Academic program Description form

(2026_2025)

University Name : National University of Science and Technology

College Name : pharmacy

Name of academic or professional program: Bachelors

Name of final degree: Bachelor of pharmacy

Study system : courses

Description preparation date : 2025/2026

File completion date :

Date : 2025/11/18 signature :

Dean of college name : Usama Kadem Radi

Date: 2025/11/18 signature:

Name of the scientific Assistant : Dr Tariq Mohamed

File checked by

Quality Assurance and university performance Division

Name of director of Quality Assurance and university performance Division :
Mohammed Hashim Mohammed

Date : 2025/11/18

Signature :

Approval of the Dean

Program vision
The college seeks to remain a pioneer and distinguished in preparing distinguished pharmacists to work in health institutions and develop health care and scientific research.

Program message
The College of Pharmacy is an educational and research institution for the public good whose goal is human health. The college is keen to provide high-quality training using the latest methods and in multiple disciplines to prepare pharmacists and pharmaceutical scientists who possess high scientific and professional capabilities and skills. They will be leaders in their specialties, capable of spreading health culture, providing the best health care in society, and developing scientific research for the welfare of society and human health.

Program objectives
Providing the highest levels of knowledge, skills and encouragement to college students using the latest educational methods. - Preparing qualified pharmacists and pharmaceutical scientists to work in health institutions, community pharmacies, pharmaceutical laboratories, pathological analysis laboratories, pharmaceutical factories, in addition to private companies that market medicines. - Developing the role of the pharmacist as a vital and effective part of the healthcare team. - Improving the quality of education, scientific research and pharmaceutical practice to achieve the best international standards. We strive for the college to be distinguished among colleges in the region and the world. - Effective contribution to spreading health awareness and culture in society.

Program accreditation
National Accreditation / National Council for the Accreditation of Colleges of Pharmacy is underway

Other external influences
Practical part - desk research - classroom activities - volunteer activities - other

Program structure				
comments	percentage	Study unit	Number of courses	Program structure
essential	5.5	10	8	Institutional requirements
essential	19.9	160	55	College requirements
/	/	/	/	Department requirements
		Complete	-	Summer training

Program description				
Credit hours		Course name	Course code	Year/Level
practical	theoretical			
1	2	Human anatomy and histology		First / First Semester
1	3	Analytical Chemistry		First / First Semester
0	2	Democracy and humen right		First / First Semester
0	3	BioStatistics		First / First Semester
0	1	Medical terms		First / First Semester
1	2	Physiology I		First/Second Semester
0	2	Arabic language		First/Second Semester
1	3	Organic Chemistry 1		First/Second Semester
1	2	Pharmaceutical Calculation		First/Second Semester
1	0	Computer seience		First/Second Semester
2	3	Microbiology 1		Second/First Semester
2	3	Organic Chemistry 2		Second/First Semester
2	3	Physiology 1		Second/First Semester
0	2	Baath regime crime in iraq		Second/First Semester
2	3	Physical Pharmacy 1		Second/First Semester

2	2	Microbiology 2		Second / Second Semester
2	3	Physiology 2		Second / Second Semester
2	3	Physical Pharmacy 2		Second / Second Semester
2	2	Organic Chemistry 3		Second / Second Semester
0	2	Arabic		Second / Second Semester
1	0	Calculators		Second / Second Semester
2	2	Inorganic Pharmaceutical Chemistry 1		Third / First Semester
2	3	Pharmaceutical Technologies 1		Third/first Semester
2	2	Pharmacognesy II		Third/first Semester
2	3	Pathphysiology		Third/first Semester
2	3	Biochemistry 1		Third/first Semester
0	3	Organic Pharmaceutical Chemistry 1		Third/Second Semester
2	3	Pharmaceutical and cosmetics preparations		Third/Second Semester
0	3	Pharmacology 1		Third/Second Semester
1	2	Pharmacognesy III		Third/Second Semester
1	3	Biochemistry 2		Third/Second Semester
0	1	Pharmacy Ethics		Third/Second Semester

2	3	Pharmacology 2		Fourth / First Semester
0	2	Puplic health		Fourth / First Semester
2	2	Biopharmaceutics		Fourth / First Semester
2	2	Clinical Pharmacy 1		Fourth / First Semester
2	3	Organic Pharmaceutical Chemistry 2		Fourth / First Semester
2	3	Industrial Pharmacy 1		Fourth / Second Semester
0	2	Pharmacology 3		Fourth / Second Semester
2	2	General Toxicology		Fourth / Second Semester
2	2	Clinical Pharmacy 2		Fourth / Second Semester
2	3	Organic Pharmaceutical Chemistry 3		Fourth / Second Semester
0	2	communication skills		Fourth / Second Semester
0	3	Applied Therapies 1		Fifth / First Semester
2	3	Clinical Chemistry		Fifth / First Semester
0	2	Organic Pharmaceutical Chemistry 4		Fifth / First Semester
2	3	Industrial Pharmacy 2		Fifth / First Semester
4	0	Laboratory training		Fifth / First Semester
2	2	Clinical toxicology		Fifth / First Semester

0	1	Graduation project		Fifth / First Semester
0	2	Drug delivery system design		Fifth / Second Semester
1	2	Therapeutics drug monitor		Fifth / Second Semester
0	2	pharmacoeconomics		Fifth / Second Semester
0	2	applied Therapeutic		Fifth / Second Semester
2	3	Advanced pharmaceutical analysis		Fifth / Second Semester
0	1	Pharmaceutical Biotechnology		Fifth / Second Semester
4	0	Hospital training		Fifth / Second Semester

	Expected learning outcomes of the program.	
	knowledge	
A1	Understanding the normal functions of the body and the changes in these functions associated with disease	Understanding the human body, its organs, and their functions in health and disease from anatomical, functional, biochemical, and clinical perspectives.
A2	Identifying types of drug doses and recognizing the chemical and physical properties of substances and side effects.	How to determine the appropriate dosage form for a drug, methods of manufacturing it, and evaluating its efficacy, therapeutic effect, adverse effects, stability, and calculating the correct dosage.

A3	Understanding the concepts of human rights and citizenship	Pharmacists should be aware of their duties and rights as good citizens in society.
A4	Introduction to the principles of medical statistics and medical physics	Understanding the fundamentals of evaluating the results of clinical studies and economic studies of pharmaceutical preparations
	Skills	
B1	Dealing with the laboratory environment	Students will be able to safely handle laboratory equipment and materials in accordance with laboratory safety and security standards.
B2	Self-education	Students are able to search for and utilize information.
B3	Providing the highest level of healthcare and communicating with patients and medical staff	Pharmacists are able to provide scientific and pharmaceutical advice to individuals in healthcare institutions and the community, monitor treatment, and interact constructively with patients and medical staff.

B4	Providing safe and effective treatment	Pharmacists are able to diagnose treatment errors in terms of the suitability of the treatment for the medical condition and the patient, and the absence of drug interactions or interference with the patient's general health.
	values	
C1	Dealing with patients in accordance with the ethics of the pharmacy profession	Pharmacists maintain patient privacy and make the safety and well-being of patients and society the primary goal of the pharmacy profession.
C2	Working as a team with fellow graduates within the healthcare team in the workplace	The student and pharmacist interact with their classmates in a spirit of teamwork.
C3	Commitment to honesty and security in providing information	Pharmacists are committed to honesty and safety in providing information to patients and colleagues, and strive to promote mutual trust between pharmacists and patients.
C4	Commitment to continuous professional development and improvement of pharmaceutical skills	Pharmacists are committed to continuing professional development in order to keep pace with all changes in medical and pharmaceutical practice aimed at providing effective and safe pharmaceutical care.

	Teaching and learning strategies
•	• Presentation and delivery • Interactive discussions • brainstorming • small groups • Research and induction • mirrored rows • Discussion sessions • Field visits to institutions and entities related to the pharmacist's work • Volunteer work, seminars, workshops and exhibitions

Evaluation methods
• Individual and group assignments and reports • Daily and weekly exams • Practical skills assessment • Midterm and final exams • Graduation projects

Faculty					
Faculty members					
Faculty preparation		Special requirements/skills, if any	Specialization		Academic rank
lecturer	employee		private	general	
5	37				PhDs 15 Master's 27

Professional development
Orientation of new faculty members
• Teaching Methods Course • Teaching Competency Course
Professional development for faculty members
Workshops, seminars and courses in: • The field of pharmaceutical education mechanisms and strategies

- Foundations of setting exam questions
- Interactive teaching strategies
- Foundations and mechanisms for updating and developing curricula

Acceptance criteria
Academic GPA and physical health as approved by the Ministry of Higher Education and Scientific Research.

The most important sources of information about the program
The website of the Ministry of Higher Education and Scientific Research. University of Baghdad website. The website of the College of Pharmacy, University of Baghdad, in Arabic and English. Boards installed in the college corridors. Official documentation.

Program Development Plan
Adopting the clinical skills test for the largest possible number of appropriate lessons for all levels, including interactive teaching strategies, increasing the use of technological techniques in education, encouraging scientific research and induction, developing scientific skills, encouraging cooperation between scientific disciplines, and professional development for the teaching staff.

Curriculum Skills Map																			
Please tick the boxes corresponding to the individual learning outcomes of the programme being assessed.																			
Required learning outcomes of the program																			
General skills andTransferable qualification (Other skills related to employability and personal development)				**Emotional and value goals**				**Program skill objectives**				**Cognitive objectives**				**essential Or** OPTIONAL	**Course name**	**Course code**	**Year/Level**
D4	**D3**	**D2**	**D1**	**A4**	**Part 3**	**Part 2**	**Part 1**	**B4**	**B3**	**B2**	**B1**	**A4**	**A3**	**A2**	**A1**				
✓							✓				✓				✓		Humen anatomy and histology		First stage / first and second semester
	✓			✓	✓					✓	✓		✓	✓			Analytical Chemistry		
	✓			✓				✓			✓			✓			Medical physics		
✓					✓					✓		✓					BioStatistics		

✓				✓							✓			✓			Medical terms	
✓					✓					✓		✓					Democracy and humen right	
✓				✓							✓				✓		physiology	
✓					✓						✓	✓					Computer sciences	
	✓			✓							✓			✓			Organic Chemistry 1	
✓							✓		✓				✓				Arabics language	
	✓		✓	✓				✓						✓			Pharmaceuti cacalculation s	

	✓			✓							✓		✓	✓			Medical Microbiology 1		**Second stage / first and second semester**
✓						✓				✓					✓		Organic Chemistry 2		
✓						✓				✓			✓				Physiology 1		
	✓			✓							✓			✓			democracy		
✓						✓				✓							Physical Pharmacy 1		
			✓	✓		✓				✓		✓					Baath regims crimes in iraq		
✓						✓					✓				✓		Microbiology 2		
			✓	✓							✓				✓		Physiology 2		
			✓	✓							✓			✓			Physical Pharmacy 2		

✓						✓				✓							arabic language		
✓						✓				✓							Pharmacognesy I		
	✓				✓						✓		✓	✓			Inorganic Pharmaceutical Chemistry 1		**Third stage / first and second semester**
	✓		✓	✓				✓						✓			Pharmaceutical Technologies 1		
			✓	✓							✓			✓			Pharmacognesy II		
✓						✓				✓					✓		Pathophysiology		
	✓				✓					✓			✓				Biochemistry 1		

													✓			Organic Pharmaceutical Chemistry 1		
			✓	✓						✓				✓			Pharmaceutical and cosmentic preprations	
			✓	✓			✓							✓			Pharmacology 1	
	✓				✓						✓		✓				Biochemistry 2	
✓					✓				✓								Pharmacy Ethics	
			✓	✓					✓						✓		Pharmacology 2	**Fourth stage / first and second semester**
			✓				✓		✓						✓		Community health	
			✓	✓						✓			✓				Biopharmacy	

✓				✓				✓						✓			Clinical Pharmacy 1	
	✓										✓		✓	✓			Organic Pharmaceutical Chemistry 2	
	✓			✓							✓			✓			Industrial Pharmacy 1	
			✓	✓					✓						✓		Pharmacology 3	
			✓	✓				✓						✓			General toxicology	
				✓				✓						✓			Clinical Pharmacy 2	
																	Organic Pharmaceutical Chemistry 3	
				✓	✓					✓	✓		✓	✓			communication skills	

✓							✓				✓				✓		Therapies 1		**Fifth stage / first and second semester**
	✓			✓	✓					✓	✓		✓	✓			Clinical Chemistry		
	✓			✓				✓			✓			✓			Organic Pharmaceutical Chemistry 4		
✓							✓				✓				✓		Industrial Pharmacy 2		
	✓			✓	✓					✓	✓		✓	✓			Laboratory training		
	✓			✓				✓			✓			✓			Clinical toxicology		
✓					✓					✓		✓					graduations project		
✓				✓							✓			✓			Drug delivery system design		

	✓			✓				✓			✓			✓			Pharmacological control		
✓							✓				✓				✓		pharmacoeconomic		
	✓			✓	✓					✓	✓		✓	✓			Therapeutic		
	✓			✓				✓			✓			✓			Advanced pharmaceutical analysis		
✓					✓					✓		✓					Pharmaceutical Biotechnology		
✓				✓							✓			✓			Hospital training		

Description of first-stage courses

Course Description Form

1. Course Name:
Human anatomy and histology
2. Course Code:
3. Semester / Year:
First, first
4. Description Preparation Date:
5. Available Attendance Forms:
Person
6. Number of Credit Hours (Total) / Number of Units (Total)
3
7. Course administrator's name (mention all, if more than one name)
Name: Msc. Hadeer Ali Lghewei Email: Hadeer.A.lghewei@nust.edu.iq
8. Course Objectives

Course Objectives	• **Presentation and delivery** • **Brainstorming** • **Interactive discussions**

9. Teaching and Learning Strategies

Strategy	The course aims to provide students with basic and comprehensive knowledg in anatomy and histology (identifying anatomical positions, understanding th structural organization of living organisms, learning about the four types of tissues, acquiring the ability to identify different cells and tissues in the body, and studying the anatomy and function of different body systems).

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Familiarity with wha taught in anatomy ar histology	Introduction to Human Anatomy and Histology	Lectures, discussio and reports	Theoretical exa and classro activities
2	3	Identify the main tiss types and describe th characteristics and function of each type	. The four types of tissue (epithelial, connective, muscular, nervous)	Lectures, discussio and reports	Theoretical exa and classro activities
3	3	Explains the structur and function of bone distinguishes betwee types of joints and th movement, and links bone shape to functi	Musculoskeletal syst (bones and joints)	Lectures, discussio and reports	Theoretical exa and classro activities
4	3	Identifies the components of the cardiovascular syste accurately describes the structure of the heart and blood vess and explains the relationship betwee tissue structure and function.	Cardiovascular syst (anatomy of cardiovascular system tissues)	Lectures, discussio and reports	Theoretical exa and classro activities

5	3	Explains the structur and function of the lymphatic system, identifies the components of blood and their functions, a links blood to immur and circulatory functions.	Lymphatic and bl systems (bl components)	Lectures, discussic and reports	Theoretical exa and classrc activities
6	3	Identifies the organs the upper digestive system. Describes their anatomical and functional structure. Explains the tissue changes along the digestive tract.	Upper digestive syst (mouth, phary oesophagus, stomach)	Lectures, discussic and reports	Theoretical exa and classrc activities
7	3	Describes the anaton and function of the lower part of the digestive system Distinguishes the tiss structure of accesson organs and relates tissue structure to digestion and absorption	Lower digestive system and accessory organs (small and large intestin rectum, anus, liver, pancreas, gallbladder)	Lectures, discussic and reports	Theoretical exa and classrc activities
8	3	Identifies the components of the central and peripher nervous systems, describes the basic functions of each par and explains the general organisation the nervous system Identifies the differer types of nerve cellsDescribes the function of microcyte Explains the structur	Nervous system, anato (central nervous syst (brain and spinal co peripheral nervous syst (nerves and nerve gangl	Lectures, discussic and reports	Theoretical exa and classrc activities

		of white and grey matter			
9	3	Describes the structu of the respiratory system, identifies the tissue differences between the parts of the system, and explains how gas exchange occurs	Respiratory syst (anatomy and tissue of nose, trachea, lungs)	Lectures, discussio and reports	Theoretical exa and classro activities
10	3	Explains the anatom structure of the kidn and its tubular unit Identify the histologi differences along the urinary system Relat the structure to the function of blood purification and urin production	Urinary system (kidn ureters, bladder)	Lectures, discussio and reports	Theoretical exa and classro activities
11	3	Distinguishes betwe thick and thin skin, describes the layers skin and their functions, and identi the structures associated with the skin.	Skin (skin layers, associa tissues (hair, sebace glands, sweat glands))	Lectures, discussio and reports	Theoretical exa and classro activities
12	3	Identifies the locati of the body's glar explains the structur each gland and hormonal functio and links anatomy hormonal disorders.	Endocrine anato (pituitary gland, thyr gland, parathyroid glar adrenal glands, pancreas	Lectures, discussio and reports	Theoretical exa and classro activities
13	3	Distinguishes the tiss structure of each glar and explains how hormones are secret based on tissue composition.	Endocrine tiss (microscopic structure endocrine glands)	Lectures, discussio and reports	Theoretical exa and classro activities

		Compares glands terms of function a structure.			
14	3	Identifies components of reproductive syst explains the anatom and functional struct of each part, a describes the tis differences between reproductive organs.	Reproductive system (m reproductive system)	Lectures, discussio and reports	Theoretical exa and classro activities
15	3	Identifies the components of the reproductive system explains the anatomi and functional structure of each par and describes the tis differences between reproductive organs.	Reproductive syst (female reproduct system)	Lectures, discussio and reports	Theoretical exa and classro activities

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Anatomy and Physiology for Healthcare by Paul Marshall; Beverly Gallacher; Jim Jolly; Shupikai Rinomhota

Main references (sources)	Atlas of Human Anatomy by Frank H. Nette.
Recommended books and references (scientific journals, reports…)	Basic Histology: text and Atlas, 11th ed. BY L Carlos, Uchoa Junqueria
Electronic References, Websites	Wheaters functional histology: a text and col atlas 6th ed. BY Yung, Barbara

13. Course name	
Analytical Chemistry	
14. codeThe decision	
15. the chapter /	
First stage / First semester	
16. Date preparedDescription	
17.AAvailable attendance forms	
My presence	
18.Number of study hours (total)/	
36 Number of units (total) 3	
19. Course Instructor Name(If more than one name is mentioned)	
Name: Elaf Haider Lutfi:elafhaiderlotfi@gmail.com	
20. Course objectives	
Objectives:supply students With background theory healthy in Principles Chemical that It is considered necessary To practice Analysis The chemist.as Enable students from to understand importance The ruling on accuracy Data empiricism and techniques Analysis Quantitative as Explain that Theory mostly what Be as a guide useful To solve problems Analytical.	**Course objectives**

21. Teaching and learning strategies

	Strategy

22. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Oral and written exams	Lectures	Review of important basic concepts in analytical chemistry: strong and weak electrolytes, important units of mass and concentration.	Understand basic concepts such as electrolytes, strong and weak solutions, and understand different concentration units and their calculations. Application of the concepts of equivalent weights and their importance in chemical analysis.	4	1st
Oral and written exams	Lectures	Analytical Data Evaluation: Definition of Terms.	Understand the importance of accuracy and validity of analytical data.	1	2nd
Oral and written exams	Lectures	Introduction to gravimetric analysis: statistical analysis of data; data rejection; sedimentation methods; gravity factor.	Understand the theoretical foundations of gravimetric analysis, apply statistical analysis to experimental data, distinguish between different sedimentation methods and identify the factors affecting them.	9	3rd
Oral and written exams	Lectures	Application range of gravimetric analysis: inorganic precipitating	Knowledge of inorganic precipitating	4	4th

		agents; organic precipitating agents.	materials and solvents used. Analysis of the effect of chemical and physical factors on precipitation efficiency.		
Oral and written exams	Lectures	Introduction to Volumetric Methods: Volumetric Calculations; Acid-Base Equilibria and pH Calculations	Understand the basics of volumetric calculations. Understand acid-base equilibrium calculations.	5	5th
Oral and written exams	Lectures	Buffer solutions: Equivalent titration theory for simple systems.	Understand the working principle of buffer solutions, calculate pH in neutralization systems, and interpret the results of simple neutralization titrations.	3	6th
Oral and written exams	Lectures	Neutralization titration theory for complex system; precipitation titrations.	Apply interaction theories in titrations of complex systems and learn the types of precipitation titrations and their uses.	5	7th
Oral and written exams	Lectures	Calculation of pH in complex system; volumetric methods based on complex system.	Calculation of pH in multi-reactive systems. Applications of volumetric methods in the analysis of complex compounds.	4	8th
Oral and written exams	Lectures	Equilibrium in the redox system; theory of redox titrations.	Understand the principles of redox equilibrium and apply	6	9th

			redox titrations in chemical analysis.		
Oral and written exams	Lectures	Optical Spectroscopy: Introduction to Optical Methods of Analysis; Methods Based on Radiation Absorption.	Understand the basic principles of optical spectroscopy, know the methods of radiation absorption and their applications in chemical analysis, and interpret spectral data for use in the quantitative and qualitative determination of materials.	4	10th

23. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

24. Learning and teaching resources

	Required textbooks (methodology if any)
	Main references (sources)
1- Reference text: Fundamentals of Analytical Chemistry by Stock and West.	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

1. Course name
Democracy
2. Course code
3. Semester/Year
First/Second
4. Date this description was prepared
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
1/1
7. Name of the course supervisor (if more than one name is mentioned)
Name: M.M. Ishraq Talib Hamza Email:sideshraq@gmail.com
8. Course objectives

• Introducing students to democracy, its concepts and outcomes. • Knowing the most important democratic practices that have occurred in our society.	Course objectives

9. Teaching and learning strategies

and delivery • Interactive discussions • brainstorming • Research and induction	Strategy•Presentation

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week

theoretical exam Class activities	Lectures and discussions	Definition of democracy	Understanding the concept of democracy	1	1
=	=	The emergence of democracy	Learn about the emergence of democratic ideas	1	2
=	=	Democracy in the Middle Ages	Understanding the concepts of democracy in the Middle Ages	1	3
=	=	Different concepts of democracy	Identifying the differences in the concept of democracy according to different societies	1	4
=	=	Characteristics of a democratic system	Identifying the characteristics of democratic systems	1	5
=	=	Conditions, components and pillars of democracy	Learn about the conditions, components and pillars of democracy	1	6
Midterm exam for					7
=	=	Applications of democracy	Learn about the most important applications of democracy	1	8
=	=	Types of democracy	Direct and semi-direct democracy	1	9
=	=	Democracy in Islam	The concept of democracy in Islam	1	10
=	=	Majority rule systems	Learn about systems based on majority rule	1	11
=	=	Positives of democracy	Pointing out the positives of democracy	1	12
=	=	Disadvantages of democracy	Pointing out the negatives of democracy	1	13

=	=	Principles of shared democracy	Understanding the concept of shared democracy	1	14
=	=	Democratic systems	Discussing some democratic systems	1	15

11. Course Evaluation
Midterm exam 30 degrees Final exam70 degrees
12. Learning and teaching resources

	Required textbooks (methodology), if any
Political Systems by Hamid Hanoun	Main References (Sources)
Democracy from the Greeks to the Postmodern World by Hashem Al-Milani	Recommended supporting books and references (scientific journals, reports) ....
	Electronic references, websites

1. Course name
BioStatistics
2. codeThe decision
3. the chapter /
First stage / First semester
4. Date preparedDescription
5. AAvailable attendance forms
My presence
6. Number of study hours (total)/
36 Number of units (total) 3
7. Course Instructor Name(If more than one name is mentioned)
Name: Hoda Mohammed Ali huda90mohammadali@gmail.com
8. Course objectives

Objectives: To provide students with th ability to deal with the concepts of mathematics and statistics. Focus on the knowledge and skills needed to perform Duties and responsibilities of a competent pharmacist. The course	**Course objectives**

covers basic mathematical concepts an their application. Biostatistics in the medical field. Upon completion of the course, Students will be able to: Understanding the applications of statistics in the medical field.	

9. Teaching and learning strategies

	Strategy

10. Course structure

Evaluation method	**Learning method**	**Name of unit or topic**	**Required learning outcomes**	**watches**	**week**
Oral and written exams	Lectures	Mathematics: General concepts; coordinates and graphing in the plane; Variance; absolute value or magnitude; function and its graphs; displacement function; slope and equation of lines.		6	1st
Oral and written exams	Lectures	Limits and Continuity: Limits; Limit Theorem; Limit including infinity; Continuity; Conditions of continuity.		4	2nd

Oral and written exams	Lectures	Derivatives: Tangent and derivatives; differentiation rules; derivative of trigonometric function; practical exercises.		6	3rd
Oral and written exams	Lectures	Integration: Indefinite integrals; Rules of indefinite integrals; Integration formulas for basic trigonometric functions; Definite integrals; Properties of definite integrals; Practice exercises.		6	4th
Oral and written exams	Lectures	Biostatistics: General concepts of statistics; Statistical methods; Statistical theory; Applied statistics; Statistical operations.		2	5th
Oral and written exams	Lectures	Probability concepts: properties of probability; set theory and set notation (basic notation); counting techniques - permutations and combinations; calculating the probability of an event; probability distribution of discrete variables; binomial distribution, Poisson distribution; continuous and normal probability distribution, review		6	6th

		questions and exercises.			
Oral and written exams	Lectures	Concept of central tendency: sample mean and population mean; median; mode; measure of central tendency; review questions and exercises.		6	7th
Oral and written exams	Lectures	Deviations and Variance: Skewness; Dispersion and Variance; Standard Deviation and Variance; Coefficient of Variation; Standard Error; Correlation Analysis (Regression Model and Sample Regression Equation); Application of Statistics in the Medical Field; Review Questions and Exercises.		9	8th

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

	Required textbooks (methodology if any)
	Main references (sources)
Reference text: 1.Finny RI,Thomas GB (eds.); Calculus and Analytical Geometry.	Recommended supporting books and references (scientific journals, reports…)
	Electronic references

	Intention, websites

Course name:1

Medical terms

Course code:2

3Semester/Year:

First Course

4Date this description was prepared:

Available attendance forms:5

My presence

6 Number of study hours (total) / Number of units (total):

Total number of study hours for the entire course = 15 hours

Total number of units for the entire course = 15 units

7 Course Instructor Name

name: M.M. Hussein Kamel Hamed

Email: **Hussain.hamid@nust.edu.iq**

Course objectives 8

The Medical Terminology course for the first year of the College of Pharmacy includes several essential aspects aimed at enhancing students' understanding of the terminology used in the medical and pharmaceutical fields. **Main objectives of the medical terminology course:** **Introducing students to basic terms**To enable students to recognize basic medical terms and understand their meanings and uses in clini contexts...	**Course objecti**

Develop communication skills:Improving the ability to communicate effectively with patients and healthcare professionals through the us of accurate terminology...

Promote scientific understanding: Help students understand comple medical concepts by analyzing terms made up of roots, prefixes, and suffixes...

Application of knowledge Encourage students to apply the acquired knowledge in practical situations, such as dealing with real medical cases or reading medical reports..

Improve research skills Developing skills in searching for medical information and dealing with various scientific sources..

These objectives contribute to preparing the studentByTo be more efficient in the field of pharmacy and healthcare

Teaching and learning strategies.9

AThe learning and teaching strategy for the first-year medical terminology course in the College of Pharmacy aims to provide students with basic knowledge of terminology used in the medical field. The strategy includes several key elements.Including:

Firstly :theoretical educationIt includes

Interactive lectures Providing interactive lectures that focus on explaining basic medical terminology, using practical examples to illustrate concepts..

Educational materials Providing educational materials such as books, articles, and electron resources containing medical terminology..

It includessecondly:practical learning

Practical exercises: Carry out practical exercises that include analyzing medical terminolo and applying it in different contexts, such as reading medical reports or prescribing medications..

Group projects Encourage students to work in groups to conduct research on specific terms and present them to colleagues..

It includesThird: Evaluation

Periodic tests: Conduct periodic tests to assess students' understanding of medical terminology and their ability to use it correctly..

Final projects Students are assigned final projects that require them to use medical terminology in preparing reports or case studies..

Fourth: Technology, including:

Use of electronic platforms Leveraging online platforms to provide additional educational content, such as videos and recorded lectures..

Educational applications Use educational applications that help students learn medical terminology in an interactive way..

This strategy helps enhance students' understanding of medical terminology and its effectiv application in their future fields..

Course structure

Evaluation method	Learning method	Name of unit or topic	quired learning outcomes	watches	week
inations and Assessment Oral	he study ttendance ide the hall he study	ntroduction to Medical Terminology	e student will understand the knowledge. Basic Medical Terminology Curriculum ere he can know the prefix and suffix of the medical term	one	rst week

ations and oral assessment	person study e classroom	ots of medical terms, their types and meanings	e student will understand the types of roots. lical terms and their meanings	one	e second week
ations and oral assessment	person study e classroom	lechanism and basics of ombining prefixes and ffixes with the root of a medical term	e student will understand the echanism of combining the fix and suffix with the root of the medical term.	one	third week
ations and oral assessment	person study e classroom nd on the Tube channel	Respiratory System Terminology	The student will be able to cognize most of the medical terms. respiratory system	one	rth week
ations and oral assessment	person study e classroom nd on the Tube channel	nary System Terminology	student will be able to identify t of the medical terms related to the urinary system.	one	th week
ations and oral assessment	person study e classroom nd on the Tube channel	productive system terms	student will be able to identify t of the medical terms related o the reproductive system.	one	sixth week
ations and oral assessment	person study e classroom nd on the Tube channel	estive System Terminology	student will be able to identify t of the medical terms related to the digestive system.	one	e seventh week
ations and oral assessment	person study e classroom nd on the Tube channel	Circulatory and diovascular System Terms	student will be able to identify t of the medical terms related he circulatory system and the heart.	one	e eighth week
ations and oral assessment	person study e classroom nd on the Tube channel	necological and obstetric terminology	student will be able to identify t of the medical terms related gynecology, pregnancy and childbirth.	one	Week 9
ations and oral assessment	person study e classroom	Terms related to eye mponents and diseases	student will be able to identify t of the medical terms related	one	e tenth week

	nd on the Tube channel		he components of the eye and the diseases that affect it.		
ations and oral assessment	person study he classroom nd on the Tube channel	rminology of the nervous em, mental and behavioral disorders	student will be able to identify t of the medical terms related he nervous system and mental and behavioral diseases.	one	day week ten
ations and oral assessment	person study he classroom nd on the Tube channel	ms related to the skeletal ystem and its diseases	student will be able to identify t of the medical terms related to the skeletal system.	one	e twelfth week
ations and oral assessment	person study he classroom nd on the Tube channel	Lymphatic System Terminology	student will be able to identify t of the medical terms related to the lymphatic system.	one	irteenth week
ations and oral assessment	person study he classroom nd on the Tube channel	Blood Terms	student will be able to identify t of the medical terms related to blood.	one	urteenth week
ations and oral assessment	person study he classroom nd on the Tube channel	Blood Terms	The student will be able to cognize most of the medical terms related to the skin.	one	th week ten

Course Evaluation

Learning and teaching resources

ic medical language.
dical language for modern health care
stering healthcare terminology
dical terminology for health care professionals
dical terminology for dummies

Course Description Form

1. Course Name:
Physiology I
2. Course Code:
3. Semester / Year:
second, first
4. Description Preparation Date:
24/11/2025
5. Available Attendance Forms:
Person
6. Number of Credit Hours (Total) / Number of Units (Total)
45
7. Course administrator's name (mention all, if more than one name)
Name: Msc. Hadeer Ali Lghewei Email: Hadeer.A.lghewei@nust.edu.iq
8. Course Objectives

Course Objectives	Presentation and delivery Brainstorming Interactive discussions

9. Teaching and Learning Strategies

Strategy	Understanding the fundamental principles of human physiology and how the body is organized. Identifying the structure and functions of the cell, as well as cellular communication pathways (cell signaling). Understanding how the nervous system works and the mechanisms of neuronal signaling.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Define physiology and explain its role understanding body function. Describe the levels of structural organization from cells to organ syste Distinguish between the internal and external environment of the body. Explain how organ systems integrate maintain life.	Introduction to Physiology	Lectures, discussions, reports	Theoretical exams a classroom activities
2	5	Define homeostasis and explain its importance in maintaining body stability.Describe the components of feedback control systems. Differentiate between negative and positive feedback mechanisms. Apply homeostasis concepts to physiological examples such as temperature and glucose regulation	Homeostasis	Lectures, discussions, reports	Theoretical exams a classroom activities
3	7	Describe the major components of th and their functions. Explain protein structure and the process of protein synthesis. Outline key metabolic pathways such as glycolysis and the K cycle. Connect metabolic pathways to energy production in the cell.	Cellular Struct and Metabolism	Lectures, discussions, reports	Theoretical exams a classroom activities
4	7	Describe the structure and properties the cell membrane. Distinguish between passive and activ transport mechanisms. Explain diffusion, osmosis, and carrie mediated transport. Interpret the physiological significanc membrane transport in processes like movement.	Membrane Transport	Lectures, discussions, reports	Theoretical exams a classroom activities
5	6	Define cell signaling and its importan intercellular communication. Describe different types of cellular receptors and their mechanisms of ac Understand chemical messengers and cells communicate. Relate cell signalin	Cell Signaling	Lectures, discussions, reports	Theoretical exams a classroom activities

		mechanisms to physiological processe such as hormonal regulation.			
6	9	Describe the structure and function o neurons and glial cells. Explain restin membrane potential and action poten generation. Understand synaptic transmission and neurotransmitter release. Outline the organization of the centra peripheral nervous systems.	Neuronal Signal and the Nerv System	Lectures, discussions, reports	Theoretical exams classroom activities
7	6	Explain how sensory receptors detect stimuli and convert them into neural signals. Distinguish between different types of sensory receptors. Describe mechanisms of pain, touch, pressure, temperature sensation. Trace sensory pathways leading to the central nervo system.	Sensory Physiol	Lectures, discussions, reports	Theoretical exams classroom activities

11. Course Evaluation

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

12. Learning and Teaching Resources

Vander's Human physiology: the mechanisms body function. Eric P. Widmaier, Hershel R Kevin T.Strang, last edition	

1. Name of the headquarters
Arabic
2. Location code
3. Semester/Year
Second
4. Date this description was prepared
5. Available forms of attendance
Attendance
6. Number of study hours (total) / Number of units (total)
2/2
7. Name of the course supervisor (if more than one name is mentioned)
Name: M.M. Ishraq Talib Hamza sideshraq@gmail.comEmail:
8. Course objectives
Course objectives• Enabling students to learn sentence formation skills and to know what produces incorrect sentences and how it affects the meaning. • Enabling students to prepare scientific reports in the Arabic language
9. Teaching and learning strategies

• Presentation and delivery • Interactive discussions • brainstorming • Research and induction	Strategy

Course Description Form

13. Course Name:
Organic chemistry I
14. Course Code:
15. Semester / Year:
First stage / 1st semester 2024-2025
16. Description Preparation Date:
17. Available Attendance Forms:
18. Number of Credit Hours (Total) /
45 Number of Units (Total) 4
19. Course administrator's name (mention all, if more than one name)
Name: Tammar Hussein Ali Email: alitamar4@gmail.com
20. Course Objectives

Course Objectives	Study of stereochemistry and how to prepare a name organic compounds

21. Teaching and Learning Strategies	
Strategy	

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	**6**		Aromatic Hydrocarbons (includes benzene, electrophilic aromatic substitution, arenas and their derivatives).	Oral and written exams	**Lectures**
3-4	**5**		Carboxylic acids: properties and reactions	Oral and written exams	**Lectures**
5-6	7		Functional derivatives of carboxylic acids.	Oral and written exams	**Lectures**
7-8	6		Amines I and II	Oral and written exams	**Lectures**
9-12	12		Aldehydes and ketones (include also aldol and Claisen condensation); Classification, reactions and properties.	Oral and written exams	**Lectures**
13-15	5		Phenols.	Oral and written exams	**Lectures**

23. Course Evaluation

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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Organic Chemistry by Robert T. Morrison and

	.Robert N. Boyd Organic Chemistry by McCurry; 5th ed. Thomason learning; CA,USA; 2000
Recommended books and references (scientific journals, reports…)	Organic Chemistry by Robert T. Morrison and Robert N. Boyd Organic Chemistry by McCurry; 5th ed. Thomason learning; CA,USA; 2000 An introduction to the chemistry of heterocyclic compound by Acheson, R. M.latest ed
Electronic References, Websites	

Course name:1
Pharmaceutical accounts
Course code2
3Semester/Year:
4Date this description was prepared:
3/11
Available attendance forms:5
My presence
6 Number of study hours (total) / Number of units (total):
30hour/3Units
7 Name of the course administrator (if more than one name is mentioned)
the name: **Tahseen Jasb Naima** **Email:** **tach398@gmail.com**
Course objectives 8

\Distinguish between different types of doses. **\Dosage description and how to take it.**	**Course objectives**

\Performing dosage calculations involving home measures **\Performing calculations related to the dose quantity.** **\Describe the factors to consider when determining dosages for pediatric and elderly patients.** **\Dosage calculation based on age, body weight, and body surface area.** **\Use of dosage tables and charts in calculations.** **\Calculating doses of single and combination chemotherapy regimens.** **\Distinguish between the terms isotonic, isotonic, hypertonic, and hypotonic.** **\Applying physical and chemical principles in calculating isotonic solutions.** **\Performing the necessary calculations to prepare compound isotonic prescriptions.** **Calculate equivalent weight from atomic weight or formula.** **Convert between milligrams and milliequivalents.** **\. Calculating problems involving equivalents.** **\Calculating problems involving millimoles and milliosmoles**	

Teaching and learning strategies9

AFor lectures, presentations, discussions, laboratory experiments with learning strategies:

1. Identify students' current knowledge and skills.

2. Discovery... Encouraging inquiry and independent learning.

3- Encourage student analysis.

4- Providing opportunities for students to develop speaking.

5-Reflection... allows students to identify, discuss, and consider changes in their understanding.

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
-Written tests Oral exams Laboratory reports	Lectures - Whiteboard -an offer Data -an offer Presentation-illustrative charts	**Dosage**	Dose definitions and dose calculations	2 2	1 2
			Based on age and weight	2 2	3
			and the surface area of the body	2 2	4
			Dosage calculation considerations	2	5 6
		Factors affecting Dosage **Solutions** **isotonic**	In cancer chemotherapy Isotonic: Physical, Chemical, and Clinical Considerations and Preparation	2 2 2 2	7 8 9 10
		Ionized solutions	Solutions: milliequivalent, millimoles, milliosmoles	2 2 2	11 12 14 15
		Dilution and concentration	Considerations	2 2 2	16 17 18

			Clinical water and electrolytes Special Considerations To change the strength of the product in the pharmaceutical field Dilution and concentration of fluids Strengthening the focus of the pharmaceutical product alcohol reduction acid reduction	**2**	**19** **20**

11Course Evaluation

The grade is distributed according to the tasks assigned to the student, such as daily preparation, daily and oral exams.

Monthly, editorial, reports...etc.

12Learning and teaching resources

Pharmaceutical calculation 3rd edition by Ansel	**Required textbooks (methodology if any)**

Pharmaceutical calculation 3rd edition by Ansel	**Main References (Sources)**
Pharmaceutical Calculations: A Conceptual Approach. 2019. Cham: Springer	**Recommended supporting books and references (scientific journals, reports, etc.)**
https://www.nps.org.au/assets/e1522a550c298d2818d3eafe5ce1-Extemporaneously-compoundedmedicines_40-119.pdf http://repo.upertis.ac.id/1819/1/FASTtrack%20Pharmaceutical%20Compounding%20and%20Dispensing.pdf	**Electronic references, websites**

1. Course name
CalculatorsII
2. Course code

3. Semester/Year
Second/first
4. Date this description was prepared
2025/11/14
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
1/2
7. Name of the course supervisor (if more than one name is mentioned)
1- the nameIsmail Aswad Madloul Email:masmas4565@gmail.com

8. Course objectives	
comprehensive review of computer application principles, the use of Microsoft Word, and the use of Google applications.	Course objectivesA

9. Teaching and learning strategies	
1- Presentation and delivery 2- Discussions 3- Laboratory experiments 4- inverted classroom	Strategy

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
-Written exams - Oral exams - Laboratory experiment reports	- Lectures - Presentation - Educational videos - Laboratory experiments	Introduction to Excel	Font formatting, number formatting, table formatting, conditional formatting, hide/show, sorting / Filter, Paste Special, Find & Select	2	1

=	=	drawer bar	Illustrations, charts, and text chart processor types	2	2

Description of second - stage courses

25. **Course Name:**
Medical Microbiology

26. Course Code:	
27. Semester / Year:	
1st Semester 2025/2026	
28. Description Preparation Date:	
29. Available Attendance Forms:	
Full-time students	
30. Number of Credit Hours (Total) / Number of Units (Total)	
Theory 3 hours / laboratory 1 hour= 4 hours	
31. Course administrator's name (mention all, if more than one name)	
Name: Riyad Eadn Abed **Email: riyad.edanabed@nust.edu.iq**	
32. Course Objectives	
Course Objectives	1. Introduction to Microbiology 2. Understanding Bacterial Structure 3. Understand the genetic makeup of microorganisms and their methods of reproduction 4. Antimicrobial Resistance 5. Identifying Gram-Negative and Gram-positive Bacterial Species
33. Teaching and Learning Strategies	
Strategy	• Direct education: delivering information from the professor to the students through lectures, presentations, and the blackboard. • Collaborative learning: through working in groups to complete scientific reports and solve problems. • Blended learning: which combines face-to-face and electronic lessons through special applications. • Problem-Based Learning: Presenting students with real-life problems and asking them to provide possible solutions. • Discovery Learning: Encouraging students to explore and discover knowledge on their own through research and experimentation.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1st	3	Introduction to microbiology , Bacterial classification structure , Bacterial pathogenicity	Introduction to microbiology , Bacterial classification and structure , Bacterial pathogenicity	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
2nd &3d	6	Bacterial genetic, Bacterial growth physiology and biofilm, Chemotherapy	definition; genetic; element; mutation; spontaneous; gene transfer; transformation; conjugation; gene transduction;; physical and chemical determinants of growth; growth and growth curve; bacterial reproduction and biofilms; chemotherapy	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
4th	3	Antimicrobial resistance, Normal flora	Antimicrobial resistance, Normal flora	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
5th & 6th &7th	9	Gram positive bacteria	Staphylococci, Streptococci, Bacillus, Clostridium, Corynebacterium	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
8th & 9th	6	Gram negative bacteria	Neisseria, Enterobacteria Salmonella, Shigella, Klebsiella, Proteus	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations

				4.Experiential Learning	
10th & 11th	6	Gram negative bacteria	Non-enteric Pseudomonas and vibrio, Brucella, Bordetella, Haemophilus influenzae, Helicobacter pylori, Campylobacter	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
12th	3	Gram negative bacteria	Treponema, Yersinia and Actinomycetes	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
13th	3	Gram negative bacteria	Mycobacteria, Antimicrobial stewardship	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
14th	2	Recombinant biotechnology, Phage and toxins	Recombinant biotechnology, Phage and toxins	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations
15th	3	Probiotics, prebiotics and postbiotics	Probiotics, prebiotics and postbiotics	1.Visual Learning 2.Auditory Learning 3.Self-paced Learning 4.Experiential Learning	1.Examinations and tests 2.Quizzes 3.Assignments 4.Practical examinations

35. Course Evaluation

Midpoints are 40 come from:

1. **15 points theory exam + 5 points for quizzes, and presentations.**
2. **10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.**

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

36. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- Medical Microbiology (Twenty-Eighth Edition), Jawetz, Melnick, & Adelberg's 2- principle of microbiology by roland M.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

37. Course Name:	
Organic Pharmaceutical Chemistry (II)	
38. Course Code:	
39. Semester / Year:	
Semester 1/ 2023 – 2024	
40. Description Preparation Date: 20/2/2024	
41. Available Attendance Forms:	
Full-time students	
42. Number of Credit Hours (Total) / Number of Units (Total)	
3h. Theory+1 h. practical/ 4h	
43. Course administrator's name (mention all, if more than one name)	
Name: tammar hussein ali Email: tammar@mu.edu.iq	
44. Course Objectives	
Course Objectives	1. To the discovery and development of new agents for treating diseases and enab the translating of the drug structural formula into therapeutic effect. 2. It focuses on the methods of preparation for some pharmaceutical agents.
45. Teaching and Learning Strategies	
Strategy	1. Active participation by engaging actively in lectures and discussions. 2. Effective time management by creating a study schedule.

	3. Utilize resources. 4. Collaborative learning from study groups. 5. Hands-on experience by taking advantage of laboratory sessions. 6. Regularly review previous topics to ensure retention of information.

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	Cholinergic System	Cholinergic agents, Cholinergic receptors, and their subtypes	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.
2nd	3	Cholinergic System	Stereochemistry and structure-activity relationships (SAR); Products.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
3rd	3	Cholinergic System	Cholinesterase inhibitors Cholinergic blocking age structure-activity relationships (SAR).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
4th	3	Cholinergic System	Solanaceous alkaloids an analogues; Synthetic cholinergic blocking ager and products. Ganglionic blocking agents (neuromuscular blocking agents).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

5th	3	Analgesic System	Analgesic agents (SAR of morphine, SAR of meperidine type molecu SAR of methadone type compounds; N-methylbezomorphans.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
6th	3	Analgesic System	Antagonist-type analgesi in benzomorphans; Analgesic receptors, Endogenous opioids.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th	3	Analgesic System	Products; Antitussive agents; Anti-inflammato analgesics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
8th	3	Adrenergic System	Adrenergic agents (Adrenergic neurotransmitters); Adrenergic receptors.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	3	Adrenergic System	Drugs affecting Adrenerg neurotransmission; Sympathomimetic agent	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
10th	3	Adrenergic System CNS depressant	Adrenergic receptor antagonists. CNS depressant	- Active Reading Textbooks. - Online resourc - Self-assessmer	Formative and Summative Evaluation (Mid final)

				- Reflection.	Exams with Quizzes
11th	3	CNS depressant	Benzodiazepines and related compounds; Barbiturates.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
12th	3	CNS depressant	CNS depressant with skeletal muscle relaxant properties; Antipsychotics; Anticonvulsants.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
13th	3	CNS Stimulants	CNS Stimulants	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	3	Hormones	Steroidal & nonsteroidal hormones	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th		Exam	Exam		

47. Course Evaluation

Midpoints are 40 come from:

1. 15 points theory exam + 5 points for quizzes, and presentations.
2. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.	
48. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

			Charts, Add Title/Means Illustration/Labels, Print Charts, Add data to a chart, Format/Redo Rename/delete data series, change data series order		
=	=	The ribbon of the admission	Illustrations, charts, and text chart processor types Charts, Add Title/Means Illustration/Labels, Print Charts, Add data to a chart, Format/Redo Rename/delete data series, change data series order	2	3
=	=	Layout bar Page and basic functions	For Total / Average / Count / Max / Min, Body / Date / Time / Search / Functions Information, Name Manager, Formula Validation	2	4
=	=	Logical functions	Using logical functionsIFs and Nested IF Functions Using AND / OR / NOT Functions MATCH with VLOOKUP Functions , INDEX & MATCH Functions	2	5

=	=	Logical functions	Using logical functionsIFs and Nested IF Functions Using AND / OR / NOT Functions MATCH with VLOOKUP Functions , INDEX & MATCH Functions	2	6
Midterm exam					7
=	=	Data bar	Import from the web, Import from text, convert text to columns, remove Duplicates, grouping and ungrouping Assembly	4	8 and 9
=	=	View and Preview Bar	Audit, Comments, Protection, View Types, Zoom, Windows	4	10 and 11
=	=	Developer bar	Enable developer, using checkbox/option buttons	8	15-12

11. Course Evaluation

Grade distribution from100 according to the tasks assigned to the student, such as daily preparation, daily and monthly oral and written exams, and reports.

12. Learning and teaching resources

Microsoft office Professional 2019, BY Linda Foulkes, Senior Editor: Afshaan Khan ISBN 978-1-83921-725-8	The reporter books (Required) methodology (if any)
	Main References (Sources)
Microsoft office Professional 2010, BY Joyce Cox, Jo an Lambert & Curtis Frge	Recommended supporting books and references (scientific journals, reports) ....
	Electronic references, websites

Course Description Form

1. Course Name:	
Physiology I	
2. Course Code:	
3. Semester / Year:	
second, first	
4. Description Preparation Date:	
24/11/2025	
5. Available Attendance Forms:	
Person	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45	
7. Course administrator's name (mention all, if more than one name)	
Name: Msc. Hadeer Ali Lghewei Email: Hadeer.A.lghewei@nust.edu.iq	
8. Course Objectives	
Course Objectives	**Presentation and delivery** **Brainstorming** **Interactive discussions**
9. Teaching and Learning Strategies	

Strategy	Understanding the fundamental principles of human physiology and how the body is organized. Identifying the structure and functions of the cell, as well as cellular communication pathways (cell signaling). Understanding how the nervous system works and the mechanisms of neuronal signaling

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Define physiology and explain its role understanding body function. Describe the levels of structural organization from cells to organ syste Distinguish between the internal and external environment of the body. Explain how organ systems integrate maintain life.	Introduction to Physiology	Lectures, discussions, reports	Theoretical exams a classroom activities
2	5	Define homeostasis and explain its importance in maintaining body stability.Describe the components of feedback control systems. Differentiate between negative and positive feedback mechanisms. Apply homeostasis concepts to physiological examples such as temperature and glucose regulation	Homeostasis	Lectures, discussions, reports	Theoretical exams a classroom activities
3	7	Describe the major components of th and their functions. Explain protein structure and the process of protein synthesis. Outline key metabolic pathways such as glycolysis and the K cycle. Connect metabolic pathways to energy production in the cell.	Cellular Struct and Metabolism	Lectures, discussions, reports	Theoretical exams a classroom activities
4	7	Describe the structure and properties the cell membrane. Distinguish between passive and activ transport mechanisms. Explain diffusion, osmosis, and carrie mediated transport. Interpret the physiological significanc membrane transport in processes like movement.	Membrane Transport	Lectures, discussions, reports	Theoretical exams a classroom activities
5	6	Define cell signaling and its importan intercellular communication. Describe different types of cellular receptors and their mechanisms of ac Understand chemical messengers and cells communicate. Relate cell signalin mechanisms to physiological process such as hormonal regulation.	Cell Signaling	Lectures, discussions, reports	Theoretical exams a classroom activities

6	9	Describe the structure and function o neurons and glial cells. Explain restin membrane potential and action poten generation. Understand synaptic transmission and neurotransmitter release. Outline the organization of the centra peripheral nervous systems.	Neuronal Signal and the Nerv System	Lectures, discussions, reports	Theoretical exams classroom activities
7	6	Explain how sensory receptors detect stimuli and convert them into neural signals. Distinguish between different types of sensory receptors. Describe mechanisms of pain, touch, pressure, temperature sensation. Trace sensory pathways leading to the central nervo system.	Sensory Physiol	Lectures, discussions, reports	Theoretical exams classroom activities

11. Course Evaluation

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

12. Learning and Teaching Resources

Vander's Human physiology: the mechanisms body function. Eric P. Widmaier, Hershel R Kevin T.Strang, last edition	

Course Description Form

1. Name of the headquarters	
Baath regime crimes in Iraq	
2. Location code	
3. Semester/Year	
First/Second	
4. Date this description was prepared	
2024/9/19	
5. Available forms of attendance	
Attendance	
6. Number of study hours (total) / Number of units (total)	
1/1	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: M.M. Ishraq Talib Hamza sideshraq@gmail.comEmail:	
8. Course objectives	
• LookYThis generation saw an intellectual opening that revealed something to them.andAmong the crimes of this regime are: It is not permissible, by Sharia or law, for it to remain imprisoned in cellars away from free Iraqis. • • A statement of what the investigation and truth system has to reveal about any crimes. The Baath regime. • Documenting crimes Baath regime according to the Iraqi Criminal Court Law Alia 2005	Course objectives
9. Teaching and learning strategies	

• Presentation and delivery • Interactive discussions • brainstorming • Research and induction	Strategy

10. Headquarter structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	Week A
theoretical exam Safiya's activities	Lectures and discussions	Definition of crime linguistically and terminologically	Types of international crimes.	2	1 and 2
=	=	human rights violations	The fundamental rights and human dignity that every human being enjoys under the provisions of international law and their violation.	2	3 and 4
=	=	Psychological crimes and their effects	Levels of achieving balance	2	5 and6
Midterm exam					7
=	=	Violations of Iraqi laws	Human rights violations and crimes of the Baath Party authority	2	8 and 9

=	=	Violation decisions The political and military structure of the Ba'ath regime	The lie of accusing him of planning a coup against anyone who opposes the Baath regime. To purge those who oppose him in the army.	2	10 and 11
=	=	Environmental crimes	war pollution Radiation and explosion mines	2	12 and 13
=	=	contamination with radioactive materials	Use of internationally prohibited weapons.	2	14 and 15

	11. Course Evaluation
	Midterm exam30 degrees Final exam70 degrees
	12. Learning and teaching resources
	Required textbooks (methodology), if any
UN reports condemning system Resurrection violations rights man For the period1991-2003 AD Dr. Raed Abees W.D. Abbas Attia, Publisher: Iraqi Center for Documenting Extremist Crimes, First Edition	Main References (Sources)

Iraqi Center Archives To document Crimes of extremism in the Abbasid shrine Holy Prisoners' Foundation Archives Politicians.	Recommended supporting books and references)Scientific journals, reports(....
	Electronic references, websites

1. Course Name:
Physical pharmacy I
2. Course Code:
3. Semester / Year:
First semester/ second year
4. Description Preparation Date:
October – 2025
5. Available Attendance Forms:
Attendance In class
6. Number of Credit Hours (Total) / Number of Units (Total)
3hours theoretical- 2 hours practical / 4 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Maitham Razaq Altaee Email: maytham.r.abdlhasan@nust.edu.iq

8. Course Objectives	
Objectives:	**To understand the application of quantitative and theoretical principles of the physic characters of matter in the practice of pharmacy. It aids the pharmacists in their attempt to predict the solubility, compatibility and biological activity of drug products. As a result of this knowledge it will help in the developme of new drugs and dosage forms as well as in improvement of various modes of administration**

9. Teaching and Learning Strategies	
Strategy	• Cooperative education strategy. • Teaching strategy brainstorming. • Education strategy one minute paper. • Education strategy real time feedback Education strategy notes series.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	State of matter and bonds between	State of matter	Board, power point	Mid-final exam

Course Description Form

1. Course Name:
Physiology II
2. Course Code:
3. Semester / Year:
SECOND STAGE /Semester 2
4. Description Preparation Date:
5. Available Attendance Forms:
Full-time students
6. Number of Credit Hours (Total) / Number of Units (Total)
3h. Theory+1 h. practical/ 4h
7. Course administrator's name (mention all, if more than one name)
Name: Tarig Mohamed Hassan Email: Tarigacad2@gmail.com
8. Course Objectives

Course Objectives	1) To understand the basic principles of the physiological functions of various tissues and organs in the human body. 2) To evaluate physiological functions and correlate them with normal and abnormal conditions. 3) To emphasize the role of homeostatic changes in maintaining physiological integration. 4) To highlight the impact of hemodynamic changes on the integration of physiological status.

9. Teaching and Learning Strategies

Strategy	7. Actively participate in lectures and discussions to enhance learning. 8. Manage time effectively by creating and following a study schedule. 9. Make use of available resources to support learning and understanding. 10. Engage in collaborative learning through study groups. 11. Gain practical knowledge through hands-on laboratory sessions. 12. Regularly revisit previous topics to reinforce and retain knowledge.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	Introduction to gastrointestinal function	Digestion and absorption of carbohydrates, proteins, and lipids	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
2nd	3	Absorption of nutrients	Absorption of water, electrolytes, vitamins, and minerals	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
3rd	3	Regulation of gastrointestinal functior	Gastrointestinal hormon and overview	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
4th	3	Organs of the gastrointestinal system	Mouth, esophagus, stomach, exocrine pancreas, liver, and biliar system	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
5th	3	Functions of the intestir	Small intestine and color	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz

6th	3	Introduction to circulato body fluids	Blood, bone marrow, and immunity	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
7th	3	Hematological compone	White blood cells, platele red blood cells	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
8th	3	Blood disorders	Anemia, polycythemia, a blood group systems (including Rh factor)	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
9th	3	Hemostasis	Clotting mechanism and abnormalities	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
10th	3	Plasma and lymph	The plasma, the lymph, a their functions	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
11th	3	Introduction to endocrinology	Overview of energy balance, metabolism, an nutrition	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
12th	3	The pituitary and thyroi glands	Hormonal regulation and function	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
13th	3	Reproductive and adren functions	The gonads, adrenal medulla, and adrenal cor	- Active Reading Textbooks. - Online resource	Formative and Summative Evaluation (Mid

				- Self-assessmen - Reflection.	final) Exams with Quiz
14th	3	Calcium metabolism and bone physiology	Hormonal control of calcium and bone physiology	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
15th		Exam	Exam		

11. Course Evaluation

Midpoints are 40 come from:

3. 15 points theory exam + 5 points for quizzes, and presentations.
4. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	2. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1. Course Name:
Physical pharmacy II
2. Course Code:
3. Semester / Year:
Second/ second year
4. Description Preparation Date:
5November -202
5. Available Attendance Forms:
In class
6. Number of Credit Hours (Total) / Number of Units (Total)
3 hours weekly- 45 hours in total /4 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Maitham Razaq Altaee Email: maytham.r.abdlhasan@nust.edu.iq
8. Course Objectives
• To understand the solubility process and the physical properties of molecules, the activity of the prodrug, the methods of developments of new drugs and the modes of administrations.
9. Teaching and Learning Strategies
Strategy — Learning and teaching in cooperative education. Brainstorming strategy.
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	3	Complexation phenomena	Complexation phenomena	Power point, whiteboard pictures, figures.	Oral exam quizzes written fin exams

2	3	Diffusion phenomena , introduction and steady state diffusion	Diffusion phenomena , introduction and steady state diffusion		
3	3	Fick's laws of diffusion , first and second law	Fick's laws of diffusion , first and second law		
4	3	Kinetics, rate a orders of reactions	Kinetics, rate a orders reactions		
5	3	Influence temperature decomposition medicinal agents.	Influence temperature decomposition medicinal agen		
6	3	Accelerated stability analysis	Accelerated stability analysis		
7	3	Interfacial phenomena , liquid interface , Surface free energy	Interfacial phenome liquid interface, surface free energy		
8	3	The analysis a thermodynamic treatment of stability constant	The analysis a thermodynamic treatment of stability constant		

9	3	Spreading phenomena , role of surfactants in wetting	Spreading phenomena , role o surfactants in wetting		
10	3	Rheology, Newtonian system	Thixotropy, negative Thixotropy		
11	3	Rheology	Determination of Thixotropy		
12	3	Colloids, dispersion systems, types colloidal systems	Colloids, dispersion systems, types colloidal systems		
13	3	Zeta potent diffusion, solubilization	Zeta potent diffusion, solubilization		
14	3	Micrometrics	Particle size, methods of particle-s reduction, particle shape and surface area		
15	3	polymer	Pharmaceutical polymers		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ....
35% mid term, daily exam 5% daily participation, 60% final exam.

12. Learning and Teaching Resources

Physical pharmacy	
Physical pharmacy by Alfred martin	

Course Description Form

1. Course Name:
Organic chemistry III
2. Course Code:
3. Semester / Year:
Second / Second semester
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) /
36 Number of Units (Total) 3
7. Course administrator's name (mention all, if more than one name)
Name: Tammar Husein Ali Email: alitamar4@gmail.com
8. Course Objectives

Course Objectives	**Active ingredients used in pharmaceutical formulations** **Extraction, isolation and preparation methods** **Chemical structures of drugs and treatments** **Its medical and therapeutic uses** **Effects and changes on chemical compounds to increase the effectiveness of drugs**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	**5**		Heterocyclic system: Classes of heterocyclic systems; general structures; properties; Occurrence in nature and in medicinal products	Oral and written exams	**Lectures**
3	3		Five-membered ring heterocyclic compounds: pyrrole; furan and thiophen..	Oral and written exams	**Lectures**
4	2		Source of pyrrole, furan and thiophen.	Oral and written exams	**Lectures**
5-6	5		Electrophilic substitution in pyrrole, furan and thiophen: Reactivity and orientation.	Oral and written exams	**Lectures**
7-8	4		Six-membered ring heterocyclic compounds: Structure & reactions of pyridine.	Oral and written exams	**Lectures**
9-11	6		Saturated five-membered heterocyclic compounds	Oral and written exams	**Lectures**

12-15	5		Heterocyclic of five & six member rings with two & three heteroatoms.		

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	heterocyclic compound by Acheson, M.latest ed
Recommended books and references (scientific journals, reports…)	Organic Chemistry by Robert T. Morrison and Robert N. Boyd Organic Chemistry by McCurry; 5th ed. Thomason learning; CA,USA; 2000 An introduction to the chemistry of heterocyclic compound by Acheson, R. M.latest ed
Electronic References, Websites	

1. Course name
CalculatorsII
2. Course code

3. Semester/Year
Second/first
4. Date this description was prepared
2025/11/14
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
1/2
7. Name of the course supervisor (if more than one name is mentioned)
1- the nameIsmail Aswad Madloul Email:masmas4565@gmail.com
8. Course objectives

objectivesA comprehensive review of computer application principles, the use of Microsoft Word, and the use of Google applications.	Course

9. Teaching and learning strategies	
1- Presentation and delivery 2- Discussions 3- Laboratory experiments 4- inverted classroom	Strategy

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
-Written exams - Oral exams - Laboratory experiment reports	- Lectures - Presentation - Educational videos - Laboratory experiments	Introduction to Excel	Font formatting, number formatting, table formatting, conditional formatting, hide/show, sorting / Filter, Paste Special, Find & Select	2	1

=	=	drawer bar	Illustrations, charts, and text chart processor types	2	2

			Charts, Add Title/Means Illustration/Labels, Print Charts, Add data to a chart, Format/Redo Rename/delete data series, change data series order		
=	=	The ribbon of the admission	Illustrations, charts, and text chart processor types Charts, Add Title/Means Illustration/Labels, Print Charts, Add data to a chart, Format/Redo Rename/delete data series, change data series order	2	3
=	=	Layout bar Page and basic functions	For Total / Average / Count / Max / Min, Body / Date / Time / Search / Functions Information, Name Manager,	2	4

			Formula Validation		
=	=	Logical functions	Using logical functionsIFs and Nested IF Functions Using AND / OR / NOT Functions MATCH with VLOOKUP Functions , INDEX & MATCH Functions	2	5
=	=	Logical functions	Using logical functionsIFs and Nested IF Functions Using AND / OR / NOT Functions MATCH with VLOOKUP Functions , INDEX & MATCH Functions	2	6
Midterm exam					7
=	=	Data bar	Import from the web, Import from text, convert text to columns, remove Duplicates, grouping and ungrouping Assembly	4	8 and 9
=	=	View and Preview Bar	Audit, Comments, Protection, View Types, Zoom, Windows	4	10 and 11

=	=	Developer bar	Enable developer, using checkbox/option buttons	8	15-12

11. Course Evaluation

Grade distribution from100 according to the tasks assigned to the student, such as daily preparation, daily and monthly oral and written exams, and reports.

12. Learning and teaching resources

Microsoft office Professional 2019, BY Linda Foulkes, Senior Editor: Afshaan Khan ISBN 978-1-83921-725-8	The books reporter (Required) methodology (if any)
	Main References (Sources)
Microsoft office Professional 2010, BY Joyce Cox, Jo an Lambert & Curtis Frge	Recommended supporting books and references (scientific journals, reports) ....
	Electronic references, websites

Description of third - stage courses

13. Course Name:	
Inorganic Pharmaceutical Chemistry	
14. Course Code:	
15. Semester / Year:	
Third / first semester	
16. Description Preparation Date:	
17. Available Attendance Forms:	
Full-time students	
18. Number of Credit Hours (Total) / Number of Units (Total)	
2h. Theory+1 h. practical/ 2 + 1	
19. Course administrator's name (mention all, if more than one name)	
Name: Tammar Hussein Ali Email: alitamar4@gmail.com	
20. Course Objectives	
Course Objectives	3. To present a review of the principles of inorganic chemistry that apply to medic and /or pharmaceutical chemistry. 4. To understand atomic and molecular structures, an explanation of atomic structu and the relationship with binding forces and complexation.

	5. It also describes inorganic products used as pharmaceutical preparations diagnostic tools.

21. Teaching and Learning Strategies

Strategy	13. Active participation by engaging actively in lectures and discussions. 14. Effective time management by creating a study schedule. 15. Utilize resources. 16. Collaborative learning from study groups. 17. Hands-on experience by taking advantage of laboratory sessions. 18. Regularly review previous topics to ensure retention of information.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	Alkali Metals:	Lithium, Sodium, Potassium: Electron configuration, chemial properties of metals, Advantages and disadvantages using lithium-based drugs, Sodium as an essential ion in the human body, Active transport of sodium ions, Drugs, diet and toxicity of sodium ions, Potassium and its clinical application.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.
2nd	2	**Alkaline Earth Metals**:	Magnesium, Calcium: Electron configuration of metals, Major uses and Chemical properties, Magnesium Biological importance and clinical applications and preparations. Calcium:	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

			the key to many human functions.		
3rd	2	**Group 13:**	Aluminium, Boron and Gallium: General chemist of group 13 elements, Pharmaceutical applicati of boric acid, Bortezomib Biological importance of Aluminiumant its adjuvar	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
4th	2	**Group 13:**	Antacids, Aluminium-bas therapeutics, Phosphate binders, Antiperspirant. Gallium Introduction, Chemistry, Pharmacology gallium-based drugs and their uses	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
5th	2	**The Carbon Group**:	General chemistry of gro 14 elements, Silicon-base drugs versus carbon-base analogues, Introduction o silicon groups, Silicon isosters, Organosilicon drugs.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
6th	2	**Transition Metals and d Block Metal Chemistry:**	Electronic configurations platinum anticancer ager Iron and its role in biolog systems,	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th		**Transition Metals and d Block Metal Chemistry**	clinical applications. Copper-containing drugs Silver: the future of antimicrobial agents?, Go the fight against rheumatoid arthritis and zinc and its role in biolog systems, clinical applications and toxicity.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

8th		**Chelation Therapy**:	What is heavy-metal poisoning? What is chelation? Chelation therapy, Calcium disodiu edetate, Dimercaprol (BA Dimercaptosuccinic acid (DMSA), 2,3-Dimercapto-propanesulfonic acid (DMPS), and Lipoic acid (ALA).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	2	Antacids	Principle of antacids; Antacid types; Antacid drugs	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
10th	2	Protective adsorbents Dental agents	Introduction of protecti adsorbents; Most produ for the treatment Introduction of dental agents; Anticaries agent Polishing agents; Desensitizing agents	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
11th	2	Topical agents	Principles of topical therapy; Protectives; Antimicrobial and astringents	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
12th	2	Radiopharmaceutical preparations	Definition of a radiopharmaceutical; Id Radiopharmaceutical	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

13th	2	Radiopharmaceutical preparations	Types of radiopharmaceuticals; Methods of production radiopharmaceuticals	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	2	Radiopharmaceutical preparations	Mathematical consideration of radioactive decay	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th	2	Radio opaque and contrast media	Radiographic contrast; Types of contrast media	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
16th	2	Radio opaque and contrast media	Methods of administrat of contrast material; Special ''o-grams''; Contrast media for spec procedures	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
	3	Exam	Exam		

23. Course Evaluation

Midpoints are 40 come from:

5. 15 points theory exam + 5 points for quizzes, and presentations.
6. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	3. Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche Soine, and Wilson, latest edition 4. Wilson and Gisvold; Textbook of Organic Medicinal and Pharmaceutical Chemistry; Delgado JN, Remers WA, (eds); latest edition
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1. Course Name:
Pharmaceutical technology I
2. Course Code:
3. Semester / Year:
3nd year/ 1st semester
4. Description Preparation Date:
5. Available Attendance Forms:
Attendance in the class
6. Number of Credit Hours (Total) / Number of Units (Total)
3 theoretical hours /2 practical hours /4 units
7. Course administrator's name (mention all, if more than one name)
Name: Maitham Razaq Altaee Email:maytham.r.abdlhasan@nust.edu.iq

8. Course Objectives	
Course Objectives	**To teach theoretical bases for the technology of preparing different dosage forms with respect to their raw materials, compositions, methods of preparation, stability, storage and uses.**

9. Teaching and Learning Strategies	
Strategy	• Cooperative education strategy. • Teaching strategy brainstorming. • Education strategy one minute paper. • Education strategy real time feedback Education strategy notes series.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Dispersed	Blackboard	Final exam, m
		Dispersed system their classification comparisons between differ system	systems: th classification; comparisons between differ system	, vid pictures diagram Power point lecture	term exam, da and oral exams
2	3	Solution and type of solution	Solution and types of solution	=	=
3	3	Solubility: Factor affecting solubility expression of dissolution; dissolution rate versus solubility; preparation of solutions containing non-volatile materials.	Solubility: Facto affecting solubility; expression of dissolution; dissolution rate versus solubility preparation of solutions containing non-volatile materials.	=	=
4,5	6	Official solutions; classification of official solutions; preparation and uses.	Official solution classification of official solution preparation and uses.	=	=
6	3	Aqueous solution contain aromatic principles; aromatic waters; methods of preparations; stability.	Aqueous sol. contains aroma principles; aromatic water methods of preparations; stability.	=	=
7,8	6	Syrups: sugar based syrups; artificial and sorbitol based syrups; stability of syrup	Syrups: sugar based syrups; artificial and sorbitol based syrups; stability	=	=

			of		
			syrups.		
9	3	Definition and	Definition and	=	=
		methods of	methods of		
		clarification; filter	clarification; filter		
		aids in clarification	aids in clarification.		
10	3	Preparation of	Preparation of	=	=
		solutions using	solutions using		
		mixed solvent	mixed solvent		
		systems; spirits,	systems; spirits		
		and	and		
		elixirs.	elixirs.		
11	3	Extraction; maceration and percolation.	Extraction; maceration and percolation.	=	=
12	3	Tinctures; fluid extracts; extracts resins and oleoresins	Tinctures; fluid extracts; extrac of resins and oleoresins	=	=
13	3	Colloidal dispersions; lyophilic; lyopho	Colloidal dispersions; lyophilic; lyophobic	=	=
14, 15	6	Coarse dispersio suspensions	Coarse dispersion; suspensions	=	=

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports..... etc
40% striving (20% mid-term exam score, 20% practical, daily preparation, daily and oral exams, and classroom activities)
60% final exam score

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. and Sprowe American Pharmacy.

Main references (sources)	Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition Sprawl's American Pharmacy.
Recommended books and references	Pharmaceutical Dosage Forms - Tablets: Unit Operating and Mechanical Properties
(scientific journals, reports...)	
Electronic References, Websites	https://scholar.google.com

Course name:1
Drugs and Medicinal Plants Part One **Pharmacognosy I**
Course code:2
3Semester/Year:
Course two / 2024-2025
4Date this description was prepared:
1/2/2025
Available attendance forms:5
My presence
6 Number of study hours (total) / Number of units (total)
Total number of study hours for the entire course = forty-five hours **Total number of units for the entire course = forty-five units**
7 Course Instructor Name
the name: M.M. Hussein Kamel Hamed **Hussain.hamid@nust.edu.iq** **Email:**
Course objectives 8

That DThe study of drugs and medicinal plants for third-year students in the College of Pharmacy aims to::	**Course objectives**

Firstly :Identifying natural sources of medicineslikeStudy of medicinal plants, fungi, and animal products as sources of drugs.. **secondly:Understanding active ingredientsandIdentification of biologically active compounds such as alkaloids,Antibiotics and herbal medicine .** **Third:Extraction and estimation methodsWhere the student can knowMethods of extracting and analyzing active ingredients using modern technologies..** **Fourth:Drug applications in medicine and pharmacyandUnderstanding the effects of natural medicines and their use in treatment and prevention.** **Fifth:Drug interactions and toxicityWhere the student canStudy of side effects and potential interactions between herbal medicines and traditional medicines..** **Sixth:Economic and industrial aspectsWhere the student learns how toInvesting in medicinal plants in the pharmaceutical and nutritional supplement industry..** .	

Teaching and learning strategies9

Teaching and learning strategies in the subject of drugs and medicinal plants/Stage 3/First course.....……

First: Education strategies

1-Interactive lectures:

presentation The material Scientific from during Offers Introductory and means Illustrative like the pictures And PowerPoint as wellStimulating questions method to engage students in discussion.

2-Project-based learning:

Assigning students research projects on specific medicinal plants, including their chemical, pharmaceutical, and medical uses..

3-Case-based learning:

Analyzing medical cases that require the use of medicinal plants or herbal extracts, to apply scientific concepts in practice

evidence-based learning:-4

Training students to analyze recent studies and research on the effectiveness of medicinal plants and their active ingredients...

Education cooperationY:-5

Divide students into small groups to solve problems or give presentations about drugs and medicinal plants..

Second: Learning strategies

1-Practical learning in laboratories:Training students to identify different plant parts under the microscopeR.

2 -Conduct experiments to extract and estimate active compounds.

3-Scientific trips and visits to botanical gardens.

-Identify medicinal plants in their natural environment to understand their properties and distinguish them practically.4

5-E-learning and digital resources:Use e-learning platforms to follow lectures and watch educational videos on extracting and analyzing active ingredients..

6-Self-learning style:Encourage students to read scientific references and research the latest developments in the field of drugs and medicinal plants.Y.

7-Continuous assessment and feedback:Providing short tests, scientific reports, and presentations to monitor students' progress and motivate them to develop their skills..

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
ExamsEditorialand evaluation Oral	In-person study in the classroom and on the YouTube channel	Introduction to the collection of drugs and medicinal plants	The student will understand the role and importance of pharmacology and medicinal plants. During this lecture, he will be able to study an introduction to pharmacology and the importance of this science in the College of Pharmacy.	Three hours	First week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Sources of natural remedies and classification of medicinal plants	Students learn the sources of medicinal treatments, obtaining them from natural sources, and classifying medicinal plants.	Three hours	The second week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Naming medicinal plants	The student learns how to name medicinal plants according to the law of scientific nomenclature.	Three hours	The third week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Production, collection and drying of medicinal plants	The student learns the mechanism of producing medicinal plants, collecting them, and drying them.	Three hours	Fourth week

ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Chemistry of compounds found in medicinal plants	The student learns the chemical compounds and their types found in medicinal plants.	Three hours	Fifth week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Causes of damage to medicinal plants and quality control	The student learns the causes of damage to medicinal plants and studies the mechanism of quality control using visual, microscopic, chemical and biological examinations.	six hours	Weeks 6 and 7
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Chemical botany, extraction, separation and diagnosis methods	The phytochemical study of medicinal plants includes the study of extraction methods, separation of medicinal compounds and their diagnosis.	Three hours	The eighth week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of methods for separating chemical compounds extracted from plants	The student learns methods of separating compounds from each other in plant extracts using thin layer chromatography, coulomb chromatography, ion separation, and others.	fifteen hours	Week 9 to Week 13
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	The role of traditional medicine in obtaining medicinal compounds from medical sources	The student learns the role of traditional medicine and its importance in obtaining medicinal compounds using biological analysis of plant extracts.	Three hours	Fourteenth week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study	tissue culture	The student learns the importance of tissue culture in the production	four hours	The fifteenth week

	And on channel YouTube		**of pharmaceutical compounds of plant origin and methods of industrial cultivation.**		

11Course Evaluation

12Learning and teaching resources

Reference text: Trease and Evans Pharmacognosy; 15th ed., 2000.

1. Name of the headquarters	
Biochemistry 2	
2. Location code	
3. Semester/Year	
First/Third	
4. Date this description was prepared	
2024/9/19	
5. Available forms of attendance	
Attendance	
6. Number of study hours (total) / Number of units (total)	
4/5	
7. Name of the course supervisor (if more than one name is mentioned)	
taghreed.k.fadaam taghreed.k.fadaam@nust.edu.iq	
8. Course objectives	
• To provide students with the biochemistry principles of important biological molecules and prepare them to discuss the metabolism of these molecules. • Providing students with the necessary technical skills in the field of biochemistry.	Course objectives
9. Teaching and learning strategies	

• Presentation and delivery • Interactive discussions • brainstorming • Research and induction	Strategy

10. Headquarter structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	Week A
theoretical exam Class activities	Lectures, discussions and reports	Introduction to Macromolecules in biochemistry	Familiarity with what biochemistry studies and description of important macromolecules	3	1
=	=	Acids The secretary	Amino acid structure; classification; properties; shapes	3	2
=	=	Acids The secretary	Chemical reactions; ion Zoeter; correction equation; ion point calculation Neutral; Non-protein	3	3

			forming amino acids; Clinical significance		
=	=	Peptide T	Peptide bonds; angles Wrapping; Naming of peptides; Structure and function of some Peptides in the human body	3	4
=	=	Proteins	Primary structure; Secondary structure; Tertiary structure; Quaternary structure; Types and strengths of cohesive bonds; classification based on function and nature Chemical and nutritional value	3	5

=	=	Proteins	Determine the order of amino acids in the primary structure of proteins; determine the nitrogenous end and the carboxyl end.	3	6
Midterm exam for					7

=	=	Carbohydrate T	Carbohydrate chemistry, classification and importance; Stereochemistry of monosaccharides; some physiologically important carbohydrates	3	8
=	=	The oil	The importance of fats and their classification; fatty acids and Naming saturated and unsaturated; properties Physical; the effect of free radicals on tissues The effect of antioxidants in maintaining fats	3	9

=	=	Enzyme T	Enzyme synthesis, naming and classification; How do enzymes work? Enzyme-reactant interaction models; coenzymes necessary for the function of some enzymes; clinical applications of enzymes	3	10
=	=	Enzyme kinetics	General principles; factors Factors affecting the reaction rate in the presence of enzyme (concentration, pH, and temperature); the Michelis-Menten equation and the straight-line equation derived from it; the Michelis constant, its definition and what it means	3	11
=	=	ANSA inhibitors	Inhibitors and competitive Non-competitive; irreversible inhibition; motor effects of each of these Inhibitors and the mechanism of inhibition	3	12

=	=	Regulating the work of enzymes	Effect of available concentration The role of reactants in the process of regulating the work of enzymes is: The presence of enzymes in specific locations of the cell or in Certain tissues and cells facilitate organization; step Best to target regulation; regulation of enzyme quantity; regulation of enzyme action by Reversible or irreversible changes in enzyme structure	3	13
=	=	Diversity of the endocrine system	Basic principles of work Endocrine hormones; types and mechanisms of action Endocrine hormones; steps in the production, transport, and storage of hormones	3	14

=	=	Hormone work	The roles of motivation and formation Hormone and its release, signal generation, and effector response in hormone-regulated physiological processes; the role of receptors associated with T proteinsG in transmitting hormonal signals; coordinating the action of hormones and their effect on physiological outputs; the mechanism of the hormone’s effect on cells	3	15

11. Course Evaluation	
Midterm exam15 degrees Pop-up exams and homework5 degrees Practical part20 degrees Final exam60 degrees	
12. Learning and teaching resources	
Harper's Illustrated Biochemistry, 32 ed.	Required textbooks (methodology, if any)
Lippincott Illustrated Reviews: Biochemistry, 7th ed. Lehninger Principles of Biochemistry, 8th ed.	Main References (Sources)

	Recommended supporting books and references (scientific journals, reports, etc.)
	Electronic references, websites

1. Course name
Organic Pharmaceutical Chemistry
2. codeThe decision
3. the chapter /year
Third/Second
4. Date preparedDescription
5. AAvailable attendance forms
My presence
6. Number of study hours (total) / Number of units (total)
3 hours (theoretical) - 1 hour (practical) / 4
7. Course Instructor Name(If more than one name is mentioned)
Name: Tamar Hussein Ali Email:alitamar4@gmail.com
8. Course objectives

• To enable understanding of drug mechanisms of action at the molecular level, and the role of medicinal chemistry in the discovery and development of synthetic therapeutic agents. • It also enables students to understand the concept of the structure–activity relationship and apply it in the design and synthesis of new compounds or derivatives.	**Course objectives**

9. Teaching and learning strategies

Strategy	
1. Active participation through active participation in lectures and discussions. 2. Effective time management by creating a study schedule. 3. Leverage resources. 4. Cooperative learning from study groups. 5. Practical experience through laboratory sessions. 6. Review previous topics regularly to ensure information retention.	

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	Acid dissociation constant (Ka); pKa; ionization	Acid-base properties	3	1
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	absorption; distribution; metabolismDeletion	Drug distribution	3	2
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	The old computer method drug design	Statistical prediction drug activity.	3	3
Structure and conclusion	- Active readin textbooks.	A new way to design drugs	ModelsQSAR	3	4

Evaluation (m =final) Exams with te	- Online resources. - Self-assessm - Reflection.	Computer-aided drug desig	Molecular modeling		
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	The strength of the bond involved in binding; the interaction between drug receptors and events theSeries units	TEntrancesDrug receptors:	3	5
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	Geometric analogues. Optical configurational isomers.	Static properties of drugs. Optical isomerism And biological activi	3	6
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	calculated formation Stereochemistry of drugs Analog	calculated formatior Three-dimensional quantitative structu relationships and databases. Analog	3	7
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	Drug biotransformation sit	General pathways of drug metabolism	3	8
Structure and conclusion	- Active readin textbooks.	The role of cytochromeP45 monooxygenase in oxidativ biotransformation	General pathways of drug metabolism	3	9

Evaluation (m =final) Exams with te	- Online resources. - Self-assessm - Reflection.				
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	Oxidative reactions	General pathways of drug metabolism	3	10
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	InteractionsReductionism	General pathways of drug metabolism	3	11
Structure and conclusion Evaluation (mid-=final) Exams with tests	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	Hydrolysis reactions	General pathways of drug metabolism	3	12
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm - Reflection.	Phase reactionsII	General pathways of drug metabolism	3	13
Structure and conclusion Evaluation (m =final) Exams with te	- Active readin textbooks. - Online resources. - Self-assessm	Factors affecting drug metabolism.	Factors affecting dru metabolism.	3	14

	- Reflection.				
		exam	exam		15

11. Course Evaluation

The midterm grade is 40 and comes from:

1. 15 points for the theoretical exam + 5 points for tests and presentations.

2. 10 points for the practical exam + 5 points for tests and 5 points for reports and attendance.

The final grade is 60 and comes from the final theoretical exam.

The total evaluation score is 100.

12. Learning and teaching resources

5. Wilson and Gisvold Textbook of Organic medicinal and pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports…)
	Electronic references, websites

1. Course Name:	
Pharmaceutical and cosmetic preparations	
2. Course Code:	
3. Semester / Year:	
3rd year/ 2nd semester	
4. Description Preparation Date:	
5. Available Attendance Forms:	
Attendance in class	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 theoretical hours /2 practical hours /4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Maitham Razaq Altaee Email: maytham.r.abdlhasan@nust.edu.iq	
8. Course Objectives	
Course Objectives	**To teach theoretical bases for the technology of preparing different dosage forms with respect to their raw materials, compositions, methods of preparation, stability, storage and uses.**
9. Teaching and Learning Strategies	
Strategy	• Cooperative education strategy. • Teaching strategy brainstorming. • Education strategy one minute paper. • Education strategy real time feedback Education strategy notes series.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2,3	9	Emulsions; purpose of emulsification; methods of emulsification; emulsifying agen HLB syste stability emulsions.	Emulsions; purpose of emulsification; methods of emulsification; emulsifying agents; H system; stabil of emulsions.	Blackbo d, vid pictures diagram PowerP nt lectur	Final exam, m term exam, da and oral exams
4,5,6	9	Ointments, creams and gels.	Ointments, Creams and gels.	=	=
7,8,9	9	Suppositories.	Suppositories.	=	=
10	3	Pharmaceutical incompatibilities.	Physical and chemical incompatibilities , correction of it.	=	=
11,12 13,14	12	Cosmetic Formulations	Introduction, cosmetic of skin care, Toners, sunscreens	=	=
15	3	Herbs in cosmeceuticals	Herbs in cosmeceuticals	=	=

11. Course Evaluation

Divided the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc
40% striving (20% mid-term exam score, 20% practical, daily preparation, daily and oral exams, and classroom activities)
60% final exam score

12. Learning and Teaching Resources

Required textbook (curricular books, any)	Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition. and Sprowel's Americ Pharmacy. Cosmetic Formulation of Skin Care Products ; by Zoe Diana Draelos and Lauren A. Thaman ; Taylor and Francis Group ; 2006
Main references (sources)	Pharmaceutical Dosage forms and Drug Delivery Systems By Haward A. Ansel; latest edition Sprawl's American Pharmacy

	Cosmetic Formulation of Skin Care Products ; by Zoe Diana Draelos and Lauren A. Thaman ; Taylor and Francis Group ; 2006
Recommended books and references (scientific	pharmaceutical Dosage Forms and Drug Delivery.
journals, reports...)	
Electronic Reference Websites	https://scholar.google.com

Description Form

1. Course Name:
Pharmacology I
2. Course Code:
3. Semester / Year:
Second semester/ Third stage
4. Description Preparation Date:
2024/2/6
5. Available Attendance Forms:
The attendance during the lecture
6. Number of Credit Hours (Total) / Number of Units (Total)
3 hours weekly/3 units
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Faris Abed Mansoor Email: Ahmediraqiz1987_ah@yahoo.com
8. Course Objectives

Course Objectives	• **To introduce the pharmacy students to the basis of general pharmacology.** • **The student will learn about various body systems and drugs used to affect them in health and disease.** • **Moreover the course will cover the drugs used to treat microbial infections.**

9. Teaching and Learning Strategies

Strategy	• Cooperative education strategy. • Teaching strategy brainstorming. • Education strategy from reading and analyze a scientific paper. • Education strategy using the feedback and response to it. • Education strategy from note taking and response to it.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Remembering, understanding, applying, analyzing, evaluating and other knowledge, skills and values that the	General introduction to Pharmacology Pharmacokinetics	Teaching and explanation during lectures, using data show to clarify the lectures,	Through daily and midterm exam, in addition to scientific discussions
2	3		Pharmacokinetics		
3	3		Drug-receptor interaction and pharmacodynamics		
4	3		The autonomic nervous system (ANS); and cholinergic agonist		
5	3		Cholinergic antagonist		
6	3		Adrenergic agonist		
7	3		Adrenergic antagonist		

8	3	student acquires during the explanation of each topic of the curriculum that specified for the subject.	Principal of antimicrobial therapy	scientific discussions, homework, and informing the student about modern scientific sources.	and other scientific activities.
9	3		and cell wall inhibitor		
10	3		Protein synthesis inhibitors		
11	3		Quinolones, Folate antagonists, and urinary tract antiseptics		
12	3		Antimycobacterim drugs		
13	3		Antifungal drugs		
14	3		Antiprotozoal drugs		
15	3		Anthelmintic drug		

11. Course Evaluation

5 marks Quizzes and scientific activities and attendance+ 35 marks Midterm exam+ 60 marks Final exam.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	المنهج الموحد للامتحان التقويمي لكليات الصيدلة للعام الدراسي 2024-2025 Lipincott Pharmacology 7th Edition
Main references (sources)	Lippincott's illustrated reviews pharmacology (different editions and for up-to-date years).

Recommended books and references (scientific journals, reports…)	Basic and clinical pharmacology Some other related references could be used in the lectures
Electronic References, Websites	Some other related references could be used in the lectures

Course name:1
Drugs and medicinal plants

Pharmacognosy II
Course code:2
3Semester/Year:
First Course /2024-2025
4Date this description was prepared:
1/2/2025
Available attendance forms:5
My presence
6 Number of study hours (total) / Number of units (total):
Total number of study hours for the entire course = thirty hours **Total number of units for the entire course = thirty units**
7 Name of the course administrator (if more than one name is mentioned)
the name: M.M. Hussein Kamel Hamed **Hussain.hamid@nust.edu.iq** **Email:**
Co **urse objectives 8**

That DThe study of drugs and medicinal plants for third-year students in the College of Pharmacy aims to:: **Firstly :Identifying natural sources of medicineslikeStudy of medicinal plants, fungi, and animal products as sources of drugs..**	**Course objectives**

secondly:Understanding active ingredientsandIdentify biologically active compounds such as alkaloids, glycosides, flavonoids, and volatile oils.And tannin..

Third:Extraction and estimation methodsWhere the student can knowMethods of extracting and analyzing active ingredients using modern technologies..

Fourth:Drug applications in medicine and pharmacyandUnderstanding the effects of natural medicines and their use in treatment and prevention.

Fifth:Drug interactions and toxicityWhere the student canStudy of side effects and potential interactions between herbal medicines and traditional medicines..

Sixth:Economic and industrial aspectsWhere the student learns how toInvesting in medicinal plants in the pharmaceutical and nutritional supplement industry..

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Teaching and learning strategies9

Teaching and learning strategies in the subject of drugs and medicinal plants/Stage 3/First course.....……

First: Education strategies

1-Interactive lectures:

presentation The material Scientific from during Offers Introductory and means Illustrative like the pictures And PowerPoint as wellStimulating questions method to engage students in discussion.

2-Project-based learning:

Assigning students research projects on specific medicinal plants, including their chemical, pharmaceutical, and medical uses..

3-Case-based learning:

Analyzing medical cases that require the use of medicinal plants or herbal extracts, to apply scientific concepts in practice

evidence-based learning:-4

Training students to analyze recent studies and research on the effectiveness of medicinal plants and their active ingredients...

Education cooperationY:-5

Divide students into small groups to solve problems or give presentations about drugs and medicinal plants..

Second: Learning strategies

1-Practical learning in laboratories:Training students to identify different plant parts under the microscopeR.

2 -Conduct experiments to extract and estimate active compounds.

3-Scientific trips and visits to botanical gardens.

-Identify medicinal plants in their natural environment to understand their properties and distinguish them practically.4

5-E-learning and digital resources:Use e-learning platforms to follow lectures and watch educational videos on extracting and analyzing active ingredients..

6-Self-learning style:Encourage students to read scientific references and research the latest developments in the field of drugs and medicinal plants.Y.

7-Continuous assessment and feedback:Providing short tests, scientific reports, and presentations to monitor students' progress and motivate them to develop their skills..

10.Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
ExamsEditorialand evaluation Oral	In-person study in the classroom and on the YouTube channel	Introduction to the composition of active ingredients in medicinal plants	The student is able to understand and study the methods of forming the active substance within the plant.	2 hours	First week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Chemical and pharmaceutical study of hydrocarbon compounds	The student will be able to study carbohydrate compounds in terms of their chemical composition and their importance in the formation of secondary compounds in medicinal plants.	2 hours	The second week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of glycosides, their types and properties	The student will be able to study glycosidic compounds, study their chemical and physical properties, and classify them.	2 hours	The third week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study	Study of glycosides that act on the heart	The student will be able to study the glycosides that act on the heart.	2 hours	Fourth week

	And on channel YouTube				
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of aldehyde, alcohol, and cyanide alcohols	The student will be able to study aldehyde, alcoholic and cyanide glycosides.	2 hours	Fifth week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of anthraquinone, lactone, and coumarin glycosides	The student will be able to study anthraquinone, lactone and coumarin glycosides.	2 hours	Week 6
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of phenolic glycosides, flavonoids and saponins	The student will be able to study phenolic glycosides, flavonoids and saponins.	2 hours	The seventh week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of resin and tannin tannins	The student will be able to study resin and tannin compounds.	2 hours	The eighth week
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of fats and oils	The student will be able to study fixed fats and oils.	2 hours	Week 9
ExamsEditorialand evaluation Oral	the study attendance inside hall the study And on	Study of vegetable oils and their chemical	The student will be able to study, classify and extract volatile vegetable oils and	2 hours	The tenth week

	channel YouTube	components and their classification	their chemical compounds.		
Exams Editorial and evaluation Oral	the study attendance inside hall the study And on channel YouTube	Alcoholic and aldehyde volatile oils	The student will be able to study volatile alcoholic and aldehyde vegetable oils.	2 hours	Week eleven
Exams Editorial and evaluation Oral	the study attendance inside hall the study And on channel YouTube	Ketone, oxyacetic, phenolic and etheric volatile oils	The student will be able to study ketogenic, oxidative, phenolic and etheric volatile vegetable oils.	2 hours	The twelfth week
Exams Editorial and evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of poisonous plants and their types	The student will be able to study the types and varieties of poisonous plants.	2 hours	thirteenth week
Exams Editorial and evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of plant vitamins	The student will be able to study the types and importance of plant vitamins.	2 hours	Fourteenth week
Exams Editorial and evaluation Oral	the study attendance inside hall the study And on channel YouTube	Study of amino acids	The student will be able to study the types of amino acids and their role in human health.	2 hours	The fifteenth week

11 Course Evaluation

12Learning and teaching resources
Reference text:*Robbers JE, Speedie MK, Tyler VE (Eds.); Pharmacognosy and Pharmacobiotechnology; the latest edition.*

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Course Description Form

13. Course Name:
Medical ethics

14. Course Code:
15. Semester / Year:
THIRD STAGE /Semester 2
16. Description Preparation Date:
17.Available Attendance Forms:
Full-time students
18.Number of Credit Hours (Total) / Number of Units (Total)
1h. Theory
19. Course administrator's name (mention all, if more than one name)
Name: Tarig Mohamed Hassan Email: Tarigacad2@gmail.com

20. 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 go way.

21. Teaching and Learning Strategies	
Strategy	19. Actively participate in lectures and discussions to enhance learning. 20. Manage time effectively by creating and following a study schedule. 21. Make use of available resources to support learning and understanding. 22. Engage in collaborative learning through study groups. 23. Gain practical knowledge through hands-on laboratory sessions. 24. Regularly revisit previous topics to reinforce and retain knowledge.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	1	Introduction to the fundamental concepts of pharmacy ethics.	Introduction to Pharmacy Ethics: Theoretical Considerations.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
2nd	1	Understand the Code of Ethics for Pharmacists.	Code of Ethics for Pharmacists: Overview and Application.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
3rd	1	Explore common ethical considerations in pharmaceutical care practice (Beneficence, Autonomy, Honesty, etc	Ethical Considerations in Pharmaceutical Care Practice.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
4th	1	Develop awareness of interprofessional relatio and their ethical implications.	Interprofessional Relatio Collaboration and Ethics.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
5th	1	Learn the process of making ethical decisions pharmacy practice.	Making Ethical Decisions Frameworks and Strateg	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
6th	1	Identify ethical issues related to clinical pharmacy research.	Ethical Issues in Clinical Pharmacy Research.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
7th	1	Address ethical problem in the pharmacist's clini practice.	Addressing Ethical Problems in Pharmacist's Clinical Practice.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes

8th	1	Understand the importance of preventir misuse of medicines.	Preventing Misuse of Medicines: Ethical and Le Aspects.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
9th	1	Apply ethical principles real-life case studies in pharmacy practice.	Case Studies in Pharmacy Ethics: Practical Applications.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
10th	1	Explore ethical challeng in patient confidentiality and informed consent.	Patient Confidentiality ar Informed Consent in Pharmacy.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
11th	1	Understand the role of fidelity and autonomy ir pharmacy ethics.	Fidelity and Autonomy ir Pharmacy Practice Ethics	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
12th	1	Discuss ethical issues in emerging pharmaceutic technologies.	Emerging Pharmaceutical Technologies and Ethics.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
13th	1	Analyze ethical dilemma in public health pharma	Public Health Pharmacy: Ethical Considerations.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
14th	1	Review ethical challenge in drug development an marketing.	Ethical Challenges in Dru Development and Marketing.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid = final) Exams with Quizzes
15th		Exam	Exam		

23. Course Evaluation

Midpoints are 40 come from:

25 points theory exam + 5 points for quizzes, and presentations. The final point is 70 comes from the theory final exam. The Total points of evaluation is 100.

24. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	fast track: Law and Ethics in Pharmacy Practice. Pharmaceutical Press 2010.
Main references (sources)	*Joy Wingfield and David Badcott* ***. Pharmacy Ethics and Decision Making.*** *Pharmaceutical Press2007*
Recommended books and references (scientific journals, reports…)	*Robert J. Cipolle, Linda M. Strand, Peter C. Morley.* ***Pharmaceutical Care Practice: The Clinician's Guide,*** *2nd Edition****.***
Electronic References, Websites	*Robert m. Veatch and Amy Haddad****. Case Studies in Pharmacy Ethics.*** *second edition. Copyright © 2008 by Oxford University Press, Inc.*

Description of fourth - stage courses

25. Course name:
Biopharmaceutics
26. code The course:

27. semester /year:
Academic chapterbadthe second
28. Date of preparation of this description:
29.Available attendance forms:
Full-time students
30.Number of credit hours (total) / Number of units (total)
3 theoretical hours + 1 practical hour / 4 hours
31. Course Director's Name(Mention allIf there is more than one name)
name:Safaa Haloul Mohammed Email: safaa632658@gmail.com
32. Course objectives

Course objectives	5) Understanding Pharmacy Unit Operations:Learn the principles and applications of key processes such as mixing, grinding, drying, and filtration in pharmaceutical manufacturing.. 6) Exploring sterilization techniques:Study of different sterilization methods(Such as heat, radiation, and filtration.)Its importance in producing sterile pharmaceutical products. 7) Ensuring the quality and safety of sterile products:Understand contamination control, sterile processing, and regulatory guidelines to maintain the safety and efficacy of sterile dosage forms.. 8) Applying theoretical knowledge to industrial practices:Develop practi skills in dealing with and improving pharmaceutical manufacturing processes to enhance product quality and efficiency..

33. Teaching and learning strategies

Strategy	25. ParticipationEffective in lectures and discussions to enhance learning. 26. administrationManage time effectively by creating and following a study schedule.

	27. useResources available to support learning and understanding. 28. ParticipationIn cooperative learning through study groups. 29. acquiredPractical knowledge through practical laboratory sessions. 30.Get upReview previous topics regularly to reinforce and retain knowled

34. Course structure

week	hours	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
-the first	3	Measuring the concentration of the drug in the blood	Fluid mixing Mixing mechanisms Mixing liquids Mix in batches Practical considerations	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
the second	3	Measuring the concentration of t drug in the blood	Choosing a blender Mixing solids Factors affecting the removal of confusion continuous mixers	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
-the third	3	Measuring the concentration of t drug in the blood	mitigation equipme Fracturing mitigatic mechanisms	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
Fourth	3	grinding	Factors affecting th choice of grinding	-Active reading books.-Online Resources.-Self	Formative and summative assessment tests(Average=Final)With short tests

			grinding techniques	assessment.-Meditation.	
Fifth	3	drying	The purpose of dry Psychometric theor For drying Drying solids	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
Sixth	3	drying	Types of dryers Air systems system Specialized drying Metho Specialized drying	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
Seventh	3	Filtering and filtrat	filtering theory Filter media Media Nomination Aids Filtration filtration equipment	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
The eighth	3	Filtering and filtrat	Laboratory filtratio equipment Laborat filtration equipmen Candidate selection Specialist	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
Ninth	3	Sterilization	Sterilization metho Sterilization metho Types of sterilizers Evaluation indicato	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests

tenth	3	Sterilization	Chemical processes for sterilization Chemical sterilizati application For sterilization	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
eleventh	3	Sterilization	Sterilization metho	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
twelfth	3	Sterile products	additive containers	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
thirteenth	3	Sterile products	Hardware Quality Control	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
fourteenth	3	Sterile products	Hardware Quality Control	-Active reading books.-Online Resources.-Self assessment.-Meditation.	Formative and summative assessment tests(Average=Final)With short tests
fifteenth		exam	exam		

35. Course evaluation

The midpoints are 40 come from:

7. 15 points for the theoretical exam + 5 points for tests and presentations.
8. 10 points for practical exam + 5 points for quizzes and 5 points for reports and attendance.

The last point is 60 which comes from the final theoretical exam.

The total evaluation points is 100.

36. Learning and teaching resources

Required books (Textbooks(if any)	1. Industrial Pharmacy Theory and Practice by Leon Lachman

Main References (Sources)	
Recommended books and references (scientific journals, reports…)	
Electronic references and websites	

Course Description Form

37. Course Name:
Clinical Pharmacy II
38. Course Code:

39. Semester / Year:
FOURTH STAGE / SECOND Semester
40. Description Preparation Date:
41. Available Attendance Forms:
Full-time students
42. Number of Credit Hours (Total) / Number of Units (Total)
2h Theory+1 h. practical/ 3h
43. Course administrator's name (mention all, if more than one name)
Name: Tarig Mohamed Hassan Email: Tarigacad2@gmail.com
44. Course Objectives

Course Objectives	• **Understand the Role of Clinical Pharmacy** • **Apply Pharmaceutical Care Principles** • **Optimize Drug Therapy for Various Diseases** • **Ensure Patient Safety and Medication Management** • **Stay Updated on Emerging Clinical Pharmacy Practices**
45. Teaching and Learning Strategies	
Strategy	31. Actively participate in lectures and discussions to enhance learning. 32. Manage time effectively by creating and following a study schedule. 33. Make use of available resources to support learning and understanding. 34. Engage in collaborative learning through study groups. 35. Gain practical knowledge through hands-on laboratory sessions. 36. Regularly revisit previous topics to reinforce and retain knowledge.
46. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	Introduction to the concept of clinical pharmacy: its activities and professional responsibilities	Clinical pharmacy introduction and responsibilities	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
2nd	2	An overview of pharmaceutical care pra (the patient care proces	Pharmaceutical care practice overview	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
3rd	2	Hematologic disorders: Anemia and sickle cell disease	Anemia and sickle cell disease	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
4th	2	Hypertension	Hypertension manageme	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
5th	2	Ischemic heart diseases	Ischemic heart diseases Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
6th	2	Heart failure	Heart failure manageme	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
7th	2	Peripheral vascular diseases	Peripheral vascular disea	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz

8th	2	Asthma	Asthma management	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
9th	2	Chronic obstructive pulmonary disease (COP	Chronic obstructive pulmonary disease (COP	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
10th	2	Diabetes mellitus & Diabetic ketoacidosis (D	Diabetes mellitus and Diabetic ketoacidosis (DK Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
11th	2	Peptic ulcer disease	Peptic ulcer disease, Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
12th	2	Tuberculosis	Tuberculosis Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
13th	2	Infective meningitis	Infective meningitis Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
14th	2	Respiratory tract infecti	Respiratory tract infectio Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
15th		Exam	Exam		

47. Course Evaluation

Midpoints are 40 come from:

9. 15 points theory exam + 5 points for quizzes, and presentations. 10. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance. The final point is 60 comes from the theory final exam. The Total points of evaluation is 100.

48. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Reference Text: Roger Walker, Clive Edwards (eds), Clinical Pharmacy & Therapeutics
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

13. Course Name:
Organic Pharmaceutical Chemistry (II)
14. Course Code:
15. Semester / Year:
Semester 1/
16. Description Preparation Date:

17. Available Attendance Forms:

Full-time students

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

3h. Theory+1 h. practical/ 4h

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

Name: Ammar Kadhim Wabdan

Email: ammar.k.wabdan@nust.edu.iq

20. Course Objectives

Course Objectives	6. To the discovery and development of new agents for treating diseases and enab the translating of the drug structural formula into therapeutic effect. 7. It focuses on the methods of preparation for some pharmaceutical agents.

21. Teaching and Learning Strategies

Strategy	37. Active participation by engaging actively in lectures and discussions. 38. Effective time management by creating a study schedule. 39. Utilize resources. 40. Collaborative learning from study groups. 41. Hands-on experience by taking advantage of laboratory sessions. 42. Regularly review previous topics to ensure retention of information.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	Cholinergic System	Cholinergic agents, Cholinergic receptors, and their subtypes	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.

2nd	3	Cholinergic System	Stereochemistry and structure-activity relationships (SAR); Products.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
3rd	3	Cholinergic System	Cholinesterase inhibitors Cholinergic blocking age structure-activity relationships (SAR).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
4th	3	Cholinergic System	Solanaceous alkaloids an analogues; Synthetic cholinergic blocking ager and products. Ganglionic blocking agents (neuromuscular blocking agents).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
5th	3	Analgesic System	Analgesic agents (SAR of morphine, SAR of meperidine type molecu SAR of methadone type compounds; N-methylbezomorphans.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
6th	3	Analgesic System	Antagonist-type analgesi in benzomorphans; Analgesic receptors, Endogenous opioids.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th	3	Analgesic System	Products; Antitussive agents; Anti-inflammato analgesics.	- Active Reading Textbooks. - Online resourc - Self-assessmer	Formative and Summative Evaluation (Mid final)

				- Reflection.	Exams with Quizzes
8th	3	Adrenergic System	Adrenergic agents (Adrenergic neurotransmitters); Adrenergic receptors.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	3	Adrenergic System	Drugs affecting Adrenerg neurotransmission; Sympathomimetic agent	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
10th	3	Adrenergic System CNS depressant	Adrenergic receptor antagonists. CNS depressant	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
11th	3	CNS depressant	Benzodiazepines and related compounds; Barbiturates.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
12th	3	CNS depressant	CNS depressant with skeletal muscle relaxant properties; Antipsychotics; Anticonvulsants.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

13th	3	CNS Stimulants	CNS Stimulants	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	3	Hormones	Steroidal & nonsteroidal hormones	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th		Exam	Exam		

23. Course Evaluation

Midpoints are 40 come from:

11. 15 points theory exam + 5 points for quizzes, and presentations.
12. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	6. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1.Course name :
Industrial PharmacyII
2.Headquarters code
3.the chapter/ Year:
the first /2024
4.Date this description was prepared:

September/2024
5.Available attendance forms
Attendance
6.Number of study hours(Total) / Number of units (Total):
Number of units4 / 3 (theoretical hours + 2 practical hours per week)
7.Course Instructor NameIf more than one name is mentioned
Name: Tahseen chasib naimah
8.Course objectives

The objectives are to teach pharmacy students the methods of preparing different types of dosage forms and the advantages and disadvantages of each dosage form. This core course enables the student to understand the effect of pharmaceutical additives and different pharmaceutical dosage forms on the performance of a pharmaceutical product. It also introduces the principles required for drug manufacturing and the development of new formulations based on a comprehensive knowledge of pre-formulation, the excipients required for each dosage form, and the preparation methods..	Course objectives

9.Teaching and learning strategies		
	Prevention and display Interactive discussions Laboratory experiments	Strategy

10.Headquarter structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Written exams Oral exams Laboratory experiments	The eraser Dhat blackboard Information display Videos plans laboratory experiments	Initial formulation (comprehensive properties); crystallization And polygamy doubtyfor me, Particle properties, powder flow properties Transit coefficient of naked membranes, and the stability coefficient of the formula Y In liquid and solid state Capsule shell materials, production method, filling equipment, formulas and quality control Nature of capsule shell and contents, capsule manufacturing processing and control, quality control Definition of micropackaging, mm Its uses, methods of preparation, examples of its use and applications Types and classification of discs, Special types of tablets The capsule R Sh, dry and wet granulation Thinners, binders, materials Disintegrants, lubricants, anti-stick agents, colors, flavors and sweeteners	Understanding the principles of pharmaceutical manufacturing; pre-formulation Solubility and stability analysis study Understanding the gelatin capsule Y n steel Understanding the gelatin capsule Y N L Y Micro-packaging description Description of tablets as a pharmaceutical formula Understanding tablet preparation methods Description of materials	3 3 3 3 3 3 3 3 3 3	

		Hardness, disintegration, solubility and chemical content testing Y and Cutting, laminating, picking, sticking, and duplex printing the componentsAnd boxes Packing, Spray formation systems	used Y Prepare the disc Knowing how to evaluate the dosage form of tablets (quality control based on the pharmacopoeia) Understanding disc manufacturing problems and how to solve them Description of pharmaceutical inhalers		
		Production process, quality control and types of nebulizers	Learn to manufacture pharmaceutical inhalers and their delivery devices.	3 3 3	

			review		

11. Course Evaluation

Grade distribution from 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

The Theory and Practice of Industrial Pharmacy: Lachman/Lieberman's	Required textbooks (methodology if any)
Pharmaceutics: The Science of Dosage Form Design, by Michael E. Aulton	Main References (Sources)
Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems by Loyd Allen	Recommended supporting books and references (scientific journals, reports, etc.)
	Electronic references, websites

Course Description Form

1. Course Name:
Pharmacology III
2. Course Code:
3. Semester / Year:
Second semester/ Fourth stage
4. Description Preparation Date:
2024/2/6
5. Available Attendance Forms:
The attendance during the lecture
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours weekly/ 2units
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Faris Abed Mansoor Email: Ahmediraqiz1987_ah@yahoo.com
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, and other diseases. • **Inflammatory agents and the anti-inflammatory drugs will also be covered during this course.**

9. Teaching and Learning Strategies

Strategy	• Cooperative education strategy. • Teaching strategy brainstorming. • Education strategy from reading and analyze a scientific paper. • Education strategy using the feedback and response to it. • Education strategy from note taking and response to it.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Remembering, understanding, applying, analyzing, evaluating and other knowledge, skills and	Hormones of the pituitary and thyroid glands	Teaching and explanation during lectures, using data show to clarify the	Through daily and midterm exam, in addition to scientific discussions
2	2		Insulin and oral hypoglycemic drugs		
3	2		Insulin and oral hypoglycemic drugs		
4	2		Estrogens and Androgens		
5	2		Estrogens and Androgens		

6	2	values that the student acquires during the explanation of each topic of the curriculum that specified for the subject.	Corticosteroids	lectures, scientific discussions, homework, and informing the student about modern scientific sources.	and other scientific activities.
7	2		Drugs affecting bone metabolism		
8	2		Anti-inflammatory, Antipyretic, and analgesic agents		
9	2		Anti-inflammatory, Antipyretic, and analgesic agents		
10	2		Biological therapies in rheumatoid arthritis		
11	2		Other drugs for rheumatoid arthritis; Drugs employed in the treatment of gout		
12	2		Principles of cancer chemotherapy		
13	2		Anticancer Drugs		
14	2		Anticancer Drugs		
15	2		Anticancer Drugs		

11. Course Evaluation

5 marks Quizzes and scientific activities and attendance+ 35 marks Midterm exam+ 60 marks Final exam.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	المنهج الموحد للامتحان التقويمي لكليات الصيدلة للعام الدراسي 2024-2025

	Lipincott Pharmacology 7th Edition
Main references (sources)	Lippincott's illustrated reviews pharmacology (different editions and for up-to-date years).
Recommended books and references (scientific journals, reports…)	• Basic and clinical pharmacology • Some other related references could be used in the lectures
Electronic References, Websites	Some other related references could be used in the lectures

Course Description Form

25. Course Name:	
Organic Pharmaceutical Chemistry (III)	
26. Course Code:	
27. Semester / Year:	
4th stage Semester 2/ 2023 – 2024	
28. Description Preparation Date:	
20/2/2024	
29.Available Attendance Forms:	
Full-time students	
30.Number of Credit Hours (Total) / Number of Units (Total)	
3h. Theory+1 h. practical/ 4h	
31. Course administrator's name (mention all, if more than one name)	
Name: Ammar wabdan Email: ph.ammarkw@gmail.com	
32. Course Objectives	
Course Objectives	8. To the discovery and development of new agents for treating diseases and enab the translating of the drug structural formula into therapeutic effect. 9. It focuses on the methods of preparation for some pharmaceutical agents.
33. Teaching and Learning Strategies	
Strategy	43. Active participation by engaging actively in lectures and discussions. 44. Effective time management by creating a study schedule.

	45. Utilize resources. 46. Collaborative learning from study groups. 47. Hands-on experience by taking advantage of laboratory sessions. 48. Regularly review previous topics to ensure retention of information.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	Antibiotics	β-Lactam antibiotics (Penicillins).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.
2nd	3	Antibiotics	β-Lactamase inhibitors.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
3rd	3	Antibiotics	Cephalosporins and Monobactams.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
4th	3	Antibiotics	Aminoglycosides and Chloramphenicol; Tetracyclines.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

5th	3	Antibiotics	Macrolides; Lincomycin and Polypeptides.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
6th	3	Antibiotics	Antiviral agents (properties of viruses, viral classification, products).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th	3	Antibiotics	Sulfonamides (chemistr nomenclature, mechani of action, resistance, toxicity, side effects, metabolism, protein binding, distribution an SAR); products; Sulfone	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
8th	3	Anticancer	Anti-neoplastic agents; Alkylating agents.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	3	Anticancer	Antimetabolites.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
10th	3	Anticancer	Antibiotics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final)

					Exams with Quizzes
11th	3	Anticancer	Plant products.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
12th	3	Anticancer	Miscellaneous compounds	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
13th	3	Hormones and Monoclonal for cancer	Hormones and related compounds; Future ant neoplastic agents.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	3	Hormones and Monoclonal for cancer	Monoclonal antibodies; Gene therapy of cancer.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th		Exam	Exam		

35. Course Evaluation

Midpoints are 40 come from:

13. 15 points theory exam + 5 points for quizzes, and presentations.

14. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.	
36. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	7. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

13. Course Name:	
Pharmacology III	
14. Course Code:	
15. Semester / Year:	
Second semester/ Fourth stage	
16. Description Preparation Date:	
2024/2/6	
17. Available Attendance Forms:	
The attendance during the lecture	
18. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours weekly/ 2units	
19. Course administrator's name (mention all, if more than one name)	
Name: Ahmed Faris Abed Mansoor Email: Ahmediraqiz1987_ah@yahoo.com	
20. 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, and other diseases. • **Inflammatory agents and the anti−inflammatory drugs will also be covered during this course.**

21. Teaching and Learning Strategies

Strategy	• Cooperative education strategy. • Teaching strategy brainstorming. • Education strategy from reading and analyze a scientific paper. • Education strategy using the feedback and response to it. • Education strategy from note taking and response to it.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Remembering, understanding, applying, analyzing, evaluating and other	Hormones of the pituitary and thyroid glands	Teaching and explanation during lectures,	Through daily and midterm exam, in
2	2		Insulin and oral hypoglycemic drugs		
3	2		Insulin and oral hypoglycemic drugs		
4	2		Estrogens and Androgens		

5	2	knowledge, skills and values that the student acquires during the explanation of each topic of the curriculum that specified for the subject.	Estrogens and Androgens	using data show to clarify the lectures, scientific discussions, homework, and informing the student about modern scientific sources.	addition to scientific discussions and other scientific activities.
6	2		Corticosteroids		
7	2		Drugs affecting bone metabolism		
8	2		Anti-inflammatory, Antipyretic, and analgesic agents		
9	2		Anti-inflammatory, Antipyretic, and analgesic agents		
10	2		Biological therapies in rheumatoid arthritis		
11	2		Other drugs for rheumatoid arthritis; Drugs employed in the treatment of gout		
12	2		Principles of cancer chemotherapy		
13	2		Anticancer Drugs		
14	2		Anticancer Drugs		
15	2		Anticancer Drugs		

23. Course Evaluation

5 marks Quizzes and scientific activities and attendance+ 35 marks Midterm exam+ 60 marks Final exam.

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	المنهج الموحد للامتحان التقويمي لكليات الصيدلة للعام الدراسي 2024-2025 Lipincott Pharmacology 7th Edition
Main references (sources)	Lippincott's illustrated reviews pharmacology (different editions and for up-to-date years).
Recommended books and references (scientific journals, reports…)	• Basic and clinical pharmacology • Some other related references could be used in the lectures
Electronic References, Websites	Some other related references could be used in the lectures

Course Description Form

49. Course Name:	
Clinical Pharmacy II	
50. Course Code:	
51. Semester / Year:	
FOURTH STAGE / SECOND Semester	
52. Description Preparation Date:	
53.Available Attendance Forms:	
Full-time students	
54.Number of Credit Hours (Total) / Number of Units (Total)	
2h Theory+1 h. practical/ 3h	
55. Course administrator's name (mention all, if more than one name)	
Name: Tarig Mohamed Hassan Email: Tarigacad2@gmail.com	
56. Course Objectives	
Course Objectives	• **Understand the Role of Clinical Pharmacy** • **Apply Pharmaceutical Care Principles** • **Optimize Drug Therapy for Various Diseases** • **Ensure Patient Safety and Medication Management** • **Stay Updated on Emerging Clinical Pharmacy Practices**
57. Teaching and Learning Strategies	

Strategy	49. Actively participate in lectures and discussions to enhance learning. 50. Manage time effectively by creating and following a study schedule. 51. Make use of available resources to support learning and understanding. 52. Engage in collaborative learning through study groups. 53. Gain practical knowledge through hands-on laboratory sessions. 54. Regularly revisit previous topics to reinforce and retain knowledge.

58. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	Introduction to the concept of clinical pharmacy: its activities and professional responsibilities	Clinical pharmacy introduction and responsibilities	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
2nd	2	An overview of pharmaceutical care pra (the patient care proces	Pharmaceutical care practice overview	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
3rd	2	Hematologic disorders: Anemia and sickle cell disease	Anemia and sickle cell disease	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
4th	2	Hypertension	Hypertension manageme	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
5th	2	Ischemic heart diseases	Ischemic heart diseases Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz

6th	2	Heart failure	Heart failure manageme	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
7th	2	Peripheral vascular diseases	Peripheral vascular disea	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
8th	2	Asthma	Asthma management	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
9th	2	Chronic obstructive pulmonary disease (COP	Chronic obstructive pulmonary disease (COP	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
10th	2	Diabetes mellitus & Diabetic ketoacidosis (D	Diabetes mellitus and Diabetic ketoacidosis (DK Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
11th	2	Peptic ulcer disease	Peptic ulcer disease, Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
12th	2	Tuberculosis	Tuberculosis Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
13th	2	Infective meningitis	Infective meningitis Diagnosis and treatment	- Active Reading Textbooks. - Online resource	Formative and Summative Evaluation (Mid

				- Self-assessmen - Reflection.	final) Exams with Quiz
14th	2	Respiratory tract infecti	Respiratory tract infectio Diagnosis and treatment	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
15th		Exam	Exam		

59. Course Evaluation

Midpoints are 40 come from:

15. 15 points theory exam + 5 points for quizzes, and presentations.

16. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Reference Text: Roger Walker, Clive Edwards (eds), Clinical Pharmacy & Therapeutics
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

37. Course Name:	
Organic Pharmaceutical Chemistry (III)	
38. Course Code:	
39. Semester / Year:	
4th stage Semester 2/ 2023 – 2024	
40. Description Preparation Date:	
20/2/2024	
41. Available Attendance Forms:	
Full-time students	
42. Number of Credit Hours (Total) / Number of Units (Total)	
3h. Theory+1 h. practical/ 4h	
43. Course administrator's name (mention all, if more than one name)	
Name: Ammar wabdan Email: ph.ammarkw@gmail.com	
44. Course Objectives	
Course Objectives	10. To the discovery and development of new agents for treating diseases and enab the translating of the drug structural formula into therapeutic effect. 11. It focuses on the methods of preparation for some pharmaceutical agents.
45. Teaching and Learning Strategies	
Strategy	55. Active participation by engaging actively in lectures and discussions. 56. Effective time management by creating a study schedule. 57. Utilize resources.

	58. Collaborative learning from study groups. 59. Hands-on experience by taking advantage of laboratory sessions. 60. Regularly review previous topics to ensure retention of information.

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	Antibiotics	β-Lactam antibiotics (Penicillins).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.
2nd	3	Antibiotics	β-Lactamase inhibitors.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
3rd	3	Antibiotics	Cephalosporins and Monobactams.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
4th	3	Antibiotics	Aminoglycosides and Chloramphenicol; Tetracyclines.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
5th	3	Antibiotics	Macrolides; Lincomycin and Polypeptides.	- Active Reading Textbooks. - Online resourc	Formative and Summative

				- Self-assessmer - Reflection.	Evaluation (Mid final) Exams with Quizzes
6th	3	Antibiotics	Antiviral agents (properties of viruses, viral classification, products).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th	3	Antibiotics	Sulfonamides (chemistr nomenclature, mechani of action, resistance, toxicity, side effects, metabolism, protein binding, distribution an SAR); products; Sulfone	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
8th	3	Anticancer	Anti-neoplastic agents; Alkylating agents.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	3	Anticancer	Antimetabolites.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
10th	3	Anticancer	Antibiotics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

11th	3	Anticancer	Plant products.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
12th	3	Anticancer	Miscellaneous compounds	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
13th	3	Hormones and Monoclonal for cancer	Hormones and related compounds; Future ant neoplastic agents.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	3	Hormones and Monoclonal for cancer	Monoclonal antibodies; Gene therapy of cancer.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th		Exam	Exam		

47. Course Evaluation

Midpoints are 40 come from:

17. 15 points theory exam + 5 points for quizzes, and presentations.

18. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	8. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1. Course name
communication skills
2. Course code
3. Semester/Year
the chapterSecond / Fourth Stage
4. Date this description was prepared
2024/9/13
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
2 hours/2 units
7. Name of the course supervisor (if more than one name is mentioned)
Name: Tahseen Jasb
8. Course objectives

Communication skills are one of the functions of pharmaceutical care practice. They aim to develop a traditional relationship between pharmacists and patients, where information is exchanged, maintained, and used to improve patient care through appropriate drug therapy. This course aims to provide Pharmacists provide better patient care, focusing on the communication skills necessary to build the type of relationship that leads to improved treatment outcomes.	Course objectives

9. Teaching and learning strategies	
Lectures, seminars, simple competitions Brainstorming questions for real-time discussions during lectures	Strategy

10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week

Simple exams	Lectures and discussions	Patient-Centered Communication in Pharmacy Practice	1- The responsibility of pharmacists in patient care 2- The importance of communication in fulfilling your patient care responsibilities 2- What is patient-centered care? 4- Understanding medication use from the patient's perspective 5- Encouraging a more active patient role In therapeutic monitoring	2	1

			6- A patient-centered view of the medication use process		
Simple exams	Lectures and discussions	Principles and elements of interpersonal communication	1- Components of the interpersonal communication model 2- Personal responsibilities in the communication form 3- Searching for the meaning of the message 4- The importance of perception in communication	2	2

Simple exams	Lectures and discussions	Type of nonverbal communication.	1- Nonverbal communication vs. verbal communication 2- Elements of nonverbal communication 3- Distraction of nonverbal communication 4- Detecting unauthorized signals verbal Others have 5-Dealing with sensitive issues 6- Overcoming non-verbal distractions	2	3
Simple exams	Lectures and discussions	Communication barriers	1- Environmental barriers 2- personal barriers 3- Administrative obstacles 4- Time barriers	2	4
Simple exams	Lectures and discussions	Listening and responding empathetically During communication.	1- Good listening 2- Empathic response 3- Positions underlying empathy 4- Nonverbal aspects of empathy 5- Problems in establishing supportive relationships	2	5

Simple exams	Lectures and discussions	Affirmation and firmness	1- Definition of packages 2- Theoretical foundations 3-Packaging techniques 4- Firmness and patience 5- Packages and other specialists in health care 6- Packages and workers 7- Packages and employers 8- Packages and colleagues	2	6
Simple exams	Lectures and discussions	Interview and evaluation	1- Ingredients Effective interview 2- procedure Interview as a process	2	7
			3- Interview in pharmacy practice 4- ProcedureInterviews Patient-reported results 5- Documentation information The interview 6- The interview Using the phone		

Simple exams	Lectures and discussions	Assisting patients in managing treatment regimens	1- Mistaken assumptions about patient understanding And his commitment to medication 2- Techniques to improve patient understanding 3-Techniques Establishing new behaviors 4- Techniques to facilitate behavior change 5- Theoretical foundations supporting behavior change 6- Applicationprinciples Motivational interviewing strategies	2	8
Simple exams	Lectures and discussions	guidance patient;list Consultation review; point-by-point discussion; consultation scenario	An essential element of counseling Effectiveness of patient consultation and how to provide this consultation	2	9
Simple exams	Lectures and discussions	Safety Pharmacology and communication skills.	1- IntroductionFor issues Drug safety 2-Types Errors: Reasons Potential and possible solutions 3- General strategies to enhance patient safety when errors occur	2	10

Simple exams	Lectures and discussions	Strategies To meet specific needs.	Contact A- Senior Housing B- Weakness of the connection C- Patients People with disabilities D- Terminally ill patients H patients HIV or AIDS و- patients Those who suffer from mental health problems ز- patients suicide bombers	2	11

			H-Patients Those with low health literacy i- Cultural competence j- Caregivers		
Simple exams	Lectures and discussions	With children ge round Communication and senior pharmaceuticals	1- necessityEducation Children and their parents about medications 2-Importance Use of patient-centered interaction approach 3-Understanding the child's level of cognitive development 4-Principles General for communicating with and empowering children, infants and preschoolers6-Children in School age and teenagers	2	12

Simple exams	Lectures and discussions	Contact between Professional skills and cooperation	1-The roles of the pharmacist in Cooperative Pharmacotherapy Management 2- Obstacles and facilitators of cooperative partnerships 3- Steps Primary development Cooperative arrangements 4- Building trust: the cornerstone of successful cooperative arrangements 5- Use skills Contact to enhance cooperation relations 6-six Critical behaviors within collaborative partnerships	2	13
		Electronic communication in healthcare.	1- Using the Internet 2- Use Mail Electronic in society3- Patient Use - Electronic Communications Service Provider 4- Use Professional Electronic Communications 5- Patient privacy and system security issues 6- Responsibilities and therapeutic relationships 7- Establishing pharmaceutical care services	2	14
			Using means Electronic communication8- Create		

			an email management system		
Simple exams	Lectures and discussions	Ethical behavior when communicating with patients	This topic explains: 1. Definitions 2- Occurrence of non-adherence and lack of health awareness 3- Consequences of non-adherence and lack of health awareness 4- Reasons for non-adherence to medication and lack of health awareness 5- Measuring adherence With medication and health awareness 6- Techniques to help patients improve medication adherence and increase health awareness	2	15

11. Course Evaluation	
25 midterm exams + 5 seminars + 70 final exams	
12. Learning and teaching resources	
Communication Skills in Pharmacy Practice	Required textbooks (methodology if any)
A Handbook for Teaching Courses in Pharmacy Communications.	Main References (Sources)
Skills for Communicating with Patients.	Recommended supporting books and references (scientific journals, reports, etc.))
Review articles	Electronic references, websites

Description of fifth -stage courses

Course Description Form

49. Course Name:	
Organic Pharmaceutical Chemistry (IV)	
50. Course Code:	
51. Semester / Year:	
Semester 1/ 2023 – 2024	
52. Description Preparation Date:	
20–2–2024	
53.Available Attendance Forms:	
Full-time students	
54.Number of Credit Hours (Total) / Number of Units (Total)	
2h. Theory+0 h. practical/ 2h	
55. Course administrator's name (mention all, if more than one name)	
Name: Tammar H. Ali Email: tammar@mu.edu.iq	
56. Course Objectives	
Course Objectives	12. To give the students' knowledge and experience in pro–drug and hormones as part of their medicinal and pharmaceutical field.

	13. It includes classification, synthesis, biotransformation, and/or formulation of certain drugs to improve their action as well as to avoid some side effects.

57. Teaching and Learning Strategies

Strategy	61. Active participation by engaging actively in lectures and discussions. 62. Effective time management by creating a study schedule. 63. Utilize resources. 64. Collaborative learning from study groups. 65. Hands-on experience by taking advantage of laboratory sessions. 66. Regularly review previous topics to ensure retention of information.

58. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	The basic concept of prodrugs	Covalent bonds (cleavable)	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.
2nd	2	The basic concept of prodrugs	Prodrugs of functional groups	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
3rd	2	The basic concept of prodrugs	Types of prodrugs	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

4th	2	Chemical prodrug delivery systems	Chemical delivery systems.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
5th	2	Chemical prodrug delivery systems	Polymeric prodrugs.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
6th	2	Chemical prodrug delivery systems	Types and structure of polymers.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th	2	Chemical prodrug delivery systems	Cross-linking reagents.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
8th	2	Drug targeting	Drug targeting for monomer.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	2	Drug targeting	Drug targeting for polymer.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final)

					Exams with Quizzes
10th	2	Combinatorial chemistry	Peptides and other linear structures; Drug-like molecules.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
11th	2	Combinatorial chemistry	Support and linker; Solution-phase combinatorial chemistry.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
12th	2	Combinatorial chemistry	Detection, purification, and analgesics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
13th	2	Combinatorial chemistry	Encoding combinatorial libraries; High-throughput screening.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	2	Combinatorial chemistry	Virtual screening; Chemical diversity and library design.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th		Exam	Exam		

59. Course Evaluation

Midpoints are 40 come from:

19. 15 points theory exam + 5 points for quizzes, and presentations.

20. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	9. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course name
Applied treatmentsI
2. Course code
3. Semester/Year
semesterFirst/Fifth Stage
4. Date this description was prepared
2024/09
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
3 hours / 3 units
7. Name of the course supervisor (if more than one name is mentioned)
:Assistant Professor Osama Kazim Radhi Name:

8. Course objectives	
The course provides students with basic knowledge about pathophysiology, symptoms, and goals of treatment. In addition to basic knowledge about drug use, pharmacokinetics, dosage calculations, side effects, treatment algorithms, and patient education.	Course objectives

9. Teaching and learning strategies	
Lectures and seminars Simple tests brainstorming questions	Strategy

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week

Simple tests	Lectures and discussions	Interpretation of clinical laboratory data	Differentiate between sensitivity and specificity Laboratory tests. 2. Determine reference ranges for laboratory tests.	2	1
			3. Determination of liver function tests natural And unnatural. 4. Kidney function tests natural And unnatural. 5. Interpretation of examination results Complete blood count. 6. Interpretation of the main results of urine analysis. 7. explanation Laboratory tests for blood diseases.		

Simple tests	Lectures and discussions	dyslipidemia	Learn about common types of lipid disorders. **2.** Determine the benefits of statin combinations and the intensity of statin therapy. **3.** Recommend appropriate therapeutic lifestyle changes and drug therapy interventions for dyslipidemia. **4.** Determine the patient's risk of developing cardiovascular diseases. on hardening Arteries and corresponding treatment goals. Identify patients who are prescribed non-prescription medication. Statins. **6.** Describe the components of a monitoring plan to evaluate the efficacy and adverse effects of drug therapy for dyslipidemia. **7.** Educating patients about the disease condition, appropriate therapeutic lifestyle changes, and the drug therapy required for effective treatment.	2	2

Simple tests	Lectures and discussions	stroke	1. Differentiate between types of cerebrovascular diseases, including transient ischemic attack (TIA), ischemic stroke (MI), and myocardial infarction (MI).	1	3

			Cerebral (and hemorrhagic stroke). **2.** Identify modifiable and non-modifiable risk factors associated with ischemic and hemorrhagic stroke. **3.** to explain Pathophysiology of stroke and hemorrhagic stroke. **4.** a description Clinical manifestations of transient ischemic attacks, ischemic stroke, and hemorrhagic stroke. **5.** Formulating strategies for primary prevention of acute stroke. **6.** Evaluation of treatment options for acute stroke. **7.** Determine whether		

			fibrinolytic therapy is required. With a injured sick stroke Acute ischemic stroke. **8.** Evaluation of the role of endovascular therapy bloody I have an acute stroke patient. **9.** Formulating strategies For secondary prevention of acute stroke. **10.** Evaluation of treatment options for acute hemorrhagic stroke.		
Simple tests	Lectures and discussions	acute kidney injury	**1.** Evaluation of the patient's kidney function based on clinical presentation And the results Laboratory and urine parameters. **2.** To determine drug therapy outcomes and treatment endpoints	1	4

			in patients with acute kidney injury. . Applying knowledge of the pathophysiology of acute renal failure to develop a treatment plan.		
			4. situation Strategies to reduce the incidence of drug-induced acute kidney injury. **5.** Monitoring and evaluating the safety and effectiveness of the treatment plan.		
Simple tests	Lectures and discussions	Chronic kidney disease and end-stage renal disease	.. List risk factors that increase the susceptibility to chronic kidney disease. **2.** Explain the mechanisms associated with evolution illness Chronic kidney disease. Determine the desired outcomes for treatment of chronic kidney disease. **4.** Developing a therapeutic approach to slow the progression of chronic kidney disease,	2	5

			including lifestyle modifications. life And drug treatments. **5.** Identify specific consequences associated with chronic kidney disease. **6.** Designing a therapeutic approach appropriate to the specific consequences associated with chronic kidney disease.		
Simple tests	Lectures and discussions	Hemodialysis and peritoneal dialysis	Determine indicators for dialysis. **2.** Mention the advantages and disadvantages of hemodialysis and peritoneal dialysis. **3.** Describe the principles and procedures of hemodialysis and peritoneal dialysis. **4.** Learn about the complications of hemodialysis and kidney dialysis Peritoneum and its treatment.	1	6

Simple tests	Lectures and discussions	Pharmacovigilance	**1.** Definition of pharmacovigilance. **2.** Know who should report pharmacovigilance reports. **3.** Describe the importance of pharmacovigilance.	1	7
			4. List historical events of adverse drug reactions. **5.** Description of causality assessment. **6.** Recognition on Used in Terminology pharmacovigilance. **7.** Recognizing the importance of pharmacovigilance.		
Simple tests	Lectures and discussions	Liver cirrhosis and hepatic hypertension	**1.** Explanation of the pathophysiology of liver cirrhosis Hepatic hypertension. **2.** Recognizing the signs and symptoms of liver cirrhosis. **3.** to set Laboratory abnormalities The resulting About diseases liver Physiology description Associated diseases. **4.** a description Consequences associated with decreased liver function.	2	8

			5. Determine therapeutic goals for patients suffering from complications of liver cirrhosis. **6.** Recommending a specific treatment regimen for a patient with liver cirrhosis that includes lifestyle changes, non-drug measures, and drug therapy.		
Simple tests	Lectures and discussions	viral hepatitis	**1.** Differentiating between the five types For inflammation viral hepatitis According to Epidemiology, Causes and clinical presentation. **2.** Identify the transmission routes and risk factors among the main types of viral hepatitis. **3.** Liver serology evaluation to understand how to diagnose the type of hepatitis. **4.** Determine treatment goals for patients with viral hepatitis.	1	9

			5. Recommendation With appropriate drug therapy to prevent viral hepatitis. 6. Develop a care plan for chronic viral hepatitis.		
Simple tests	Lectures and discussions	inflammatory bowel disease	a description . Physiological The mechanisms underlying pathology of inflammatory bowel disease. 2. Learn the signs and symptoms of inflammatory bowel disease, including the key differences between ulcerative colitis and Crohn's disease. 3. Determine appropriate therapeutic outcomes for patients with inflammatory bowel disease. 4. Describes drug treatment options for patients with acute or chronic symptoms of colorectal cancer. 5. Create a patient-specific medication treatment plan based on the symptoms, severity, and location of ulcerative colitis and Crohn's disease. 6. Recommendation With appropriate monitoring standards for drug therapies for inflammatory bowel disease.	1	10

Simple tests	Lectures and discussions	shock syndromes	**1.** Mention the types and causes of shock syndromes. **2.** Describe the most important hemodynamic abnormalities that occur. I have Patients in shock. **3.** a description Clinical presentation including signs Symptoms and measurements Laboratory testsFor the typical trauma patient.	1	11

			. Preparing a treatment plan that includes specific outcome criteria Clearly for the shock patient which includes fluid management and drug therapy. **5.** Comparison of the relative advantages and disadvantages of intravenous solutions and blood products in the treatment of shock.		

Simple tests	Lectures and discussions	Fluid disturbances andStrays	1. Estimating the volumes of different body fluid compartments. 2. to set Strays Mainly found in extracellular and intracellular fluid compartments. 3. Describe the unique relationship between blood sodium concentration and total body water. 4. review Causes and symptoms Clinical and Management sodium disorders Potassium and calcium Phosphorus and magnesium.	2	12

Simple tests	Lectures and discussions	Epilepsy	**1.** Describe the epidemiological and social impact of epilepsy. **2.** Definition of terms related to epilepsy, including seizures, convulsions, and epilepsy. **3.** Describe the basic pathophysiology of seizures and epilepsy. Distinguishing between types of seizures And its classification with giving Description of the clinical presentation of the seizure and EEG. Determine therapeutic decision points Home and goals Therapeutic In the treatment of epilepsy. **6.** Discussing non-drug treatments for epilepsy.	1	13

			7. Recommending an appropriate drug treatment regimen while monitoring the epilepsy treatment criteria. **8.** Develop a plan to switch the patient from one antiepileptic regimen to a different one.		

			9. Managing potential drug interactions with Antiepileptic drugs. 0. Determine when and how to stop treatment with antiepileptic drugs.		
Simple tests	Lectures and discussions	Multiple sclerosis	Identifying risk factors for multiple sclerosis. 2. Differentiating between forms of multiple sclerosis based on the patient's condition and disease course. Comparing treatment options Modified For MS for a specific patient. 4. Determine appropriate symptomatic treatment options for a particular patient. Develop a monitoring plan for a patient taking specific medications.	1	14

Simple tests	Lectures and discussions	Enteral nutrition	**1.** Evaluate patient parameters to determine if: Nutrition Intestinal suitable or not. **2.** Comparison of clinical effectiveness and complications The costs of enteral nutrition versus parenteral nutrition. **3.** Describe the components of enteral nutrition and their role in nutritional support therapy. **4.** Develop a plan to design, initiate, and adjust the enteral nutrition formula for an adult patient based on patient-specific factors.	1	15

			5. a description Etiology and risk factors for complications associated with enteral nutrition in adult patients receiving enteral nutrition. **6.** Choosing appropriate drug administration techniques for the enteral feeding patient.		

Simple tests	Lectures and discussions	Intravenous nutrition	1. drawers Suitable indications for intravenous nutrition in adult patients. 2. Describe the components of intravenous nutrition and their role in nutritional support therapy. 3. Develop a plan to design, initiate, and adjust the IV nutrition formula for an adult patient based on: factors Patient specific 4. a description Etiology and risk factors for complications associated with parenteral nutrition in adult patients receiving parenteral nutrition. 5. a description Causes Risk factors for refeeding syndrome, as well as measures to prevent refeeding syndrome.	1	16

Simple tests	Lectures and discussions	deep vein thrombosis	1. Recognizing risk factors, signs, and symptoms of thrombosis veins Deep pulmonary embolism. 2. Description of hemostasis and coagulation processes. 3. Determine the patient's relative risk of developing venous thrombosis. 4. Formulating an appropriate preventive strategy for a patient at risk of developing deep vein thrombosis. 5. to choose And interpretation Laboratory Tests for monitoring anticoagulant drugs.	1	17

			6. Identify factors that put the patient at high risk of bleeding while taking pharmaceutical Anticoagulant. **7.** State at least two possible advantages of newer anticoagulants.)any Low molecular weight heparin, fondaparinux, Oral and inhibitors direct thrombin and direct factor inhibitorsOral Xa (compared to conventional anticoagulants) i.e. unfractionated heparin or warfarin). **8.** Managing a patient with secondary warfarin toxicity (elevated international normalized ratio)INR [with or without bleeding]. **9.** Recognizing interactions between anticoagulant drugs and drugs and food. **10.** Formulating an appropriate treatment plan For the patient who suffers from venous thrombosis		

			Deep or pulmonary embolism.		
Simple tests	Lectures and discussions	Irregular heartbeat	**1.** Description of the stages of cardiac work. **2.** Description of the modified Vaughan-Williams classification of antiarrhythmic drugs. **3.** Comparison of risk factors, their characteristics, mechanisms and causes Symptoms and treatment goals (A) Bradycardia Pocket (b)	2	18

			Atrioventricular block, (c) Atrial fibrillation, (d) Paroxysmal supraventricular tachycardia, (e) Complexes Ventricular premature ventricular tachycardia, including		

			de torsades That and (z) tremorventricular **4.** Comparison of appropriate treatment options for sinus bradycardia and atrioventricular block. **5.** Compare and contrast the mechanisms of action of drugs used to control ventricular rate and shunting. to sinus rhythm And preservation On the rhythm Pocket In patients with atrial fibrillation. **6.** Comparison of advantages and disadvantages Warfarin and non-antivitamin oral anticoagulants For the prevention of stroke and systemic embolism in patients with atrial fibrillation. **7.** Discuss non-pharmacological methods for terminating paroxysmal supraventricular tachycardia, compare and contrast the mechanisms of action of drugs used for acute termination of paroxysmal supraventricular tachycardia, and		

			compare appropriate treatment options for long-term prevention of recurrence of paroxysmal supraventricular tachycardia. **8.** Comparison of the mechanisms of action of drugs used to treat acute attacks of ventricular tachycardia, and description of options and indications for non-pharmacological treatment of tachycardia. Ventricular and ventricular fibrillation. **9.** Designing drug treatment plans Individual For patients with (a) bradycardia Pocket)for(		

			(a) AV block, (b) Atrial fibrillation, (d) Paroxysmal supraventricular tachycardia, (e) Ventricular premature complexes, (f) Ventricular arrhythmias including points(, torsades and)z(ventricular fibrillation.		
Simple tests	Lectures and discussions	Pain management	**1.** Identify the characteristics of the types of pain: nociceptive, inflammatory, neurogenic, and functional. **2.** Explain the mechanisms involved in pain transmission. **3.** Choosing the appropriate method for assessing pain. **4.** Recommendation By choosing the appropriate analgesic, dosage, and monitoring plan for the patient based on the type and severity of pain and other patient-specific criteria. **5.** procedure Arithmetic operations that Doses include: Poor For pain, and conversion from an opioid to Other, and rescue doses, And the transfer	2	19

			To the continuous leak. **6.** Educating patients and caregivers about effective pain management, coping with chronic pain, and the use of non-pharmacological measures.		
Simple tests	Lectures and discussions	headache	**1.** Differentiating between types of headache syndromes Basis of clinical manifestations. **2.** Recommendation of non-pharmacological measures For treatment Headache and prevention. **3.** Determine when drug therapy is recommended for headaches. **4.** Developing individualized treatment regimens for the management of acute	1	20

			and chronic headache syndromes.		

			5. Monitor headache treatment to ensure its safety, tolerability, and effectiveness.		

Simple tests	Lectures and discussions	Parkinson's disease	1. Describe the pathophysiology of Parkinson's disease, neurotransmitter involvement, and targets for drug therapy. 2. Identify the basic motor symptoms of Parkinson's disease and determine the patient's clinical condition and disease progression. 3. For the patient who starts treatment Parkinson's disease, appropriate drug treatment and goal setting are recommended. Therapeutic Patient specific. 4. Identify and recommend appropriate treatment for non-motor symptoms. 5. Formulate a plan to reduce Maximizing the patient's "time off" and "time on" of medications, including timing, dosage, and frequency of medications.	2	21

			6. RecognitionOn complications Different types of movement in Parkinson's disease and their treatment. **7.** building Appropriate patient counseling regarding medications and lifestyle modifications. life For Parkinson's disease. **8.** Develop a monitoring plan to evaluate the effectiveness of the treatment and its adverse effects.		
Simple tests	Lectures and discussions	benign prostatic hyperplasia	**1.** to explain Pathophysiology to inflate Benign prostatic hyperplasia. **2.** Recognizing symptoms and signs inflation	1	22

			Benign prostatic hyperplasia.		

			3. Include desired treatment outcomes to inflate Benign prostatic hyperplasia. **4.** Identifying factors that guide the choice of an antidote 1α-adrenergic specific to the individual patient. **5.** Comparison between adrenergic antagonists1α and α 5 reductase inhibitors in terms of mechanism of action, treatment outcomes, adverse effects and interactions. **6.** Describe the indications, advantages, and disadvantages of various combination drug regimens that include anticholinergics. 1α-adrenergic, α5-reductase inhibitors, or anticholinergic agents, or Tadalafil, or mirabegron.		

			7. Description of surgical intervention indications. 8. Apply the patient care process to develop a plan Individual therapy.		
Simple tests	Lectures and discussions	Glaucoma	1. Identify risk factors for the development of primary open-angle glaucoma and acute angle-closure glaucoma. 2. Recommend repeat glaucoma screening based on the patient's risk factors. 3. Comparison of the pathophysiological mechanisms responsible for open-angle glaucoma and acute angle-closure glaucoma. 4. Outline of the clinical presentation of	1	23

			chronic open-angle glaucoma and acute angle-closure glaucoma. **5.** Include management goals for patients with suspected primary open-angle glaucoma and glaucoma.		
			The first is open-angle, and the second is acute angle-closure. **6.** Choosing the most appropriate treatment based on the patient's data While Related to open-angle glaucoma, glaucoma The suspect To him, and the blue atheismClosed angle. **7.** Develop a monitoring plan for patients on specific medication regimens. **8.** Advise patients about glaucoma, drug treatment options, and management techniques. eyes,		

			And the importance of Commitment to the prescribed system.		

11. Course Evaluation	
Midterm exam25 marks, tests and attendance 5 marks, final exam 70 marks	
12. Learning and teaching resources	
A Pharmacotherapy: pathophysiologic approach. Pharmacotherapy: principles and practice. Applied therapeutics. Clinical pharmacy and therapeutics. Pharmacotherapy handbook. ACCP updates in therapeutics.	Required textbooks (methodology if any)
A Pharmacotherapy: pathophysiologic approach. Pharmacotherapy: principles and practice. Applied therapeutics. ACCP updates in therapeutics.	Main References (Sources)
A Pharmacotherapy: pathophysiologic approach. Pharmacotherapy: principles and practice.	Recommended supporting books and references (scientific journals, reports) ....
E-books and review articles	Electronic references, websites

1. Name of the headquarters
Clinical Chemistry
2. Location code
3. Semester/Year
First/Fifth
4. Date this description was prepared
2024/9/19
5. Available forms of attendance
Attendance
6. Number of study hours (total) / Number of units (total)
4/5
7. Name of the course supervisor (if more than one name is mentioned)
taghreed.k.fadaam taghreed.k.fadaam@nust.edu.iq

8. Course objectives	
• The study aims to provide students with the theoretical knowledge and technical skills necessary in the field of clinical chemistry. • Understand the role of clinical biochemistry in normal and pathological conditions in various body systems. • Discussing changes in metabolic pathways and their pathogenesis, and monitoring the progression of the condition with treatment. • Interpreting the results of biochemistry tests and integrating them with clinical examination to complete the picture and arrive at an accurate diagnosis of the medical condition.	Course objectives
9. Teaching and learning strategies	

● Presentation and delivery •Research and induction ●Interactive discussions	Strategy

Brainstorming	

10. Headquarter structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	Week A
theoretical exam Class activities	Lectures, discussions and reports	Carbohydrate metabolism disorders	Knowledge of the chemistry of glucose metabolism in the human body and the pathological conditions associated with its disorders	6	1 and 2
=	=	lipid level disorders In the blood and other accompanying symptoms	Knowing the pathological conditions associated with lipid metabolism disorders and how to detect them in the laboratory using appropriate tests.	3	3
=	=	Liver function tests	Study of the metabolic, industrial and excretory functions of the liver and how to detect their disorders	3	4
=	=	Kidney function tests	Study of the excretory functions of the kidneys and their role in Balancing the elements in the blood and removing waste and toxins	3	5

=	=	Kidney function tests	Study of acute and chronic kidney disease and how to detect it Laboratory as well as discussing the types of kidney stones	3	6
Midterm exam for					7
=	=	Enzymes in blood	Case studies Which is accompanied by changes in enzyme levels in the blood	3	8
=	=	Cancer parameters	Study of the parameters that appear in blood serum to indicate the presence of different types of cancer and their degree It can be used in early diagnosis or follow-up treatment for various cases.	3	9
=	=	Introduction to Behaviors Hormones	Familiarity with what clinical chemistry studies, especially the study of hormones, with a discussion of the structure of the hypothalamus and its hormones.	3	10
=	=	Pituitary hormones and their disorders	The pituitary gland, its disorders, and laboratory tests to detect these disorders	3	11
=	=	Adrenal hormones and their disorders	The adrenal gland, its disorders, and laboratory tests to detect these disorders	3	12
=	=	Thyroid hormones and their disorders	Thyroid gland, its disorders and laboratory tests to detect these disorders	3	13

=	=	Gonadal hormones and their disorders	male gonads Femininity and functional and pathological changes in its hormones	3	14
=	=	Study of laboratory tests and diseases related to protein, sugar and fat metabolism disorders.	Genetic diseases of metabolic processes	3	15

11. Course Evaluation

Midterm exam15 degrees

Pop-up exams and classroom

activities5 marks Practical

assessment 20 marks

Final theoretical exam60 degrees

12. Learning and teaching resources

Clinical Biochemistry & Metabolic Medicine, Crook 8th edition 2012	Required textbooks (methodology if any)
Tietz Clinical chemistry& Molecular Diagnostics 7th edition; 2015.	Main References (Sources)
Clinical Chemistry, Kaplan 2012	Recommended supporting books and references (scientific journals, reports, etc.)
	the reviewer Electronic , Internet sites

Course Description Form

1.Course name :
Industrial PharmacyII
2.Headquarters code
3.the chapter/ Year:
the first /2024
4.Date this description was prepared:
September/2024
5.Available attendance forms
Attendance
6.Number of study hours(Total) / Number of units (Total):
Number of units4 / 3 (theoretical hours + 2 practical hours per week)
7.Course Instructor NameIf more than one name is mentioned
Name: Safaa Haloul Mohammed
8.Course objectives

The objectives are to teach pharmacy students the methods of preparing different types of dosage forms and the advantages and disadvantages of each dosage form. This core course enables the student to understand the effect of pharmaceutical additives and different pharmaceutical dosage forms on the performance of a pharmaceutical product. It also introduces the principles required for drug manufacturing and the development of new formulations based on a comprehensive knowledge of pre-formulation, the excipients required for each dosage form, and the preparation methods..	Course objectives

			9.Teaching and learning strategies		
		Prevention and display Interactive discussions Laboratory experiments		Strategy	
			10.Headquarter structure		
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week

Written exams Oral exams Laboratory experiments	The eraser Dhat blackboard Information display Videos plans laboratory experiments	Initial formulation (comprehensive properties); crystallization And polygamy doubtyfor me, Particle properties, powder flow properties Transit coefficient of naked membranes, and the stability coefficient of the formula^{Y}In liquid and solid state Capsule shell materials, production method, filling equipment, formulas and quality control Nature of capsule shell and contents, capsule manufacturing processing and control, quality control Definition of micropackaging, mm Its uses, methods of preparation, examples of its use and applications Types and classification of discs, Special types of tablets The capsule^{R}Sh, dry and wet granulation Thinners, binders, materials Disintegrants, lubricants, anti-stick agents, colors, flavors and sweeteners Hardness, disintegration, solubility	Understanding the principles of pharmaceutical manufacturing; pre-formulation Solubility and stability analysis study Understanding the gelatin capsule^{Y}n steel Understanding the gelatin capsule^{Y}N L Y Micro-packaging description Description of tablets as a pharmaceutical formula Understanding tablet preparation methods Description of materials used^{Y}Prepare the disc	3 3 3 3 3 3 3 3 3 3	

		and chemical content testing Y and Cutting, laminating, picking, sticking, and duplex printing the componentsAnd boxes Packing, Spray formation systems	Knowing how to evaluate the dosage form of tablets (quality control based on the pharmacopoeia) Understanding disc manufacturing problems and how to solve them Description of pharmaceutical inhalers		
		Production process, quality control and types of nebulizers	Learn to manufacture pharmaceutical inhalers and their delivery devices.	3 3 3	

			review		

11. Course Evaluation

Grade distribution from 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

The Theory and Practice of Industrial Pharmacy: Lachman/Lieberman's	Required textbooks (methodology if any)
Pharmaceutics: The Science of Dosage Form Design, by Michael E. Aulton	Main References (Sources)
Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems by Loyd Allen	Recommended supporting books and references (scientific journals, reports, etc.)
	Electronic references, websites

1. Name of the headquarters	
Clinical Laboratory Training	
2. Location code	
3. Semester/Year	
First and second/fifth	
4. Date this description was prepared	
2024/9/18	
5. Available forms of attendance	
Attendance	
6. Number of study hours (total) / Number of units (total)	
2/4	
7. Name of the course supervisor (if more than one name is mentioned)	
Tagreed kadem	
8. Course objectives	
• Providing students with the necessary technical skills and principles of laboratory testing in the field of clinical biochemistry, serology, andBlood and microorganisms. • Explain the range of laboratory technologies available, in addition to the advantages and disadvantages of each. • Correlate laboratory results with examination Clinical examination to reach an accurate diagnosis and monitor response to treatment.	Course objectives

9. Teaching and learning strategies	
• Practical training in specialized laboratories • Interactive discussions • Research and induction	Strategy

Course Description Form

10. Headquarter structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	watches	Week A
practical skill, Theoretical exams and classroom activities	Laboratory training related; Lectures, discussions and reports	Virus study	A statement of the most important diagnostic methods for viruses, including direct and indirect methods, as well as diagnostic methods. Classical and modern serology	8	1 and 2

=	=	Tests Biochemistry	A statement of the most important biochemical tests, which include methods for measuring blood sugar, liver and kidney function tests, and protein tests, in addition to various enzyme tests.	12	5-3
=	=	blood tests	A statement of the most important blood tests, such as the total and differential white blood cell count, as well as the percentage of hemoglobin in the blood, the sedimentation rate of red blood cells, their size and concentrations, especially in relation to some medical conditions such as anemia, sickle cell anemia, and others, in addition to determining blood groups and examining blood compatibility.	8	6 and 7

=	=	Tests Bacteriology	Description of how to collect Samples; the most important culture media used in examining and diagnosing bacteria.	8	8 and 9

		Parasites and viruses	Viruses and parasites; the most important laboratory methods for diagnosis, reading and interpreting results; examining the sensitivity test for antibiotics; in addition to explaining the most important diseases that require bacterial examination and diagnosis.		

=	=	Urine examination	Description of properties Physical (such as color, appearance, odor, pH, volume, and specific gravity) And chemical (such as protein, glucose, ketones, and blood) of the urine sample in addition to microscopic examination of the urine sediment: which includes red and white blood cells and crystals.	8	10 and 11
=	=	Serological tests	Tests for sexually transmitted diseases such as syphilis, hepatitis D, C-reactive protein testing, and fever tests are included. Typhoid, Malta fever, and pregnancy test	8	12 and 13
=	=	Advanced examinations	It includes a description of how to perform the ELISA test and its different types, in addition to	8	14 and 15

			the polymerase chain reaction.		

11. Course Evaluation
Surprise exams and assessment of practical application and activities40 degrees Final exam60 degrees

12. Learning and teaching resources	
Laboratory training booklet (prepared by members of the clinical laboratory science department)	Required textbooks (methodology), if any
	Main References (Sources)
Henry's Clinical Diagnosis and Management by Laboratory Methods. 24th ed.; 2021. - Clinical Laboratory Methods: Atlas of Commonly Performed Tests. 2022. -	Recommended supporting books and references (scientific journals, reports, etc.)
	Electronic references, websites

Course Description Form

61. Course Name:
Therapeutic Drug Monitoring (TDM)
62. Course Code:
63. Semester / Year:
FIFTH Stage /Semester 2
64. Description Preparation Date:
65.Available Attendance Forms:
Full-time students
66.Number of Credit Hours (Total) / Number of Units (Total)
2 h Theory 1 practical / 3 hours
67. Course administrator's name (mention all, if more than one name)
Name: Tarig Mohamed Hassan Email: Tarigacad2@gmail.com

68. Course Objectives	
Course Objectives	• **Understand the Basics of TDM** • **Apply PK/PD Principles in Clinical Practice** • **Enhance Patient Care** • **Interpret and Utilize Data** • **Stay Updated and Ethical**

69. Teaching and Learning Strategies	
Strategy	67. Actively participate in lectures and discussions to enhance learning. 68. Manage time effectively by creating and following a study schedule. 69. Make use of available resources to support learning and understanding.

	70. Engage in collaborative learning through study groups. 71. Gain practical knowledge through hands-on laboratory sessions. 72. Regularly revisit previous topics to reinforce and retain knowledge.

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	Understand the scope and importance of Therapeutic Drug Monitoring (TDM).	Course Overview of TDM and its clinical applications.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
2nd	2	Review the fundamenta principles of pharmacokinetics (PK).	Basic principles of pharmacokinetics, including absorption, distribution, metabolism, and excretion.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
3rd	2	Review the fundamenta principles of pharmacodynamics (PD)	Basic principles of pharmacodynamics, including drug-receptor interactions and dose-response relationships.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
4th	2	Apply PK equations to clinical scenarios.	Clinical PK equations and calculations with practica examples.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
5th	2	Recognize PK variability special populations.	Clinical PK in special populations (e.g., pediatrics, geriatrics, renal/hepatic impairmen	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
6th	2	Evaluate the PK/PD principles of commonly used antibiotics.	PK/PD of antibiotics (e.g. Aminoglycosides, Vancomycin) and their clinical implications.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz

7th	2	Analyze PK/PD propertie of cardiovascular agents	PK/PD of cardiovascular agents (e.g., Digoxin, Lidocaine, Procainamide)	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
8th	2	Study the pharmacokinetics and pharmacodynamics of anticonvulsants.	PK/PD of anticonvulsants (e.g., Phenytoin, Carbamazepine, Valproic Acid).	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
9th	2	Examine PK/PD of immunosuppressants ar their role in therapy.	PK/PD of immunosuppressants (e. Cyclosporine, Tacrolimus transplant management.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
10th	2	Explore TDM of other critical drugs and their therapeutic consideratic	TDM for lithium, theophylline, and anticancer agents.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
11th	2	Understand anticoagulants' PK/PD a their clinical monitoring	Clinical PK/PD of anticoagulants and their safety profiles.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
12th	2	Develop proficiency in handling and interpretir TDM data.	Data analysis techniques in TDM, including therapeutic ranges and adjustments.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
13th	2	Study the integration of TDM in personalized medicine.	The role of TDM in precision medicine and optimizing patient outcomes.	- Active Reading Textbooks. - Online resource - Self-assessmen - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quiz
14th	2	Review the challenges a advancements in TDM practices.	Challenges in TDM implementation and emerging technologies.	- Active Reading Textbooks. - Online resource	Formative and Summative Evaluation (Mid

				- Self-assessmen - Reflection.	final) Exams with Quiz
15th		Exam	Exam		

71. Course Evaluation

Midpoints are 40 come from:

21. 15 points theory exam + 5 points for quizzes, and presentations.

22. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

72. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Applied Clinical Pharmacokinetics**, Second Edition, 2008 by Larry A. Bauer.
Main references (sources)	**Clinical Pharmacokinetics Concepts and Applications**, Third Edition, 1995 by Malcolm Rowland and Thomas Tozer;
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

1. Course name
Pharmacoeconomics
2. Course code

3. Semester/Year
Chapter Two / Stage Five
4. Date this description was prepared
2024-2-19
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
2 hours/2 units
7. Name of the course supervisor (if more than one name is mentioned)
Name: osama kadem radi
8. Course objectives
Objectives: The objective of this Pharmacoeconomics course is to teach final year pharmacy students: The article covers the basic concepts of this growing specialty in pharmaceutical economics, such as feasibility studies, types of study costs, and how to choose medications. Based on the results of economic feasibility studies for medicines. It also aims to teach pharmacy students how to compare new drugs with those currently in use by conducting an economic feasibility study of new drugs to be compared before they are approved by the Ministry of Health. Since the Iraqi Ministry of Health has a limited budget, it is important for pharmacists working in the public sector to prioritize newly introduced medications, especially those that are expensive, such as biologics and oncology drugs. Choosing the most cost-effective drugs can save the government money. Learning pharmacoeconomics is essential for any pharmacist working in the public or private sectors to help them choose the right medications since newer medications are usually more expensive but are usually more effective than older medications.
9. Teaching and learning strategies
Interactive lectures, assignments, tests, and a written project. Strategy
10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Simple tests	Interactive lectures and related articles	Basic The principle Pharmacoeconomics	**1.** Introduction to the principles of pharmacoeconomics. **2.** Explain the types of health care costs with examples. **3.** to get to know on modelECHO For types Results of the three patients. **4.** Explain and distinguish between the four methods of pharmacoeconomic analysis.	4	1
Simple tests	Interactive lectures and related articles	Cost analysis	**1.** Costing **2.** Types of costs (direct medical costs, direct non-medical costs, indirect costs, costs intangible **3.** costsAdditional and marginal costs **4.** opportunity costs **5.** How are costs evaluated?	4	2

			Timing adjustments to costs		
Simple tests	Interactive lectures and related articles	Cost reduction analysis and analytics cost-effectiveness	**1.** Understanding cost-effectiveness analysis **2.** Outcome measures in cost-effectiveness analysis **3.** Knowing how to calculate cost-effectiveness ratios	4	3
Simple tests	Interactive lectures and related articles	Costs and analysis benefits	**1.** Understand the cost-benefit analysis method. **2.** Knowing how to calculate the cost is not Direct For the sick and the benefit not Direct intervention/program Using the human capital method HCM **3.** Use HCM calculates daily wage rate and lost days to determine	4	4

			the indirect benefit of intervention/management. **4.** Describe in detail how you are prepared to pay.)WTP (Default Scenario and Bidding Methods) **5.** Cost-benefit analysis presentation formats		
Simple tests	Interactive lectures and related articles	cash Evaluation For economic evaluation	When should we choose analysis? Cost-benefit or cost-effectiveness analysis? 1. Using decision analysis to design economic evaluations 2. Decision analysis structure or tree	4	5
Simple tests	Interactive lectures and related articles	A framework focused on Drugs vs. Focused Framework on D for The princes procedure Pharmacoeconomic analysis.	**1.** Determine the cost of illness **2.** Knowing how to calculate the cost of illness **3.** Understanding the difference between care costsHealth The cost of illness	4	6

Simple tests	Interactive lectures and related articles	Introduction to Science epidemics	Students should be able to: **1.** identification science Epidemics, describing the basic terms and concepts of epidemiology. **2.** Identify types of data sources. on3- Recognition Roads to collect Basic Data and its interpretation.	4	7
Simple tests	Interactive lectures and related articles	Project presentation	A cost-effectiveness project can be assigned to teach students how to understand Terms used in published pharmacoeconomic studies.	2	8

11. Course Evaluation	
jugs5 marks - Homework 5 marks - Mid-term 20 marks - Final exam 70 marks	
12. Learning and teaching resources	
Bootman JL, Townsend RJ, McGhan WF, (Eds.), Principles of Pharmacoeconomics, 2nd ed., Harvey Whitney Books Company, Cincinnati, Oh, latest edition	Required textbooks (methodology if any)
Renée JG Arnold. Pharmacoeconomics From theory to practice. Second Edition, 2021. CRC Press, Boca Raton, FL,USA	Main References (Sources)
Hasan Raid, Ali Azeez Al-Jumaili, Nizar Abdulateef Al-Ani. Reference Infliximab (Remicade) compared to its biosimilar	Recommended supporting books and references (scientific journals, reports, etc.)

(Remsima) in patients with ankylosing spondylitis: A Fieldbased Pharmacoeconomic study. Al-Kindy College Medical Journal. April 30, 2023:19 (1). https://doi.org/10.47723/kcmj.v19i1.908 Hasan Raid Fadhil, Ali Azeez Al-Jumaili, and Nizar Abdulateef Al Ani. Cost-effectiveness Analysis of Reference Infliximab (Remicade) compared to its Biosimilar (Remsima) in Iraqi Patients with Rheumatoid Arthritis. Iraqi J Pharm Sci, Vol.31(Suppl.) 2022.https://doi.org/10.31351/vol31issSuppl.pp100-110	
Value in Health Journal Value in Health | Journal | ScienceDirect.com by Elsevier Value in Health Journal Regional Issueshttps://www.valuehealthregionalissues.com/	Electronic references, websites

Course Description Form

1. Course name
Applied treatmentsI
2. Course code
3. Semester/Year
semesterFirst/Fifth Stage
4. Date this description was prepared
2024/09
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
3 hours / 3 units
7. Name of the course supervisor (if more than one name is mentioned)
:Assistant Professor Osama Kazim Radhi Name:

8. Course objectives	
The course provides students with basic knowledge about pathophysiology, symptoms, and goals of treatment. In addition to basic knowledge about drug use, pharmacokinetics, dosage calculations, side effects, treatment algorithms, and patient education.	Course objectives

9. Teaching and learning strategies	
Lectures and seminars Simple tests brainstorming questions	Strategy

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week

Simple tests	Lectures and discussions	Interpretation of clinical laboratory data	Differentiate between sensitivity and specificity Laboratory tests. . Determine reference ranges for laboratory tests.	2	1

			8. Determination of liver function tests natural And unnatural. **9.** Kidney function tests natural And unnatural. **10.** Interpretation of examination results Complete blood count. **11.** Interpretation of the main results of urine analysis. **12.** explanation Laboratory tests for blood diseases.		

Simple tests	Lectures and discussions	dyslipidemia	Learn about common types of lipid disorders. **9.** Determine the benefits of statin combinations and the intensity of statin therapy. **10.** Recommend appropriate therapeutic lifestyle changes and drug therapy interventions for dyslipidemia. **11.** Determine the patient's risk of developing cardiovascular diseases. on hardening Arteries and corresponding treatment goals. **.** Identify patients who are prescribed non-prescription medication. Statins. **13.** Describe the components of a monitoring plan to evaluate the efficacy and adverse effects of drug therapy for dyslipidemia. **14.** Educating patients about the disease condition, appropriate therapeutic lifestyle changes, and the drug therapy required for effective treatment.	2	2

Simple tests	Lectures and discussions	stroke	1. Differentiate between types of cerebrovascular diseases, including transient ischemic attack (TIA), ischemic stroke (MI), and myocardial infarction (MI).	1	3

			Cerebral (and hemorrhagic stroke). **11.** Identify modifiable and non-modifiable risk factors associated with ischemic and hemorrhagic stroke. **12.** to explain Pathophysiology of stroke and hemorrhagic stroke. **13.** a description Clinical manifestations of transient ischemic attacks, ischemic stroke, and hemorrhagic stroke. **14.** Formulating strategies for primary prevention of acute stroke. **15.** Evaluation of treatment options for acute stroke. **16.** Determine whether		

			fibrinolytic therapy is required. With a injured sick stroke Acute ischemic stroke. **17.** Evaluation of the role of endovascular therapy bloody I have an acute stroke patient. **18.** Formulating strategies For secondary prevention of acute stroke. **19.** Evaluation of treatment options for acute hemorrhagic stroke.		
Simple tests	Lectures and discussions	acute kidney injury	**4.** Evaluation of the patient's kidney function based on clinical presentation And the results Laboratory and urine parameters. **5.** To determine drug therapy outcomes and treatment endpoints	1	4

			in patients with acute kidney injury. . Applying knowledge of the pathophysiology of acute renal failure to develop a treatment plan.		
			6. situation Strategies to reduce the incidence of drug-induced acute kidney injury. **7.** Monitoring and evaluating the safety and effectiveness of the treatment plan.		
Simple tests	Lectures and discussions	Chronic kidney disease and end-stage renal disease	**7.** List risk factors that increase the susceptibility to chronic kidney disease. **8.** Explain the mechanisms associated with evolution illness Chronic kidney disease. Determine the desired outcomes for treatment of chronic kidney disease. **10.** Developing a therapeutic approach to slow the progression of chronic kidney disease,	2	5

			including lifestyle modifications. life And drug treatments. **11.** Identify specific consequences associated with chronic kidney disease. **12.** Designing a therapeutic approach appropriate to the specific consequences associated with chronic kidney disease.		
Simple tests	Lectures and discussions	Hemodialysis and peritoneal dialysis	Determine indicators for dialysis. **6.** Mention the advantages and disadvantages of hemodialysis and peritoneal dialysis. **7.** Describe the principles and procedures of hemodialysis and peritoneal dialysis. **8.** Learn about the complications of hemodialysis and kidney dialysis Peritoneum and its treatment.	1	6

Simple tests	Lectures and discussions	Pharmacovigilance	**4.** Definition of pharmacovigilance. **5.** Know who should report pharmacovigilance reports. **6.** Describe the importance of pharmacovigilance.	1	7

			8. List historical events of adverse drug reactions. **9.** Description of causality assessment. **10.** Recognition on Used in Terminology pharmacovigilance. **11.** Recognizing the importance of pharmacovigilance.		
Simple tests	Lectures and discussions	Liver cirrhosis and hepatic hypertension	**7.** Explanation of the pathophysiology of liver cirrhosis Hepatic hypertension. **8.** Recognizing the signs and symptoms of liver cirrhosis. **9.** to set Laboratory abnormalities The resulting About diseases liver Physiology description Associated diseases. **10.** a description Consequences associated with decreased liver function.	2	8

			11. Determine therapeutic goals for patients suffering from complications of liver cirrhosis. **12.** Recommending a specific treatment regimen for a patient with liver cirrhosis that includes lifestyle changes, non-drug measures, and drug therapy.		
Simple tests	Lectures and discussions	viral hepatitis	**5.** Differentiating between the five types For inflammation viral hepatitis According to Epidemiology, Causes and clinical presentation. **6.** Identify the transmission routes and risk factors among the main types of viral hepatitis. **7.** Liver serology evaluation to understand how to diagnose the type of hepatitis. **8.** Determine treatment goals for patients with viral hepatitis.	1	9

			7. Recommendation With appropriate drug therapy to prevent viral hepatitis. 8. Develop a care plan for chronic viral hepatitis.		
Simple tests	Lectures and discussions	inflammatory bowel disease	a description . Physiological The mechanisms underlying pathology of inflammatory bowel disease. 7. Learn the signs and symptoms of inflammatory bowel disease, including the key differences between ulcerative colitis and Crohn's disease. 8. Determine appropriate therapeutic outcomes for patients with inflammatory bowel disease. 9. Describes drug treatment options for patients with acute or chronic symptoms of colorectal cancer. 10. Create a patient-specific medication treatment plan based on the symptoms, severity, and location of ulcerative colitis and Crohn's disease. 11. Recommendation With appropriate monitoring standards for drug therapies for inflammatory bowel disease.	1	10

Simple tests	Lectures and discussions	shock syndromes	**4.** Mention the types and causes of shock syndromes. **5.** Describe the most important hemodynamic abnormalities that occur. I have Patients in shock. **6.** a description Clinical presentation including signs Symptoms and measurements Laboratory testsFor the typical trauma patient.	1	11

			. Preparing a treatment plan that includes specific outcome criteria Clearly for the shock patient which includes fluid management and drug therapy. **7.** Comparison of the relative advantages and disadvantages of intravenous solutions and blood products in the treatment of shock.		

Simple tests	Lectures and discussions	Fluid disturbances andStrays	5. Estimating the volumes of different body fluid compartments. 6. to set Strays Mainly found in extracellular and intracellular fluid compartments. 7. Describe the unique relationship between blood sodium concentration and total body water. 8. review Causes and symptoms Clinical and Management sodium disorders Potassium and calcium Phosphorus and magnesium.	2	12

Simple tests	Lectures and discussions	Epilepsy	**7.** Describe the epidemiological and social impact of epilepsy. **8.** Definition of terms related to epilepsy, including seizures, convulsions, and epilepsy. **9.** Describe the basic pathophysiology of seizures and epilepsy. . Distinguishing between types of seizures And its classification with giving Description of the clinical presentation of the seizure and EEG. . Determine therapeutic decision points Home and goals Therapeutic In the treatment of epilepsy. **12.** Discussing non-drug treatments for epilepsy.	1	13

			11. Recommending an appropriate drug treatment regimen while monitoring the epilepsy treatment criteria. **12.** Develop a plan to switch the patient from one antiepileptic regimen to a different one.		

			13. Managing potential drug interactions with Antiepileptic drugs. 4. Determine when and how to stop treatment with antiepileptic drugs.		
Simple tests	Lectures and discussions	Multiple sclerosis	Identifying risk factors for multiple sclerosis. 7. Differentiating between forms of multiple sclerosis based on the patient's condition and disease course. Comparing treatment options Modified For MS for a specific patient. 9. Determine appropriate symptomatic treatment options for a particular patient. . Develop a monitoring plan for a patient taking specific medications.	1	14

Simple tests	Lectures and discussions	Enteral nutrition	5. Evaluate patient parameters to determine if: Nutrition Intestinal suitable or not. 6. Comparison of clinical effectiveness and complications The costs of enteral nutrition versus parenteral nutrition. 7. Describe the components of enteral nutrition and their role in nutritional support therapy. 8. Develop a plan to design, initiate, and adjust the enteral nutrition formula for an adult patient based on patient-specific factors.	1	15

			7. a description Etiology and risk factors for complications associated with enteral nutrition in adult patients receiving enteral nutrition. 8. Choosing appropriate drug administration techniques for the enteral feeding patient.		

Simple tests	Lectures and discussions	Intravenous nutrition	6. drawers Suitable indications for intravenous nutrition in adult patients. 7. Describe the components of intravenous nutrition and their role in nutritional support therapy. 8. Develop a plan to design, initiate, and adjust the IV nutrition formula for an adult patient based on: factors Patient specific 9. a description Etiology and risk factors for complications associated with parenteral nutrition in adult patients receiving parenteral nutrition. 10. a description Causes Risk factors for refeeding syndrome, as well as measures to prevent refeeding syndrome.	1	16

Simple tests	Lectures and discussions	deep vein thrombosis	**6.** Recognizing risk factors, signs, and symptoms of thrombosis veins Deep pulmonary embolism. **7.** Description of hemostasis and coagulation processes. **8.** Determine the patient's relative risk of developing venous thrombosis. **9.** Formulating an appropriate preventive strategy for a patient at risk of developing deep vein thrombosis. **10.** to choose And interpretation Laboratory Tests for monitoring anticoagulant drugs.	1	17

			11. Identify factors that put the patient at high risk of bleeding while taking pharmaceutical Anticoagulant. **12.** State at least two possible advantages of newer anticoagulants.)any Low molecular weight heparin, fondaparinux, Oral and inhibitors direct thrombin and direct factor inhibitorsOral Xa (compared to conventional anticoagulants) i.e. unfractionated heparin or warfarin). **13.** Managing a patient with secondary warfarin toxicity (elevated international normalized ratio)INR [with or without bleeding]. **14.** Recognizing interactions between anticoagulant drugs and drugs and food. **15.** Formulating an appropriate treatment plan For the patient who suffers from venous thrombosis		

			Deep or pulmonary embolism.		
Simple tests	Lectures and discussions	Irregular heartbeat	**4.** Description of the stages of cardiac work. **5.** Description of the modified Vaughan-Williams classification of antiarrhythmic drugs. **6.** Comparison of risk factors, their characteristics, mechanisms and causes Symptoms and treatment goals (A) Bradycardia Pocket (b)	2	18

			Atrioventricular block, (c) Atrial fibrillation, (d) Paroxysmal supraventricular tachycardia, (e) Complexes Ventricular premature ventricular tachycardia, including		

			de torsades That and (z) tremorventricular **10.** Comparison of appropriate treatment options for sinus bradycardia and atrioventricular block. **11.** Compare and contrast the mechanisms of action of drugs used to control ventricular rate and shunting. to sinus rhythm And preservation On the rhythm Pocket In patients with atrial fibrillation. **12.** Comparison of advantages and disadvantages Warfarin and non-antivitamin oral anticoagulants For the prevention of stroke and systemic embolism in patients with atrial fibrillation. **13.** Discuss non-pharmacological methods for terminating paroxysmal supraventricular tachycardia, compare and contrast the mechanisms of action of drugs used for acute termination of paroxysmal supraventricular tachycardia, and		

			compare appropriate treatment options for long-term prevention of recurrence of paroxysmal supraventricular tachycardia. **14.** Comparison of the mechanisms of action of drugs used to treat acute attacks of ventricular tachycardia, and description of options and indications for non-pharmacological treatment of tachycardia. Ventricular and ventricular fibrillation. **15.** Designing drug treatment plans Individual For patients with (a) bradycardia Pocket)for(		

			(a) AV block, (b) Atrial fibrillation, (d) Paroxysmal supraventricular tachycardia, (e) Ventricular premature complexes, (f) Ventricular arrhythmias including points(, torsades and)z(ventricular fibrillation.		
Simple tests	Lectures and discussions	Pain management	**7.** Identify the characteristics of the types of pain: nociceptive, inflammatory, neurogenic, and functional. **8.** Explain the mechanisms involved in pain transmission. **9.** Choosing the appropriate method for assessing pain. **10.** Recommendation By choosing the appropriate analgesic, dosage, and monitoring plan for the patient based on the type and severity of pain and other patient-specific criteria. **11.** procedure Arithmetic operations that Doses include: Poor For pain, and conversion from an opioid to Other, and rescue doses, And the transfer	2	19

			To the continuous leak. **12.** Educating patients and caregivers about effective pain management, coping with chronic pain, and the use of non-pharmacological measures.		
Simple tests	Lectures and discussions	headache	**5.** Differentiating between types of headache syndromes Basis of clinical manifestations. **6.** Recommendation of non-pharmacological measures For treatment Headache and prevention. **7.** Determine when drug therapy is recommended for headaches. **8.** Developing individualized treatment regimens for the management of acute	1	20

			and chronic headache syndromes.		

			5. Monitor headache treatment to ensure its safety, tolerability, and effectiveness.		

Simple tests	Lectures and discussions	Parkinson's disease	**9.** Describe the pathophysiology of Parkinson's disease, neurotransmitter involvement, and targets for drug therapy. **10.** Identify the basic motor symptoms of Parkinson's disease and determine the patient's clinical condition and disease progression. **11.** For the patient who starts treatment Parkinson's disease, appropriate drug treatment and goal setting are recommended. Therapeutic Patient specific. **12.** Identify and recommend appropriate treatment for non-motor symptoms. **13.** Formulate a plan to reduce Maximizing the patient's "time off" and "time on" of medications, including timing, dosage, and frequency of medications.	2	21

			14. RecognitionOn complications Different types of movement in Parkinson's disease and their treatment. **15.** building Appropriate patient counseling regarding medications and lifestyle modifications. life For Parkinson's disease. **16.** Develop a monitoring plan to evaluate the effectiveness of the treatment and its adverse effects.		
Simple tests	Lectures and discussions	benign prostatic hyperplasia	**3.** to explain Pathophysiology to inflate Benign prostatic hyperplasia. **4.** Recognizing symptoms and signs inflation	1	22

			Benign prostatic hyperplasia.		

			9. Include desired treatment outcomes to inflate Benign prostatic hyperplasia. **10.** Identifying factors that guide the choice of an antidote 1α-adrenergic specific to the individual patient. **11.** Comparison between adrenergic antagonists1α and α 5 reductase inhibitors in terms of mechanism of action, treatment outcomes, adverse effects and interactions. **12.** Describe the indications, advantages, and disadvantages of various combination drug regimens that include anticholinergics. 1α-adrenergic, α5-reductase inhibitors, or anticholinergic agents, or Tadalafil, or mirabegron.		

			13. Description of surgical intervention indications. **14.** Apply the patient care process to develop a plan Individual therapy.		
Simple tests	Lectures and discussions	Glaucoma	**6.** Identify risk factors for the development of primary open-angle glaucoma and acute angle-closure glaucoma. **7.** Recommend repeat glaucoma screening based on the patient's risk factors. **8.** Comparison of the pathophysiological mechanisms responsible for open-angle glaucoma and acute angle-closure glaucoma. **9.** Outline of the clinical presentation of	1	23

			chronic open-angle glaucoma and acute angle-closure glaucoma. **10.** Include management goals for patients with suspected primary open-angle glaucoma and glaucoma.		
			The first is open-angle, and the second is acute angle-closure. **9.** Choosing the most appropriate treatment based on the patient's data While Related to open-angle glaucoma, glaucoma The suspect To him, and the blue atheismClosed angle. **10.** Develop a monitoring plan for patients on specific medication regimens. **11.** Advise patients about glaucoma, drug treatment options, and management techniques. eyes,		

			And the importance of Commitment to the prescribed system.		

11. Course Evaluation	
Midterm exam25 marks, tests and attendance 5 marks, final exam 70 marks	
12. Learning and teaching resources	
A Pharmacotherapy: pathophysiologic approach. Pharmacotherapy: principles and practice. Applied therapeutics. Clinical pharmacy and therapeutics. Pharmacotherapy handbook. ACCP updates in therapeutics.	Required textbooks (methodology if any)
A Pharmacotherapy: pathophysiologic approach. Pharmacotherapy: principles and practice. Applied therapeutics. ACCP updates in therapeutics.	Main References (Sources)
A Pharmacotherapy: pathophysiologic approach. Pharmacotherapy: principles and practice.	Recommended supporting books and references (scientific journals, reports) ....
E-books and review articles	Electronic references, websites

Course Description Form

25. Course Name:	
Advanced pharmaceutical Analysis	
26. Course Code:	
27. Semester / Year:	
Semester 2/ 2024−2025	
28. Description Preparation Date:	
12-2-2025	
29. Available Attendance Forms:	
Full-time students	
30. Number of Credit Hours (Total) / Number of Units (Total)	
3h. Theory+1 h. practical/ 4 h	
31. Course administrator's name (mention all, if more than one name)	
Name: Ammar Kadhim Wabdan Email: ammar.k.wabdan@nust.edu.iq	
32. Course Objectives	
Course Objectives	14. Studying spectrometric methods used for the identification and characterization of organic compounds, including UV, IR, MASS, and NMR spectroscopy. 15. To enable students to understand the applications of these techniques for qualitative and quantitative analysis of organic compounds.
33. Teaching and Learning Strategies	
Strategy	73. Active participation by engaging actively in lectures and discussions. 74. Effective time management by creating a study schedule. 75. Utilize resources. 76. Collaborative learning from study groups.

	77. Hands-on experience by taking advantage of laboratory sessions. 78. Regularly review previous topics to ensure retention of information.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	UV/visible spectroscopy system	UV/visible spectroscopy; Sample handling and instrumentation; Characteristic absorption of organic compounds.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes.
2nd	3	UV/visible spectroscopy system	Rules for calculation of lambda max and application; Application of UV/visible; spectroscopy; Problems and solutions.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
3rd	3	Infra-red spectroscopy system	Infra-red spectroscopy (theory and H-bonding effect).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
4th	3	Infra-red spectroscopy system	Sampling techniques and interpretation of spectra.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes

5th	3	Infra-red spectroscopy system	Characteristic group frequencies of organic compounds.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
6th	3	Infra-red spectroscopy system	Application of IR spectroscopy; Problems and solutions.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
7th	3	Nucleomagnetic Resonance (NMR) system	Introduction of H1– Nucleomagnetic Resonance (NMR) and C13-NMR spectroscopy; The nature of NMR absorption; Chemical shifts; Factors affecting them.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
8th	3	Nucleomagnetic Resonance (NMR) system	Information obtained from NMR spectra, more complex spin-spin splitting patterns.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
9th	3	Nucleomagnetic Resonance (NMR) system	Application of H^1-NMR spectroscopy; C^{13}-NMR spectroscopy: introduction and characteristics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
10th	3	Nucleomagnetic Resonance (NMR) system	DEPT C^{13}- NMR spectroscopy.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes

11th	3	Mass spectroscopy system	Introduction and interpreting Mass spectra.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
12th	3	Mass spectroscopy system	Interpreting Mass spectra fragmentation patterns.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
13th	3	Mass spectroscopy system	Mass behavior of some common functional groups.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
14th	3	Elemental microanalysis CHNSO	Elemental microanalysis CHNSO	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summati Evaluation (Mid = final) Exams with Quizzes
15th		Exam	Exam		

35. Course Evaluation

Midpoints are 40 come from:

23. 15 points theory exam + 5 points for quizzes, and presentations.
24. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	10. Spectrometric Identification of Organic Compounds by Silverstein, Bassler, and Morrill

	11. Applications of absorption spectroscopy of organic compounds by Dyer JR. 12. Organic Chemistry by McMurry; 5thed; Thomason learning CA, USA 2000.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

73. Course name
Clinical Toxicology

74. Course code
75. semester/year
Chapter One / Stage Five
76. Date this description was prepared
77.Available attendance forms
My presence
78.Number of study hours (total) / Number of units (total)
4 hours per week (2 hours theoretical and 2 hours practical) 3 units
79. Name of the course administrator (if more than one name is mentioned)
me: Ahmed Fares Abdel Mansour Email:ahmediraqiz1987_ah@yahoo.com
80. Course objectives

• **Enable students to understand the basic principles of clinical toxicology.** • **The course aims to provide students with the principles and skills necessary deal with the toxicity of chemicals.** **and medications in clinical settings.** • **Provide students with the knowledge to relate signs and symptoms of poisoning to analytical data, and to know how to** **Develop preventive and therapeutic measures for poisoning cases.** • **To enable students to understand the measures required to protect organis** **from suspected toxic hazar**	**Course objectives**

81. Teaching and learning strategies	
Cooperative learning strategy. One Minute Paper Teaching Strategy.	**Strategy**

Real-time feedback education strategy Teaching Strategy Notes Series.	

Course structure .82

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Final exam, midterm exam, daily and oral exams	Blackboard, video, photos, diagrams, PowerPoint lecture	Initial assessment and management of the poisoned patient.	ial assessment of soning cases ldren and geriatric ients		
		Over-the-counter drug toxicity	feine; Theophylline		
		Over-the-counter drug toxicity	amins, antihistamines, and ongestants		
		Prescription medications	scribed medications: diovascular medications, a-blockers, and digoxin.		
		Prescription medications	idiabetic medications		
		Prescription medications	iarrhythmic agents. l calcium channel blocker		
		----------	Mad exam		

		Prescription medications	Central nervous system depressants. Phenothiazines and anticholinergics.		
		Drug abuse	Opioids. Cocaine..		
		Drug abuse	Phencyclidine. Lysergic acid		10.
		Chemical and environmental toxins	hydrocarbons		11.
		Chemical and environmental toxins	Antiseptics. Camphor		12.
		Plants and plant-derived toxins	Pesticides. .		13.
		Plants and plant-derived toxins	Herbal preparation; plants are poisonous		14.
		Plants and plant-derived toxins	poisonous mushrooms		15.

11. Course Evaluation

The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

40% effort (20% of the midterm exam grade and 20% of the practical grade, including daily preparation, daily and oral exams, and classroom activities)

60% final exam score

12. Learning and teaching resources

ssel TA, Bricker TD, (Eds.);	quired textbooks (methodology if any)

nciples of Clinical Toxicology.	
Viccellio P, (Ed.); Handbook of Medicinal Toxicology	in references (sources)
The Basic Science of Poisons; latest edition.	Recommended supporting books and references (scientific journals, reports…)
tps://scholar.google.com/	ctronic references, websites

Course Description Form

13.	Course Name:

Pharmacology I	
14. Course Code:	
15. Semester / Year:	
Second semester/ Third stage	
16. Description Preparation Date:	
2024/2/6	
17.Available Attendance Forms:	
The attendance during the lecture	
18.Number of Credit Hours (Total) / Number of Units (Total)	
3 hours weekly/3 units	
19. Course administrator's name (mention all, if more than one name)	
Name: Ahmed Faris Abed Mansoor Email: Ahmediraqiz1987_ah@yahoo.com	
20. Course Objectives	
Course Objectives	• **To introduce the pharmacy students to the basis of general pharmacology.** • **The student will learn about various body systems and drugs used to affect them in health and disease.** • **Moreover the course will cover the drugs used to treat microbial infections.**
21. Teaching and Learning Strategies	
Strategy	• Cooperative education strategy. • Teaching strategy brainstorming.

	• Education strategy from reading and analyze a scientific paper. • Education strategy using the feedback and response to it. • Education strategy from note taking and response to it.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Remembering, understanding, applying, analyzing, evaluating and other knowledge, skills and values that the student acquires during the explanation of	General introduction to Pharmacology Pharmacokinetics	Teaching and explanation during lectures, using data show to clarify the lectures, scientific discussions, homework,	Through daily and midterm exam, in addition to scientific discussions and other scientific activities.
2	3		Pharmacokinetics		
3	3		Drug-receptor interaction and pharmacodynamics		
4	3		The autonomic nervous system (ANS); and cholinergic agonist		
5	3		Cholinergic antagonist		
6	3		Adrenergic agonist		
7	3		Adrenergic antagonist		
8	3		Principal of antimicrobial therapy		

9	3	each topic of the curriculum that specified for the subject.	and cell wall inhibitor	and informing the student about modern scientific sources.	
10	3		Protein synthesis inhibitors		
11	3		Quinolones, Folate antagonists, and urinary tract antiseptics		
12	3		Antimycobacterim drugs		
13	3		Antifungal drugs		
14	3		Antiprotozoal drugs		
15	3		Anthelmintic drug		

23. Course Evaluation

5 marks Quizzes and scientific activities and attendance+ 35 marks Midterm exam+ 60 marks Final exam.

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	المنهج الموحد للامتحان التقويمي لكليات الصيدلة للعام الدراسي 2024-2025 Lipincott Pharmacology 7th Edition
Main references (sources)	Lippincott's illustrated reviews pharmacology (different editions and for up-to-date years).

Recommended books and references (scientific journals, reports…)	Basic and clinical pharmacology Some other related references could be used in the lectures
Electronic References, Websites	Some other related references could be used in the lectures

Course Description Form

37. Course Name:
Organic Pharmaceutical Chemistry (IV)

38. Course Code:	
39. Semester / Year:	
Semester 1/	
40. Description Preparation Date:	
41.Available Attendance Forms:	
Full-time students	
42.Number of Credit Hours (Total) / Number of Units (Total)	
2h. Theory+0 h. practical/ 2h	
43. Course administrator's name (mention all, if more than one name)	
Name: Ammar Kadhim Wabdan Email: ammar.k.wabdan@nust.edu.iq	
44. Course Objectives	
Course Objectives	16. To give the students' knowledge and experience in pro-drug and hormones as part of their medicinal and pharmaceutical field. 17. It includes classification, synthesis, biotransformation, and/or formulation of certain drugs to improve their action as well as to avoid some side effects.
45. Teaching and Learning Strategies	
Strategy	79. Active participation by engaging actively in lectures and discussions. 80. Effective time management by creating a study schedule. 81. Utilize resources. 82. Collaborative learning from study groups. 83. Hands-on experience by taking advantage of laboratory sessions. 84. Regularly review previous topics to ensure retention of information.
46. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	The basic concept of prodrugs	Covalent bonds (cleavable)	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes.
2nd	2	The basic concept of prodrugs	Prodrugs of functional groups	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
3rd	2	The basic concept of prodrugs	Types of prodrugs	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
4th	2	Chemical prodrug delivery systems	Chemical delivery systems.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
5th	2	Chemical prodrug delivery systems	Polymeric prodrugs.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes

6th	2	Chemical prodrug delivery systems	Types and structure of polymers.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
7th	2	Chemical prodrug delivery systems	Cross-linking reagents.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
8th	2	Drug targeting	Drug targeting for monomer.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
9th	2	Drug targeting	Drug targeting for polymer.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
10th	2	Combinatorial chemistry	Peptides and other linear structures; Drug-like molecules.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
11th	2	Combinatorial chemistry	Support and linker; Solution-phase combinatorial chemistry.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final)

					Exams with Quizzes
12th	2	Combinatorial chemistry	Detection, purification, and analgesics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
13th	2	Combinatorial chemistry	Encoding combinatorial libraries; High-throughput screening.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
14th	2	Combinatorial chemistry	Virtual screening; Chemical diversity and library design.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid final) Exams with Quizzes
15th		Exam	Exam		

47. Course Evaluation

Midpoints are 40 come from:

25. 15 points theory exam + 5 points for quizzes, and presentations.
26. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	13. Wilson and Gisvold Textbook of Organic medicinal and Pharmaceutical chemistry, Delgado JN, Remers WA, (Eds); 10th ed, 2004

Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

49.	Course Name:

Advanced pharmaceutical Analysis

50. Course Code:

51. Semester / Year:

Semester 2/ 2024–2025

52. Description Preparation Date:

12-2-2025

53. Available Attendance Forms:

Full-time students

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

3h. Theory+1 h. practical/ 4 h

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

Name: Ammar Kadhim Wabdan

Email: ammar.k.wabdan@nust.edu.iq

56. Course Objectives

Course Objectives	18. Studying spectrometric methods used for the identification and characterization of organic compounds, including UV, IR, MASS, and NMR spectroscopy. 19. To enable students to understand the applications of these techniques for qualitative and quantitative analysis of organic compounds.

57. Teaching and Learning Strategies

Strategy	85. Active participation by engaging actively in lectures and discussions. 86. Effective time management by creating a study schedule. 87. Utilize resources. 88. Collaborative learning from study groups. 89. Hands-on experience by taking advantage of laboratory sessions. 90. Regularly review previous topics to ensure retention of information.

58. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	3	UV/visible spectroscopy system	UV/visible spectroscopy; Sample handling and instrumentation; Characteristic absorption of organic compounds.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes.
2nd	3	UV/visible spectroscopy system	Rules for calculation of lambda max and application; Application of UV/visible; spectroscopy; Problems and solutions.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
3rd	3	Infra-red spectroscopy system	Infra-red spectroscopy (theory and H-bonding effect).	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
4th	3	Infra-red spectroscopy system	Sampling techniques and interpretation of spectra.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
5th	3	Infra-red spectroscopy system	Characteristic group frequencies of organic compounds.	- Active Reading Textbooks. - Online resourc	Formative and Summative Evaluation (Mid = final

				- Self-assessmer - Reflection.	Exams with Quizzes
6th	3	Infra-red spectroscopy system	Application of IR spectroscopy; Problems and solutions.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
7th	3	Nucleomagnetic Resonance (NMR) system	Introduction of H1– Nucleomagnetic Resonance (NMR) and C13-NMR spectroscopy; The nature of NMR absorption; Chemical shifts; Factors affecting them.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
8th	3	Nucleomagnetic Resonance (NMR) system	Information obtained from NMR spectra, more complex spin-spin splitting patterns.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
9th	3	Nucleomagnetic Resonance (NMR) system	Application of H^1-NMR spectroscopy; C^{13}-NMR spectroscopy: introduction and characteristics.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
10th	3	Nucleomagnetic Resonance (NMR) system	DEPT C^{13}- NMR spectroscopy.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes

11th	3	Mass spectroscopy system	Introduction and interpreting Mass spectra.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
12th	3	Mass spectroscopy system	Interpreting Mass spectra fragmentation patterns.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
13th	3	Mass spectroscopy system	Mass behavior of some common functional groups.	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
14th	3	Elemental microanalysis CHNSO	Elemental microanalysis CHNSO	- Active Reading Textbooks. - Online resourc - Self-assessmer - Reflection.	Formative and Summative Evaluation (Mid = final Exams with Quizzes
15th		Exam	Exam		

59. Course Evaluation

Midpoints are 40 come from:

27. 15 points theory exam + 5 points for quizzes, and presentations.
28. 10 points as practical exam + 5 points for quizzes, 5 points for reports, and attendance.

The final point is 60 comes from the theory final exam.

The Total points of evaluation is 100.

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	14. Spectrometric Identification of Organic Compounds by Silverstein, Bassler, and Morrill

	15. Applications of absorption spectroscopy of organic compounds by Dyer JR. 16. Organic Chemistry by McMurry; 5thed; Thomason learning CA, USA 2000.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course name
Hospital training
2. Course code
3. Semester/Year
Chapter Two / Stage Five
4. Date this description was prepared
2/17/2024
5. Available forms of attendance
My presence
6. Number of study hours (total) / Number of units (total)
4 hours / 2 units
7. Name of the course supervisor (if more than one name is mentioned)
Name: Asst. Dr. Osama Kazim Radhi
8. Course objectives

Teaching students how to apply pharmacy practice in various hospital wards, including assessing and following up on medical cases. Evaluate treatment regimens, record medication errors, and provide ideas for problem-solving.	Course objectives

9. Teaching and learning strategies

Explaining the medical conditions of patients lying in different wards of the hospital Scientific discussion with pharmacy board students at the hospital Brainstorming questions	Strategy

10. Course structure

Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Exams Quick editing and case studies	Cases to explain Satisfactory and discussion with pharmacy students	The Interior Hall	Providing students with basic clinical skills with Focus on how to deal with inpatients, patient medical charts, data Laboratory and clinical monitoring. Diseases of the following organs are covered: Heart, kidneys, lungs, Digestive system and glands	4	4-1

Exams Quick editing and case studies	Cases to explain Satisfactory and discussion with pharmacy students	Children's Hall	Providing students with basic clinical skills with Focus on how to deal with inpatients, patient medical charts, data Laboratory and clinical monitoring. Diseases of the following organs are)in covered: (Children only):(Premature, infection, heart, nervous system, kidneys, respiratory system, digestive system and glands	4	8-5
Exams Quick editing and case studies	Cases to explain Satisfactory and discussion with pharmacy students	Surgical hall	Providing students with basic clinical skills with Focus on how to deal with inpatients, patient medical charts, data Laboratory and clinical monitoring.		