٠-٢٠٢١
Total study hours per week	٤
Date of preparation of the description	١٣/٢/٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤- Know the methods used to prepare medicines

B - Skillful objectives

B ١- Gaining skill in preparing compounds and medicines
B٢- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١-Preparation of different chemical compounds and medicines
C٢-Learn about chemical compounds, drugs and their derivatives
C٣-Doing chemical analyses

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٢		Heterocyclic system: Classes of heterocyclic systems; general structures; properties; Occurrence in	Lectures	Quiz

			nature and in medicinal products. I (Theory)		
٢	٢		Heterocyclic system: Classes of heterocyclic systems; general structures; properties; Occurrence in nature and in medicinal products. II	Lectures	Quiz
٣	٢	Synthesis and reaction	Five-membered ring heterocyclic compounds: Pyrrole; furan and thiophene. I	Lectures	Quiz
٤	٢	Synthesis and reaction	Five-membered ring heterocyclic compounds: Pyrrole; furan and thiophene. II	Lectures	Quiz
٥	٢	Synthesis and reaction	Source of pyrrole, furan and thiophene.	Lectures	Quiz
٦	٢	Synthesis and reaction	Source of pyrrole, furan and thiophene. II	Lectures	Quiz
٧	٢	Synthesis and reaction	Electrophilic substitution in Pyrrole, furan and thiophene: Reactivity and orientation. I	Lectures	Quiz
٨	١,٥		**Mid Examination**		
٩	٢	Synthesis and reaction	Electrophilic substitution in Pyrrole, furan and thiophene: Reactivity and orientation. II	Lectures	Quiz
١٠	٢	Synthesis and reaction	Six-membered ring heterocyclic compounds: Structure & reactions of pyridine. I	Lectures	Quiz
١١	٢	Synthesis and reaction	Six-membered ring heterocyclic compounds: Structure & reactions of pyridine. II	Lectures	Quiz
١٢	٢	Synthesis and reaction	Saturated five membered heterocyclic compounds	Lectures	Quiz
١٣	٢	Synthesis and reaction	Saturated five membered	Lectures	Quiz

			heterocyclic compounds II		
١٤	٢	Synthesis and reaction	Heterocyclic of five & six member rings with two & three heteroatoms	Lectures	Quiz
١٥	٣		**Final Examination**		

Resources	
١. Required course books	Morrison and RN Boyd "Organic Chemistry" latest edition
٢. 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/٣١١
Available forms of attendance	Official time
Season/year	Third stage – first semester/ ٢٠٢٠-٢٠٢١

Total study hours per week	٤
Date of preparation of the description	١٣/٢/٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤- Know the methods used to prepare medicines

B - Skillful objectives

B ١- Gaining skill in preparing compounds and medicines
B٢- Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١-Preparation of different chemical compounds and medicines
C٢-Learn about chemical compounds, drugs and their derivatives
C٣-Doing chemical analyses

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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**
١	٢	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
٢	٢	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
٣	٢	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
٤	٢	Definition and application in the medical and pharmaceutical field	Atomic and molecular structure/complexes	Lectures	Quiz
٥	٢	Definition and application in the medical and pharmaceutical field	Gastrointestinal agents	Lectures	Quiz
٦	٢	Definition and application in the medical and pharmaceutical field	Protective adsorbents	Lectures	Quiz
٧	٢	Definition and application in the medical and pharmaceutical field	Topical agents	Lectures	Quiz
٨	١,٥		**Mid Examination**		
٩	٢	Definition and application in the medical and pharmaceutical field	Dental agents	Lectures	Quiz

١٠	٢	Definition and application in the medical and pharmaceutical field	Dental agents	Lectures	Quiz
١١	٢	Definition and application in the medical and pharmaceutical field	Radiopharmaceutical preparations	Lectures	Quiz
١٢	٢	Definition and application in the medical and pharmaceutical field	Radiopharmaceutical preparations	Lectures	Quiz
١٣	٢	Definition and application in the medical and pharmaceutical field	Radio opaque and contrast media	Lectures	Quiz
١٤	٢	Definition and application in the medical and pharmaceutical field	Dental agents	Lectures	Quiz
١٥	٣		**Final Examination**		

Resources	
١. Required course books	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceutical Chemistry latest edition.
٢. 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/٣٢٦
Available forms of attendance	Official time
Season/year	Third stage – second semester/ ٢٠٢٠-٢٠٢١
Total study hours per week	٥
Date of preparation of the description	١٣/٢/٢٠٢٦

Course objectives

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

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

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

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

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

Course outcomes, teaching and learning methods, and evaluation

A- Cognitive objectives

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment

A٣- Learning using different scientific techniques
A٤-Know the factors that affect the stability, solubility and absorption of drugs
A٥- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A٦- Know the methods used to prepare medicines

B - Skillful objectives

B١-Gaining skill in preparing compounds and medicines
B٢-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١- Knowing how to design drugs and chemical compounds
C٢- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C٣- Learn laboratory analysis methods to know the composition of chemical compounds
C٤- Preparing different medicines

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٣	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P٤٥٠ monooxygenases in	Lectures	Quiz

			oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reactions		
٢	٣	Definition and application in the medical and pharmaceutical field	Drug distribution.	Lectures	Quiz
٣	٣	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P٤٥٠ monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reactions	Lectures	Quiz
٤	٣	Definition and application in the medical and pharmaceutical field	Acid –base properties	Lectures	Quiz
٥	٣	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P٤٥٠ monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reactions	Lectures	Quiz
٦	٣	Definition and application in the medical and pharmaceutical field	QSAR models.	Lectures	Quiz
٧	٣	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P٤٥٠	Lectures	Quiz

			monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reaction		
٨	٣	Definition and application in the medical and pharmaceutical field	Molecular modeling (computer aided drug design) and Drug receptor interaction: force involved	Lectures	Quiz
٩	٣	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P٤٥٠ monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reaction	Lectures	Quiz
١٠	٣	Definition and application in the medical and pharmaceutical field	Steric features of drugs.	Lectures	Quiz
١١	٣	Definition and application in the medical and pharmaceutical field	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P٤٥٠ monooxygenases in oxidative biotransformation; oxidative reactions; reductive reactions; hydrolytic reactions; Phase II reaction	Lectures	Quiz
١٢	٣	Definition and application in the medical and pharmaceutical field	Optical isomerism and biological activity and Calculated conformation	Lectures	Quiz
١٣	٣	Definition and application in the medical and	Three- dimensional quantitative structure activity relationships	Lectures	Quiz

		pharmaceutical field	and databases and isosterism		
١٤	٣	Definition and application in the medical and pharmaceutical field	Drug-receptor interaction and subsequent events	Lectures	Quiz
١٥	٣	Definition and application in the medical and pharmaceutical field	factors affecting drug metabolism.	Lectures	Quiz
١٦	٣		**Final Examination**		

Resources	
١. Required course books	Wilson and Griswold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, latest edition.
٢. 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

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

Course name/code	Organic pharmaceutical chemistry II/٤١٢
Available forms of attendance	Official time
Season/year	Fourth stage – first semester/ ٢٠٢٠-٢٠٢١
Total study hours per week	٥
Date of preparation of the description	٢٢/٠٨/٢٠٢١

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 H١ and H٢ 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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤-Know the factors that affect the stability, solubility and absorption of drugs
A٥- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A٦- Know the methods used to prepare medicines

B - Skillful objectives

B١-Gaining skill in preparing compounds and medicines
B٢-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment

٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١- Knowing how to design drugs and chemical compounds
C٢- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C٣- Learn laboratory analysis methods to know the composition of chemical compounds
C٤- Preparing different medicines

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٣		Cholinergic receptors and their subtypes. stereochemistry and structure activity relationships (SAR); products.	Lectures	Quiz
٢	٣		Cholinesterase inhibitors structure-activity relationships (SAR).Solanaceous alkaloid and analogues, synthetic cholinergic blocking agents, products	Lectures	Quiz
٣	٣		Ganglionic blocking agents (neuromuscular blocking agents.	Lectures	Quiz
٤	٣		Structure and Physicochemical Properties, Biosynthesis Storage, Release, Uptake, and Metabolism	Lectures	Quiz
٥	٣		α-Adrenergic Receptors β-Adrenergic Receptors Drugs Affecting Catecholamine Biosynthesis	Lectures	Quiz

٦	٣		Drugs Affecting Catecholamine Storage and Release, Direct-Acting Sympathomimetic endogenous catecholamines (SAR)	Lectures	Quiz
٧	٣		α-adrenergic receptor agonists. β-adrenergic receptor agonists, and Indirect-Acting Sympathomimetic. α - blockers	Lectures	Quiz
٨	١,٥		**Mid Examination**		
٩	٣		Nonselective α-blockers, Irreversible α-blockers, Selective α ١-blockers.βblockers, nonselective βblockers.	Lectures	Quiz
١٠	٣		Structure–Activity ٣ ١٠ Relationships Of NSAIDs, Mechanism of Action and NSAID Induced Side Effects, enzymatic structure of Cyclooxygenases, classes of COX inhibitor	Lectures	Quiz
١١	٣		SAR of morphine meperidine, type molecules, methadone, type molecules, N-methyl benzomorphans, antagonist type analgesics in benzomorphans	Lectures	Quiz
١٢	٣		Endogenous opioids, structure-activity relationships (SAR), Products and. Antitussive agents..	Lectures	Quiz
١٣	٣		CNS depressant; Benzodiazepines and related compounds. Analeptics, central sympathomimetic agents, methyl xanthine. Barbiturates. Mechanism of action of Antipsychotics.	Lectures	Quiz
١٤	٣		Anticonvulsants, clinically important anticonvulsants. Biological Activities of Mineralocorticoids and Glucocorticoids, Steroids	Lectures	Quiz

			Sex Hormones, progestin's and androgens		
١٥	٣		**Final examination**		

Resources	
١. 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.
٢. 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/٤٢٧
Available forms of attendance	Official time
Season/year	Fourth stage – second semester/ ٢٠٢٠-٢٠٢١
Total study hours per week	٥
Date of preparation of the description	١٣/٠٢/٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤-Know the factors that affect the stability, solubility and absorption of drugs
A٥- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A٦- Know the methods used to prepare medicines

B - Skillful objectives

B١-Gaining skill in preparing compounds and medicines
B٢-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١- Knowing how to design drugs and chemical compounds
C٢- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C٣- Learn laboratory analysis methods to know the composition of chemical compounds
C٤- Preparing different medicines

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٣	Definition and application in the medical and pharmaceutical field	β-lactam antibiotics. The penicillin's, Chemical Classification, β-lactam inhibitors.	Lectures	Quiz
٢	٣	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
٣	٣	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
٤	٣	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
٥	٣	Definition and application in the medical and pharmaceutical field	Lincomycines & polypeptides. Chemical classification, SAR Mechanism of action, Microbial resistance and commercial production.	Lectures	Quiz
٦	٣	Definition and application in the medical and pharmaceutical field	sulfonamides; products; sulfones. SAR, Mechanism of action, Microbial resistance and commercial production	Lectures	Quiz
٧	٣	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

٨	١,٥		**Mid Examination**		
٩	٣	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
١٠	٣	Definition and application in the medical and pharmaceutical field	Anti-neoplastic agents; alkylating agents; Introduction, drug classes, Anti metabolites Introduction, drug classes.	Lectures	Quiz
١١	٣	Definition and application in the medical and pharmaceutical field	Antibiotics; Plant products; miscellaneous compounds	Lectures	Quiz
١٢	٣	Definition and application in the medical and pharmaceutical field	Plant products: Vinca Alkaloids, Hormones and their antagonist	Lectures	Quiz
١٣	٣	Definition and application in the medical and pharmaceutical field	Future Anti neoplastic agents	Lectures	Quiz
١٤	٣	Definition and application in the medical and pharmaceutical field	Monoclonal ; antibody Gene therapy of cancer	Lectures	Quiz
١٥	٣		**Final Examination**		

Resources	
١. 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.
٢. 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 / ٥١١
Available forms of attendance	Official time
Season/year	Fifth stage – first semester/٢٠٢٠-٢٠٢١
Total study hours per week	٢
Date of preparation of the description	١٣/٢/٢٠٢٦
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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤-Know the factors that affect the stability, solubility and absorption of drugs
A٥- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A٦- Know the methods used to prepare medicines

B - Skillful objectives

B١-Gaining skill in preparing compounds and medicines
B٢-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١- Knowing how to design drugs and chemical compounds
C٢- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C٣- Learn laboratory analysis methods to know the composition of chemical compounds
C٤- Preparing different medicines

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٢		Introduction in prodrug	Lectures	Quiz
٢	٢		Functional Groups in Prodrugs	Lectures	Quiz
٣	٢		Amines	Lectures	Quiz
٤	٢		BIOPRECURSOR PRODRUGS	Lectures	Quiz
٥	٢		CHEMICAL DELIVERY SYSTEMS	Lectures	Quiz
٦	٢		Polymeric prodrug	Lectures	Quiz
٧	٢		Design and synthesis of polymeric prodrug	Lectures	Quiz

٨	١,٥		**Mid Examination**		
٩	٢		Combinatorial Chemistry	Lectures	Quiz
١٠	٢		Peptides and Peptoids	Lectures	Quiz
١١	٢		SUPPORTS AND LINKERS	Lectures	Quiz
١٢	٢		Soluble polymers	Lectures	Quiz
١٣	٢		Detection, purification, analysis	Lectures	Quiz
١٤	٢		Mass spectrometry	Lectures	Quiz
١٥	٢		"Binary" approach	Lectures	Quiz
١٦	٢		HIGH-THROUGHPUT SCREENING	Lectures	Quiz

Resources	
١. Required course books	١.Wilson and Gisvold's textbook of organic medicinal and pharmaceutical chemistry: Delgado, JN, ١ remers WA, (Eds);١٠thed, ٢٠٠٤
٢. 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 / ٥٢١
Available forms of attendance	Official time
Season/year	Fifth stage – second semester /٢٠٢٠-٢٠٢١
Total study hours per week	٥
Date of preparation of the description	١٣/٢/٢٠٢٦

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

A١- How to deal with chemical compounds
A٢- How to deal with scientific equipment
A٣- Learning using different scientific techniques
A٤-Know the factors that affect the stability, solubility and absorption of drugs
A٥- Knowledge of the mechanism of action of the drug and the relationship of the chemical composition to it
A٦- Know the methods used to prepare medicines

B - Skillful objectives

B١-Gaining skill in preparing compounds and medicines
B٢-Acquisition of skill in the use of different methods in the manufacture and preparation of medicines
B٣- Gaining skill in how to deal with chemical compounds
B٤- Skill in writing scientific reports

Teaching and learning methods

١- Lectures
٢- Perform practical experiments
٣- Reading textbooks
٤- Conducting scientific discussions

Evaluation methods

١- Oral and written exams
٢- Practical exams after each experiment
٣- Mid-term exam (theory)
٤- Final exam (theory)

C- Emotional goals

C١- Knowing how to design drugs and chemical compounds
C٢- Knowledge of methods of synthesis of drugs and chemical compounds in the laboratory
C٣- Learn laboratory analysis methods to know the composition of chemical compounds
C٤- Preparing different medicines

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

D١-Doing scientific experiments
D٢-Acquiring the skill of preparing medicines
D٣-Giving students confidence by presenting scientific research
D٤-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
١	٣		UV / visible spectroscopy; Sample handling and instrumentation; Characteristic absorption of organic compounds;	Lectures	Quiz
٢	٣		Rules for calculation of lambda max and application; Application of UV/visible; spectroscopy; Conjugated system.	Lectures	Quiz
٣	٣		Infrared spectroscopy (theory and H-bonding effect)	Lectures	Quiz
٤	٣		Sampling techniques and interpretation of spectra; Characteristic group frequencies of organic compound	Lectures	Quiz
٥	٣		Application of IR spectroscopy; Problems and solutions.	Lectures	Quiz
٦	٣		Introduction, the nature of NMR absorption, chemical shifts and factors affecting them.	Lectures	Quiz
٧	٣		Introduction, the nature of NMR absorption, chemical	Lectures	Quiz

			shifts and factors affecting them.		
٨	٣		Introduction, the nature of NMR absorption, chemical shifts and factors affecting them. Information obtained from	Lectures	Quiz
٩	٣		Information obtained from NMR spectra, more complex spin-spin splitting patterns, application of H١-NMR spectroscopy	Lectures	Quiz
١٠	٣		Information obtained from NMR spectra, more complex spin-spin splitting patterns, application of H١-NMR spectroscopy	Lectures	Quiz
١١	٣		C١٣-NMR spectroscopy: introduction and characteristics, DEPT C١٣-NMR spectroscopy.	Lectures	Quiz
١٢	٣		Introduction and interpreting mass spectrum	Lectures	Quiz
١٣	٣		Interpreting Mass spectra fragmentation patterns, Mass behavior of some common functional groups.	Lectures	Quiz
١٤	٣		Interpreting Mass spectra fragmentation patterns, Mass behavior of some common functional groups.	Lectures	Quiz
١٥	٣		Applications of mass spectroscopy for pharmaceutical analysis.	Lectures	Quiz
١٦	٣		**Final examination**		

Resources

١. Required course books	١.Spectrometric Identification of Organic Compounds by Silverstein, Basler and Morrill, latest edition. Organic Chemistry by McMurry; latest edition.
٢. 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

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:

١٠/٠١/٢٠٢٦

File Completion Date: ٢٠/٠١/٢٠٢٦

Signature:

Head of Department Name:

Assist. Prof. Dr. Shaimaa Saleh khudhur

Date: ٢٠/٠١/٢٠٢٦

Signature:

Scientific Associate Name:

Assist. Prof. *Dr.Omar Hussein Ahmed*

Date: ٢٠/٠١/٢٠٢٦

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: / /٢٠٢٦

Signature:

Approval of the Dean
Assist.Prof.Dr.Omar Saleh

١. Program Vision
١- Excellence in the field of clinical pharmacy and comprehensive scientific pharmaceutical practice by providing specialized educational and health services to the community. ٢- Improving the therapeutic services provided to the community by keeping pace with the latest developments and adhering to quality standards and continuous development.
٢. 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.
٣. Program Objectives
١- 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. ٢- Preparing pharmacists who are able to communicate and deal with the rest of the medical team to provide appropriate health care to the patient
٤. Program Accreditation
None currently available
٥. Other external influences
None currently available

٦ Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	٣	٥	٢,٧٪	**Basic Course**
College Requirements	٦١	١٨٠	٩٧,٣٪	**Basic Course**
Department Requirements	---	---	---	**Basic Course**
Summer Training	---	---	---	**Pass**
Other	---	---	---	---

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

٧. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
٣rd / ٢nd semester	٣٢١١	Pharmacy ethics	١	----
٤th / ١st semester	٤١٣	Clinical Pharmacy I	٢	٢
٤th / ٢nd semester	٤٢٨	Clinical Pharmacy II	٢	٢
	٢١٥	Communication Skills	٢	----
٥th / ١st semester	٥١٣	Applied Therapeutics I	٣	----
٥th / ٢nd semester	٥٢١١	Hospital Training	----	٤
	٥٢٧	Pharmacoeconomics	٢	----
	٥٢٨	Applied Therapeutics II	٢	----
	٥٢٩	Therapeutic Drug Monitoring	٢	٢

٨. Expected learning outcomes of the program

Knowledge

A١. Introduce the student to human diseases and their causes

A٢. Introduce the student to how to diagnose these diseases clinically to reach the final diagnosis

A٣. Introduce the student to the most important techniques used in diagnosis

A٤. Introduce the student to the methods of treatment for each medical condition that are followed globally

A٥. Introduce the student to the optimal use of medicines according to the disease condition

Skills

B١. Acquisition of clinical applied skills for dealing with patients in hospitals and community pharmacies

B٢. Acquire the skills to prescribe treatment for each disease condition

B٣. Acquire the skills of detecting defects in drug doses and identifying drug-drug interactions

Thinking Skills

C١. Develop the student's ability to discuss

C٢. Actual application with existing capabilities

C٣. Develop the student's ability to take advantage of the available means

C٤. Develop the student's ability to perform daily duties

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

D١. Activating the student's ability to deal with books and websites specialized in drug information

D٢. Develop the student's ability to deal with laboratory equipment

D٣. Develop the student's ability to dialogue and discussion

٩. Teaching and Learning Strategies

- Theoretical and practical lectures

- Frequent visits to teaching hospitals

- Daily assignments and discussions

١٠. Evaluation methods

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

١١. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	__	١	__	__	١	_
Assistance Professor	٢	٢	---	---	٤	١
Lecturer	١	---	---	---	١	_

Assistant Lecturer	٢	٢	---	---	٤	__

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.

١٢. Acceptance Criterion

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

١٣. 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

١٤. 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		
				A١	A٢	A٣	A٤	A٥	B١	B٢	B٣	C١	C٢	C٣	C٤	D١	D٢	D٣
٣rd / ٢nd semester	٣٢١١	Pharmacy ethics	Core						√			√	√	√	√	√		√
٤th / ١st semester	٤١٣	Clinical Pharmacy I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
٤th / ٢nd semester	٤٢٨	Clinical Pharmacy II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٢١٥	Communication Skills	Core						√			√	√	√	√	√		√
٥th / ١st semester	٥١٣	Applied Therapeutics I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
٥th / ٢nd semester	٥٢١١	Hospital Training	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٥٢٧	Pharmaco-economics	Core						√			√	√	√	√	√		√
	٥٢٨	Applied Therapeutics II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	٥٢٩	Therapeutic Drug Monitoring	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Course Description Form

1. Course Name:
Pharmacy Ethics
2. Course Code:
٣٢١١
3. Semester / Year:
٢nd semester / ٣rd year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom
٦. Number of Credit Hours (Total) / Number of Units (Total)
One Credit theory hour/week – One unit
٧. 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
١+ ٢	٢	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
٣	١		Code of Ethics for Pharmacists.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٤ + ٥ + ٦	٣		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
٧ + ٨	٢		Interprofessional Relations.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٩	١		Making ethical decisions.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٠	١		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
١١	١		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
١٢	١		Preventing misuse of medicines.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٣ + ١٤ +١٥	٣		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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Exam: ٣٠ Marks

Final-Term Exam: ٧٠ 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:
٤١٣
3. Semester / Year:
١st semester / ٤th year
4. Description Preparation Date:
٠١/٠٣/٢٠٢٤
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week and Two Credit practical hours/week – Three units
٧. Course administrator's name (mention all, if more than one name)
Name: 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
١	١	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
٢	٣		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

٣	٤		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
٤	٢		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
٥	٥		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
٦	٢		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
٧	٣		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
٨	١		Eye problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٩	١		ENT problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٠	١		Oral hygiene, mouth ulcer	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١١	١		Obesity and body weight control.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٢	١		Pain and musculoskeletal disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٣	١		Nicotine replacement therapy (NRT).	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٤	١		Dietary supplements	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

١٥	٢		**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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٢٠ Marks

Mid-Term Practical Exam: ٢٠ Marks

Final-Term Exam: ٦٠ 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:
٤٢٨
3. Semester / Year:
٢nd semester / ٤th year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom and practical lectures in specialized lab.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week and Two Credit practical hours/week – Three units
٧. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr.Mohanad Yasir Radeef , Assist.Prof.Dr. Zainab Mustafa Mahdi, Assist. Lect. Zainab AH. Ibraheem Email: Shaimaa.saleh@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
١	٢+٢	This course provides main points of how to treat common diseases in hospitals' wards	Gout and hyperuricemia	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٢	٢+٢		Rheumatoid arthritis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

٣	٢+٢		Osteoporosis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٤	٢+٢		Osteoarthritis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٥	٢+٢		Hypertension	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٦	٢+٢		Ischemic heart diseases	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٧	٢+٢		Heart failure	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٨	٢+٢		Asthma	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٩	٢+٢		COPD	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٠	٢+٢		Diabetes mellitus	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١١	٢+٢		Peptic ulcer disease	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٢	٢+٢		Tuberculosis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٣	٢+٢		Infective meningitis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٤	٢+٢		Urinary tract infection	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

١٥	٢+٢		**Anaemia**	**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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٢٠ Marks

Mid-Term Practical Exam: ٢٠ Marks

Final-Term Exam: ٦٠ 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:
٢١٥
3. Semester / Year:
٢nd semester / ٤th year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. 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
١	٢	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
٢	٢		Principles and Elements of Interpersonal Communication	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

٣	٢		Nonverbal type of communication.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٤	٢		Barriers to communication.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٥	٢		Listening and empathic responding during communication.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٦	٢		Assertiveness.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٧	٢		Interviewing and assessment.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٨	٢		Helping patients to manage therapeutic regimens.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٩	٢		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
١٠	٢		Medication safety and communication skills.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١١	٢		Strategies to meet specific needs.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٢	٢		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
١٣	٢		Communication skills and inter-professional collaboration.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٤	٢		Electronic communication in healthcare.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

١٥	٢		**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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٣٠ Marks

Final-Term Exam: ٧٠ 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:
٥١٣
3. Semester / Year:
١st semester / ٥th year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Three Credit theory hours/week– Three units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist.Prof. Dr. Zainab Mustafa Mahdi, Assist.Prof.Dr. Shaimaa Saleh khuder Email: Shaimaa.saleh@tu.edu.iq
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
١	٣	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
٢	٣		-Acute coronary syndrome. -Stroke	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٣	٣		-Arrhythmias -Viral hepatitis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam

٤	٣		-Thrombosis -Acute renal failure (ARF)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٥	٣		-Inflammatory bowel diseases	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٦	٣		-Chronic renal failure (CRF)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٧	٣		-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
٨	٣		-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
٩	٣		-Disorders of fluid and electrolytes	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٠	٣		-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
١١	٣		-Epilepsy and status epilepticus -Fungal infections	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٢	٣		-Parasitic infections -Viral diseases -Parenteral nutrition	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٣	٣		-Drug distribution systems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٤	٣		-Pharmacovigilance	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٥	٣		-Enteral nutrition -Evidence-based pharmacy practice and medicine.	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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٣٠ Marks

Final-Term Exam: ٧٠ 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:
٥٢٨
3. Semester / Year:
٢nd semester / ٥th year
4. Description Preparation Date:
٠١/٠٣/٢٠٢٤
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist.Prof.Dr.Shaimaa Saleh Khudhur Email:shaimaa.saleh@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
١	١	This course provides main points of how to treat common diseases in hospitals' wards	Adrenal gland disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٢	٢		Thyroid gland disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٣	١		Alzheimer disease	The blackboard PowerPoint slides Case study	Reports Homework Daily quizzes

				E-learning	Mid-Term exam Final-Term exam
٤	١		Generalized anxiety disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٥	٢		Depressive disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٦	٢		Schizophrenia	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٧	١		Insomnia	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٨	١		Contraception	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٩	١		Hormonal replacement therapy	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٠	١		Menstruation related disorders	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١١	٢		Cancer chemotherapy & treatment	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٢	٢		Leukemia	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٣	٢		Lymphoma	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٤	١		Breast cancer	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٥	١		Prostate cancer	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam

					Final-Term exam
١٦	١		**Adverse effects of chemotherapy**	**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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٣٠ Marks

Final-Term Exam: ٧٠ 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:
٥٢٧
3. Semester / Year:
٢nd semester / ٥th year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week– Two units
٧. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr.Mohanad Yasir Radeef \Assist.lec. Ibrahim yaor anwar Email: mohanadyasir@tu.edu.iq ....
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
١	٢	**The present course will give students the basic understanding of the tools needed to assess the costs and outcomes of**	**Principles of pharmacoeconimics.**	**The blackboard PowerPoint slides Case study E-learning**	**Reports Homework Daily quizzes Mid-Term exam Final-Term exam**

٢	٢	medications and pharmaceutical care services.	Incremental costs and marginal costs.	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٣	٢		Measuring patient outcomes for use in economic evaluations	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٤	٢		Time trade –off (TTO)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٥	٢		Cost-benefit analysis (CBA)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٦	٢		Willingness- to-pay method (WTP)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٧	٢		Cost analysis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٨	٢		Decision analysis (probability)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٩	٢		Cost –effectiveness analysis	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٠	٢		Cost- utility analysis	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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٣٠ Marks

Final-Term Exam: ٧٠ 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:
٥٢٩
3. Semester / Year:
٢nd semester / ٥th year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical and practical lectures in classroom.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit theory hours/week and Two Credit practical hours/week – Three units
٧. Course administrator's name (mention all, if more than one name)
Name: Assist.Prof. Dr. Shaimaa Saleh Khuder, Assist.lec. Zainab A ibrahim .....   Email:Shaimaa.saleh@tu.edu.iq .....
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
١	١	**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**

٢	٢		Review of basic pharmacokinetic (PK)-	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٣	١		Review of basic pharmacodynamic (PD)	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٤	٣		Clinical PK equations and calculations	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
٥ +٦	٦		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
٧	٤		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
٨	٤		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
٩ + ١٠	٦		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
١١	٢		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
١٢	٤		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
١٣	٢		Review	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٤	٢		Problems	The blackboard PowerPoint slides Case study E-learning	Reports Homework Daily quizzes Mid-Term exam Final-Term exam
١٥	٢		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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ٢٠ Marks

Mid-Term Practical Exam: ٢٠ Marks

Final-Term Exam: ٦٠ 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:
٥٢١١
3. Semester / Year:
٢nd semester / ٥th year
4. Description Preparation Date:
١٠/٠١/٢٠٢٦
٥. Available Attendance Forms:
Theoretical and practical lectures in Teaching hospital's wards.
٦. Number of Credit Hours (Total) / Number of Units (Total)
Two Credit practical hours/week – Two units
٧. Course administrator's name (mention all, if more than one name)
Name: Hospital training committee Email: shaimaa.saleh@tu.edu.iq .....
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
١-٤	١٦	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
٥-٨	١٦		Surgical ward	Case study PowerPoint slides E-learning	Reports Homework Daily quizzes

					Mid-Term exam **Final-Term exam**
٩-١٢	١٦		**Gynaecology and obstetrics ward**	**Case study** **PowerPoint slides** **E-learning**	**Reports** **Homework** **Daily quizzes** **Mid-Term exam** **Final-Term exam**
١٢-١٥	١٢		**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 ١٠٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .....etc

Mid-Term Theory Exam: ١٥ Marks

Mid-Term Practical Exam: ١٥ Marks

Final-Term Exam: ٧٠ 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	