

Reviewing the performance of the higher education institution ((academic program review))

Course Description

This course description provides a summary of the most important course characteristics and the learning outcomes expected of the student to achieve, demonstrating whether the student has made the most of the learning opportunities available, and is linked and consistent with the academic program description.

1. Educational Institution	Al Zahrawi University Ministry of Higher Education and Scientific Research
2. University Department / Center	Collage of Pharmacy
3. Course Name / Code	Therapeutic drug monitoring - Fifth Stage PCPC 58
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	2025-2026
7. Total Number of Study Hours	30 hours
8. Date of preparing this description	2025-2026
9. Course Objectives: the course aims to enable students to: 1. Explain the principles, clinical importance, and applications of therapeutic drug monitoring (TDM). 2. Describe the pharmacokinetic principles related to TDM, including clearance, volume of distribution, half-life, loading dose, maintenance dose, and dosing interval. 3. Explain therapeutic and toxic drug concentrations, peak and trough concentrations, and appropriate sampling times. 4. Evaluate the effects of renal and hepatic impairment, patient-specific factors, special populations, and drug interactions on drug concentrations and dosing.	

5. Interpret TDM results and apply appropriate principles for individualized dose adjustment of commonly monitored drugs.

10- Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

At the end of this theoretical course, the student will be able to:

1. Identify drugs that require therapeutic drug monitoring and explain the rationale for their monitoring.
2. Apply pharmacokinetic concepts to predict changes in drug concentrations and therapeutic response.
3. Determine the appropriate timing of blood sampling and distinguish between peak and trough concentrations.
4. Analyze patient-specific factors, including renal and hepatic function, that affect drug concentrations and dosing.
5. Interpret TDM results and select appropriate dose-adjustment strategies for commonly monitored drugs.

B. Subject-Specific Skills

1. Gain skill in communicating with patients.
2. Acquire the skill in communicating with medical staff
3. Acquiring skill in calculating drug doses
4. Acquire the skill in assessing the disease state and the appropriate treatment

Teaching and Learning Methods

- Lectures.
- Interactive presentations.
- Case-based discussions.
- Problem-solving.
- Group discussions.
- Student presentations.
- Clinical examples and case studies.

C. Evaluation Methods

1. Midterm and final examinations / exam grades.
2. Class participation and discussion.
3. Homework and assignments.
4. Student presentations.

D. Thinking Skills

- Applying pharmacokinetic principles to clinical TDM situations.
- Analyzing patient-specific clinical and laboratory data.
- Interpreting therapeutic drug concentration results.
- Identifying factors responsible for inappropriate drug concentrations.
- Selecting appropriate dose-adjustment principles.
- Developing clinical problem-solving and decision-making skills.
- Integrating pharmacokinetic and clinical information in patient care.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Theoretical Knowledge	Introduction to Therapeutic Drug Monitoring	Lecture discussion	Daily exam, oral questions, discussion and homework
2	2	Theoretical Knowledge	Basic Pharmacokinetic Principles in TDM	Lecture discussion	Daily exam, oral questions, discussion and homework
3	2	Theoretical Knowledge	Therapeutic Range, Toxicity and Drug Concentration–Effect Relationship	Lecture discussion	Daily exam, oral questions, discussion and homework
4	2	Theoretical Knowledge	Loading Dose, Maintenance Dose and Dosing Interval	Lecture discussion	Daily exam, oral questions, discussion and homework
5	2	Theoretical Knowledge	steady State, Half-Life, Clearance and Volume of Distribution	Lecture discussion	Daily exam, oral questions, discussion and homework
6	2	Theoretical Knowledge	Drug Sampling and Interpretation of Peak and Trough Concentrations	Lecture discussion	Daily exam, oral questions, discussion and homework
7	2	Theoretical Knowledge	TDM in Renal Disease and Renal Impairment	Lecture discussion	Daily exam, oral questions, discussion and homework
8	2	Theoretical Knowledge	TDM in Hepatic Disease and Heart Failure	Lecture discussion	Daily exam, oral questions, discussion and homework

9	2	Theoretical Knowledge	TDM in Obesity, Pediatrics and Other Special Population	Lecture discussion	Daily exam, oral questions, discussion and homework
10	2	Theoretical Knowledge	Drug Interactions and Their Effects on TDM	Lecture discussion	Daily exam, oral questions, discussion and homework
11	2	Theoretical Knowledge	TDM for Aminoglycosides – Part 1	Lecture discussion	Daily exam, oral questions, discussion and homework
12	2	Theoretical Knowledge	TDM for Aminoglycosides – Part 2	Lecture discussion	Daily exam, oral questions, discussion and homework
13	2	Theoretical Knowledge	TDM for Vancomycin Part 1	Lecture discussion	Daily exam, oral questions, discussion and homework
14	2	Theoretical Knowledge	TDM for Vancomycin Part 2	Lecture discussion	Daily exam, oral questions, discussion and homework
15	2	Theoretical Knowledge	TDM for Cyclosporin	Lecture discussion	Daily exam, oral questions, discussion and homework

11. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	Admission according to the approved capacity plan
Maximum Number of Students	Admission according to the approved capacity plan

12. Infrastructure	
Required Readings:	1) References: Bauer LA (Ed.), Applied Clinical Pharmacokinetics. McGraw Hill, New York, 2014 2) Winter's Basic Clinical Pharmacokinetics, 7th Edition. Paul Beringer, 2024
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, professional training, and educational activities related to therapeutic drug monitoring and clinical pharmacokinetics.

Name of the Instructor: Ali Hassan Zaki

Course Description (biotechnology)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University College
2. University Department / Center	Pharmacy
3. Course Name / Code	\(biotechnology)\ PCLS 512
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	5 th class, 2 nd semester (2023-2024)
7. Total Number of Study Hours	2 hours per week for each group
8. Date of preparing this description	2024-2025
9. Course Objectives: Understanding the basics of biotechnology and studying the conditions and properties of high molecular weight protein-based drugs (antibiotics, vaccines, hormones, and other substances).	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Study of the properties of drugs manufactured using DNA recombination technology (hormones, antibiotics, vaccines, and other substances).
- 2- Study of the technical conditions and how biopharmaceuticals are absorbed.
- 3- Theoretical study on how to manufacture, store, and administer antibiotics produced through DNA recombination technology.

B. Subject-Specific Skills

- ☐ 1-Teaching skills in biotechnology
- ☐ 2-The student should have the ability to describe and illustrate models.
- ☐ 3-The student should have the ability to link causes with natural effects..

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Oral discussions in the classroom and written exams.
2. Midterm exams and end-of-semester exams.
3. Daily assignment reports.

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Introduction to biotechnology	Blackboard and Screen Presentations	Daily exam and oral questions
2	2	Knowledge	Synthesis of biopharmaceutics and bacterial contamination	Blackboard and Screen Presentations	Daily exam and oral questions
3	2	Knowledge	Sterilization and bacterial disinfectant	Blackboard and Screen Presentations	Daily exam and oral questions
4	2	Knowledge	Additives and excipients	Blackboard and Screen Presentations	Daily exam and oral questions
5	2	Knowledge	Solubility enhancers	Blackboard and Screen Presentations	Daily exam and oral questions
6	2	Knowledge	Oral intake products	Blackboard and Screen Presentations	Daily exam and oral questions
7	2	Knowledge	Other route of administration (nasal/ respiratory/rectal/ buccal)	Blackboard and Screen Presentations	Daily exam and oral questions
8	2	Knowledge	Pharmacokinetics of biopharmaceutics	Blackboard and Screen Presentations	Daily exam and oral questions
9	2	Knowledge	Biopharmaceutics excretion	Blackboard and Screen Presentations	Daily exam and oral questions
10	2	Knowledge	Protein degradation and examples of peptides as drugs	Blackboard and Screen Presentations	Daily exam and oral questions

12. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

13. Infrastructure	
Required Readings:	References: Pharmaceutical biotechnology : fundamentals and applications. 4th ed (2013) by Crommelin et. al
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:

Name of the Instructor: Dr. Azher Abdulmutaleb Ibrahim

Course description applied therapeutics second-course fifth year theory

**Review the performance of the higher education institution ((review of
(the academic program**

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

Al-Zahrawi University - Ministry of Higher Education and Scientific Research	1. Educational Institution
colleage of Pharmacy-Clinical Pharmacy Branch	2. University Department / Center
Therapeutics II -PCPC57	3. Course Name / Code
Bachelor of Pharmacy Science	4. Programs in which it is included
Daily attendance	5. Available Forms of Attendance
Teaching System - Courses - Fifth Stage - Courses	6. Semester / Year
32 hours	7. Total Number of Study Hours
2025-2026	8. Date of preparing this description
9. Course Objectives: Since its establishment, the department has worked hard and continuously based on its noble mission in society to achieve several strategic goals and objectives, the most important of which are: 1. The course aims to identify the different pathological conditions, their definition, causes, methods of diagnosis, treatment methods and groups of medicines used in treatment. 2. .Making the graduate student able to identify the pathological conditions proven in the patient's tympanum 3. .Making the graduate student able to communicate with patients in outpatient clinics for general diseases 4. .Making the graduate student able to educate patients regarding the medicines used by them 5. making the graduating student is able to match the wrong treatment methods with what is in the proven sources.	

10. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

A 1 - To be able to identify proven pathological conditions in the patient's tympanum

A2- To be able to communicate with the patient in the outpatient clinics for general diseases

A3- To be able to educate the patient regarding medicines

A 4- To be able to match the wrong treatment methods with what is in the proven sources

B – Special skills in the subject

B1 – Skills of follow-up treatment methods

B2 – Skills to identify new alternative medicines

B3 – Skills to determine the most important goal of the treatment of common diseases

B4- Enabling students to possess the skills of diagnosing cases of medical errors in the use of medicines and spend it

B5- Enabling students to possess the skills of using scientific research tools in the academic and scientific field

B6- Enabling students to acquire self-learning skills to acquire new information, skills and knowledge

Learning and teaching methods

.1Style of thinking and discussion.

.2Discuss medical conditions

.3Learning by applied lecture

Evaluation methods

.1Semi-semester exams and final exams exam grades

.2Oral and written evaluation that includes hypothetical cases and ways to address them

.3Exam Scores

4. Graduation Research

C –Thinking Skills

C1. The style of dialogue between the student and the professor.

C2. Conduct discussions of hypothetical cases

C3. Exploratory thinking.

C4 . Using modern methods in preparing lectures and presenting them in a PowerPoint form

C5. Preparing homework on topics related to scientific material.

Teaching and learning methods

1. Teaching and lecturing

2. Seminars and homework.

3. Discussion and dialogue.

4. Tests.

Evaluation methods
Grades, research and reports, tests.

D – General and transferred skills

D1. The student should be able to employ the knowledge he has received.

D2. The student should be able to skill the teaching and learning profession.

.D3. The student should be able to embody what he has acquired in professional development

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Adrenal gland disorders	Use the blackboard and display screen	Daily exam and oral questions
2	2	Knowledge	Thyroid disorders	Use the blackboard and display screen	Daily exam and oral questions
3	2	Knowledge	Alzheimer's disease	Use the blackboard and display screen	Daily exam and oral questions
4	2	Knowledge	Anxiety disorders	Use the blackboard and display screen	Daily exam and oral questions
5	2	Knowledge	Depressive disorders	Use the blackboard and display screen	Daily exam and oral questions
6	2	Knowledge	Schizophrenia	Use the blackboard and display screen	Daily exam and oral questions
7	2	Knowledge	Sleep disorders	Use the blackboard and display screen	Daily exam and oral questions
8	2	Knowledge	Contraception	Use the blackboard and display screen	Daily exam and oral questions
9	2	Knowledge	Hormonal replacement therapy (HRT)	Use the blackboard and display screen	Daily exam and oral questions
10	2	Knowledge	Menstruation related disorders	Use the blackboard and display screen	Daily exam and oral questions
11	2	Knowledge	Cancer treatment and chemotherapy	Use the blackboard and display screen	Daily exam and oral questions
12	2	Knowledge	Leukemias	Use the blackboard and display	Daily exam and oral

				screen	questions
13	2	Knowledge	lymphoma	Use the blackboard and display screen	Daily exam and oral question
14	2	Knowledge	Breast cancer	Use the blackboard and display screen	Daily exam and oral questions
15	2	Knowledge	prostate cancer	Use the blackboard and display screen	Daily exam and oral questions
16	2	Knowledge	Adverse effects of chemotherapy	Use the blackboard and display screen	Daily exam and oral questions

12 . Infrastructure	
- Required Readings	References : Pharmacotherapy handbook 11 th edition - Pharmacotherapy principles and practice 6th edition

Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites, Internet
Social Services (Guest Lectures, Professional Training, Field Studies, Others):	Organizing workshops and courses for graduates

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	

Name of the Instructor: Lec. Dr. Ali hassan zaki

Course Description (Drug Delivery Systems)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Drug Delivery Systems
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester, Fifth Stage (2025-2026)
7. Total Number of Study Hours	2 hours per week for each group
8. Date of preparing this description	2025-2026
9. Course Objectives: 1) Explain the process of new drug development, including drug discovery, preclinical evaluation, early formulation studies, and regulatory submission of INDs, NDAs, and ICH guidelines. 2) Explore the principles and applications of pharmaceutical nanotechnology, including the design and use of liposomes, dendrimers, micelles, solid nanoparticles, and lipid-based delivery systems in modern therapeutics. 3) Describe the anatomical and physiological considerations for non-oral routes of drug delivery, including nasal, ocular, transdermal, and pulmonary routes. 4) Analyze formulation challenges and strategies for improving drug solubility, permeability, bioavailability, and patient adherence across various advanced delivery systems. 5) Evaluate the design, function, and clinical considerations of innovative delivery platforms such as patches, inhalers, eye drops, and nanoparticle-based systems.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- A.1: Understanding the process of drug discovery and approval.
- A.2: Understanding different formulations for drug delivery and targeting for different diseases.
- A.3: Understanding the effect of drugs physicochemical properties on formulations choices.

B. Subject-Specific Skills

- B.1: Enable students to choose different drug formulations for specific diseases.
- B.2: Enable students to advance their careers as pharmaceutical scientists.

Teaching and Learning Methods

- 1. Lectures.
- 2. Teamwork.
- 3. Quizzes and exams.

C. Evaluation Methods

- 1. Quizzes, mid-term, and final exams.
- 2. Seminars and posters.

D. Thinking Skills

- D1. Encourage students to think correctly through analysis of principles of drug formulations.
- D2. Enable students to correctly handle drug formulations for proper use.

E. General and Transferable Skills

- D1. Encourage students to do research articles.
- D 2. Encourage students to discuss scientific report.
- D 3. Learn skills necessary to handle formulations.
- D 4. Learn leadership skills.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	New Drug Development and Approval Process	Smart screen	Exams and oral questions
2	2	Knowledge	New Drug Development and Approval Process	Smart screen	Exams and oral questions
3	2	Knowledge	New Drug Development and Approval Process	Smart screen	Exams and oral questions
4	2	Knowledge	Pharmaceutical Nanotechnology and Nanomedicines	Smart screen	Exams and oral questions
5	2	Knowledge	Pharmaceutical Nanotechnology and Nanomedicines	Smart screen	Exams and oral questions
6	2	Knowledge	Pharmaceutical Nanotechnology and Nanomedicines	Smart screen	Exams and oral questions
7	2	Knowledge	Nasal Drug Delivery	Smart screen	Exams and oral questions
8	2	Knowledge	Nasal Drug Delivery	Smart screen	Exams and oral questions
9	2	Knowledge	Ocular Drug Delivery	Smart screen	Exams and oral questions
10	2	Knowledge	Ocular Drug Delivery	Smart screen	Exams and oral questions
11	2	Knowledge	Transdermals and Transdermal Drug Delivery Systems	Smart screen	Exams and oral questions
12	2	Knowledge	Transdermals and Transdermal Drug Delivery Systems	Smart screen	Exams and oral questions

13	2	Knowledge	Pulmonary Drug Delivery	Smart screen	Exams and oral questions
14	2	Knowledge	Pulmonary Drug Delivery	Smart screen	Exams and oral questions

12. Infrastructure	
Required Readings:	References: Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017. Aulton's Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: None
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: None

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	
Maximum Number of Students	

Name of the Instructor: Ammar Sahib Abdulameer, Ph.D.

Course Description Template for Advanced Pharmaceutical Analyses, 5th Stage, Second Semester (Theoretical)

Course Description

• Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University College
• University Department / Center	Pharmacy
• Course Name / Code	Advanced Pharmaceutical Analyses PPCS 510
• Programs in which it is included	Bachelor of Pharmaceutical Sciences
• Available Forms of Attendance	Daily Attendance
• Semester / Year	Second Semester / Fifth year
• Total Number of Study Hours	3 hours weekly
• Date of preparing this description	2026
• Course Objectives: Course Objectives: To study spectroscopic methods used for identification and characterization of organic compounds including UV, IR, Mass and NMR spectroscopy, it enable students to understand the applications of these techniques for qualitative and quantitative analysis of organic compounds	
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

• Knowledge and Understanding
• Identify all spectroscopic tools for structure elucidation of new drugs. • Applications and interpretation of spectral data • Operating of all spectroscopy instruments • Study of all spectral charts • Writing reports
• Subject-Specific Skills
• Acquire skills interpretation of spectral data.

• identification of new compounds from their spectra. • Analysis of spectral data.
Teaching and Learning Methods
• Theoretical lectures • Seminars and reports • Laboratory Experiments. • Printing of reports
• Evaluation Methods
• Semi-semester exams and final exams. • Oral exams • Classroom activities and assignments • Assessment of student work during periodic exams
• Thinking Skills
• The use of modern methods in the preparation of lectures and presentations in the form of PowerPoint • The use of group discussion to understand the article • Giving homework that stimulates and activates thinking and linking information
• General and Transferable Skills
• The student should give interpretation of all spectral charts • The student should be able to employ the knowledge he has received. • Giving confidence to the student through the discussion of seminars. • The student should be able to embody what he has acquired in professional development.

• Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge and understanding	UV-Spectroscopy part: 1	Lecture	Evaluation of application reports, oral and written exams

2	3	Knowledge and understanding	UV-Spectroscopy part: II	Lecture	Evaluation of application reports, oral and written exams
3	3	Knowledge and understanding	IR-Spectroscopy part: I	Lecture	Evaluation of laboratory skills and lab reports oral and written exams
4	3	Knowledge and understanding	IR-Spectroscopy part : II	Lecture	Evaluation of application reports, oral and written exams
5	3	Knowledge and understanding	Mass spectroscopy part:I	Lecture	Evaluation of application reports , oral and written exams
6	3	Knowledge and understanding	Mass spectroscopy part: II	Lecture	Evaluation of application reports, oral and written exams
7	3	Knowledge and understanding	Mass spectroscopy part: III	Lecture	Evaluation of application reports, oral and written exams
8	3	Knowledge and understanding	H-NMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams
9	3	Knowledge and understanding	HNMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams
10	3	Knowledge and understanding	HNMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams
11		Knowledge and understanding	H-NMR-	Lecture	Evaluation of application

			Spectroscopy		reports, oral and written exams
12		Knowledge and understanding	H-NMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams
13	3	Knowledge and understanding	C13- NMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams
14	3	Knowledge and understanding	C13 NMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams
15		Knowledge and understanding	C13 NMR-Spectroscopy	Lecture	Evaluation of application reports, oral and written exams

• Infrastructure	
Required Readings:	References: Spectrometric Identification of Organic Compounds, 7th Edition Robert M. Silverstein, Francis X. Webster David Kiemle
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

• Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/

Maximum Number of Students	Admission exceeds the capacity plan.
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Name of the Instructor:

Dr. Shaker Awad Abdul Hussein

Al-Zahrawi University

College of Pharmacy



**Higher Education Institution Performance Review
(Academic Program Review)**

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy College
3. Course Name / Code	Pharmacoeconomics – Theory PCPC 56
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester - 5th year
7. Total Number of Study Hours	30 hours (2 hours per week)
8. Date of preparing this description	2025-2026
9. Course Objectives : Knowing the relationship between Pharmacoeconomics and Clinical Pharmacology, explaining how to obtain the best medicine at the most appropriate price, scientific methods for analyzing the cost of medicine, and how to make decisions to purchase medicines and medical supplies in a scientific manner.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding A-1 The student should be familiar with the relationship between pharmaceutical economics and clinical pharmacy. A-2 The student should be familiar with the statement of how to obtain the best medicine at the most appropriate price. A-3 The student should be familiar with how to conduct an economic feasibility study. A-4 The student should be familiar with the scientific methods for analyzing the cost of medicine. A-5 The student should be familiar with how to make decisions to purchase medicines and medical supplies in a scientific manner. A-7 Preparing trained and qualified pharmacists to work in pharmaceutical institutions.
B. Subject-Specific Skills B 1. Teaching skill in the subject of pharmaceutical economics. B 2. The student should have the ability to infer and link clinical and economic information together. B 3. The student should have the ability to link medicines to the practical economic reality in pharmacies and hospital.
Teaching and Learning Methods
1. Thinking and discussion method. 2. Scientific tests. 3. Learning by exploratory lecture.
C. Evaluation Methods
1. Submit weekly reports. 2. Exam grades. 3. Graduation research
D. Thinking Skills A1. Student-teacher dialogue method. A2. Preparing weekly reports. A3. Conducting discussions of the results. A4. Exploratory thinking.
Teaching and Learning Methods
1. Grades. 2. Discussion and dialogue. 3. Tests.
Evaluation Methods
Grades, research and reports, tests
e. General and Transferable Skills D 1. The student is able to employ the knowledge he has received. D 2. The student is able to master the teaching and learning profession. D 3. The student is able to embody what he has acquired in professional development.

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Course overview, Changes in health care delivery	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	overview of Pharmacoeconomics	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cost determination. Evaluation of outcomes and effectiveness	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cost minimization analysis (CMA)	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cost effectiveness analyses (CEA)	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Methods of data collection and analyses	Knowledge	2	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Incremental analyses; Evaluation outcomes	Knowledge	2	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Utility and quality of life (CUA)	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Types of pharmacoeconomic analyses, cost utility analyses (CUA)	Knowledge	2	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Evaluation outcomes: Net benefit, cost utility analyses (CBA)	Knowledge	2	10
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Compare and contrast CEA, CUA and CBA	Knowledge	2	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Methods of data collection and analyses: Statistical/Econometric modeling	Knowledge	2	12
Daily Quiz and Verbal Questions	Using the whiteboard and the projector	Pharmacoeconomic analyses	Knowledge	2	13

Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	How to make a feasibility study	Knowledge	2	14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Decision Making	Knowledge	2	15

11. Infrastructure	
Required Readings:	References: Essentials of Pharmacoeconomics 3rd Edition 2021
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://link.springer.com/journal/40273 https://www.ispor.org/heor-resources
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

12. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

م.م. علي عبد الواحد محمد علي البير

Coarse Description of Principles of Pharmacy Practice First Year Class, First Semester

Pharmacy practice focuses on the pharmacist's expanding role in providing patient-centered care and promoting the safe and effective use of medicines. It integrates pharmaceutical care, clinical pharmacy services, patient counseling, and medication management. The course prepares students to identify drug-related problems and collaborate effectively with healthcare professionals to improve patient outcomes.

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmacy Practice
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Classroom attendance
6. Semester / Year	Second Semester / Fourth Year
7. Total Number of Study Hours	45 Hours (3 hours/week × 15 weeks)
8. Date of preparing this description	2026

Course Objectives: This course aims to enable students to:

- Understand the principles and scope of contemporary pharmacy practice.
- Apply the pharmaceutical care process to identify, prevent, and resolve drug-related problems.
- Develop patient-centered communication, counseling, and medication-use skills.
- Understand community and hospital pharmacy practice and the pharmacist's role within the healthcare team.
- Become familiar with major clinical pharmacy services, including medication reconciliation, medication review, therapeutic drug monitoring, antimicrobial stewardship, and adverse drug reaction monitoring.
- Promote safe and rational use of medicines, medication adherence, and patient education.
- Develop documentation, referral, interprofessional collaboration, and clinical decision-making skills.

Learning Outcomes, Teaching and Learning Methods, and Evaluation

Upon successful completion of this course, the student will be able to:

- Identify and describe major pharmaceutical dosage forms.
- Explain industrial manufacturing procedures for tablets, capsules, liquids, and semisolid dosage forms.

- Explain tablet evaluation and coating processes.
- Compare hard-capsule and soft-capsule manufacturing technologies.
- Describe microencapsulation and its pharmaceutical applications.
- Apply acquired industrial-pharmacy knowledge to pharmaceutical manufacturing practice.

Knowledge and Understanding

- Explain the concepts of pharmacy practice, pharmaceutical care, and patient-centered care.
- Describe the roles of community, hospital, and clinical pharmacists.
- Recognize drug-related problems, medication errors, adverse drug reactions, and adherence problems.
- Understand key clinical pharmacy services and principles of rational medicine use.

Subject-Specific Skills

- Collect and assess patient medication histories.
- Conduct medication review and medication reconciliation.
- Provide effective patient counseling and medication education.
- Identify drug-related problems and propose appropriate pharmacist interventions.
- Document pharmaceutical care plans and communicate recommendations.

Teaching and Learning Methods

Theoretical lectures, PowerPoint presentations, case-based learning, role-play, patient counseling simulations, small-group discussions, and practical pharmacy scenarios.

A. Evaluation Methods

Written examinations, quizzes, case discussions, assignments, patient-counseling exercises, reports, and class participation.

Thinking Skills

- Analyze patient and medication information to identify actual and potential drug-related problems.
- Prioritize pharmaceutical care needs and recommend appropriate interventions.
- Evaluate medication effectiveness, safety, adherence, and monitoring requirements.

Teaching and Learning Methods

Case-based learning, clinical scenarios, group discussions, problem-solving exercises, role-play, and reflective learning.

Evaluation Methods

Evaluation through case analysis, written examinations, quizzes, assignments, presentations, and participation in discussions.

e. General and Transferable Skills

- Communicate effectively with patients and healthcare professionals.
- Work collaboratively within the healthcare team.
- Develop professionalism, leadership, documentation, and lifelong-learning skills.

11. Course Structure					
Wee ks	Hours	Required Learning Outcome s	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3 HOURS	Knowledge and practical application	Introduction to Pharmacy Practice Scope of pharmacy practice; evolution of the pharmacist's role; patient-centered care and professionalism	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
2	3 HOURS	Knowledge and practical application	Pharmaceutical Care Concept, philosophy, goals, pharmaceutical care process, patient assessment, care plan, follow-up and documentation	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
3	3 HOURS	Knowledge and practical application	Patient Communication and Counseling Effective communication; patient interviewing; counseling techniques; health literacy; special communication needs	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
4	3 HOURS	Knowledge and practical application	Medication History and Medication Reconciliation Best possible medication history; transitions of care; identifying and resolving discrepancies	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
5	3 HOURS	Knowledge and practical application	Drug-Related Problems and Pharmacist Interventions Identification, classification, prioritization, intervention, follow-up and documentation	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
6	3 HOURS	Knowledge and practical application	Medication Review and Medication Therapy Management Comprehensive medication review; appropriateness, effectiveness, safety and adherence assessment	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
7	3 HOURS	Knowledge and practical application	Community Pharmacy Practice and Services Prescription processing; OTC care; minor ailments; referral; public health and preventive services	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
8	3 HOURS	Knowledge and practical application	Hospital Pharmacy Practice and Clinical Services Hospital pharmacy organization; inpatient medication systems; ward-based clinical pharmacy services	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
9	3 HOURS	Knowledge and practical application	Clinical Pharmacy Services: Therapeutic Drug Monitoring Principles of TDM; patient selection; sampling; interpretation and	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment

			pharmacist recommendations		
10	3 HOURS	Knowledge and practical application	Medication Safety and Medication Errors Medication-use process; types and causes of medication errors; prevention and reporting systems	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
11	3 HOURS	Knowledge and practical application	Adverse Drug Reactions and Pharmacovigilance Detection, assessment, documentation and reporting of ADRs; pharmacist role in pharmacovigilance	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
12	3 HOURS	Knowledge and practical application	Antimicrobial Stewardship Rational antimicrobial use; resistance; stewardship principles; pharmacist clinical responsibilities	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
13	3 HOURS	Knowledge and practical application	Medication Adherence and Chronic Disease Support Assessment of adherence; barriers; adherence interventions; pharmacist support in chronic disease management	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
14	3 HOURS	Knowledge and practical application	Evidence-Based Pharmacy Practice and Drug Information Drug-information resources; answering clinical questions; evaluating evidence and communicating recommendations	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment
15	3 HOURS	Knowledge and practical application	Integrated Pharmaceutical Care and Clinical Case Review Comprehensive patient cases integrating medication review, counseling, safety, adherence, monitoring, documentation and referral	PowerPoint presentations, case-based learning, discussion, role-play and practical scenarios	Quizzes, assignments, case discussion, oral questions and written assessment

12. Infrastructure	
Required Readings:	Required references: standard Pharmacy Practice and Clinical Pharmacy textbooks, current clinical guidelines, formularies, and approved drug-information resources.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic drug-information databases, clinical guidelines, scientific journals, patient counseling materials, and case-based learning resources.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, pharmacy practice workshops, professional training, simulated patient activities, and field visits where applicable.

13.	
Prerequisites	Admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Name of the Instructor: Assistant Professor Dr. Salam Waheed Ahjel



Course Description

Analytical Chemistry theoretical, First Course, First Stage

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Alzahrawi University- College of pharmacy
• Course Name / Code	Analytical chemistry , PPCS 11
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	First course-2025/2026
• Total Number of Study Hours	45 hours
• Date of preparing this description	2025-2026
• Course Objectives: To provides students with a sound theoretical back ground in chemical principles that is essential to practice chemical analysis. It enables students to understand the importance of judging the accuracy and precision of experimental data and techniques of quantitative analysis, and also to show that theory frequently served as a useful guide to the solution of analytical problems	
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

- **Knowledge and Understanding:**
- Basic concepts of analytical chemistry. Applying all methods of analysis qualitatively and quantitatively.

Subject-Specific Skills:

Get experience in drug analysis such as gravimetric, precipitometric, redox.... etc.

Teaching and Learning Methods:

Using white board and projector screen

- **Evaluation Methods:**

- Periodic exams, reports, seminars, routine homeworks, final exams.

- **Thinking Skills:**

- Practical workshops, homework's, exams

Teaching and Learning:**Methods:**

using white board and projector screen. Lectures to distinct students to textbooks, notes and on-line material. Laboratory practice. Assignments and researches done and presented by the students in seminars.

Evaluation Methods:

Periodic exams, seminars, and reports

e. General and Transferable Skills:

Communicate clearly by verbal and written means. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Practice independent learning for continuous professional development. Demonstrate creativity and time management abilities. Implement writing and presentation skills. Demonstrate critical thinking, problem solving and decision making abilities.

- **Course Structure**

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Lecture	Introduction to Analytical chemistry	Lecture	Quizes and reports
2	3	Lecture	Basic Concepts: Concentration units	Lecture	Quizes and reports
3	3	Lecture	Standards and Solution preparation	Lecture	Quizes and reports
4	3	Lecture	Introduction to Pharmacopoeias	Lecture	Quizes and reports
5	3	Lecture	Pharmacopoeial Monographs &ICH Q2(R1)	Lecture	Quizes and reports
6	3	Lecture	Gravimetric Analysis I	Lecture	Quizes and reports
7	3	Lecture	Gravimetric Analysis II	Lecture	Quizes and reports
8	3	Lecture	Errors in Analytical Chemistry &Gravimetric Analysis	Lecture	Quizes and reports
9	3	Lecture	Volumetric Analysis I: Fundamentals	Lecture	Quizes and reports
10	3	Lecture	Acid–Base Titrations I	Lecture	Quizes and Reports
11	3	Lecture	Acid–Base Titrations II: pH	Lecture	

12	3	Lecture	&calculations Acid–Base Indicators &Pharmaceutical Applications	Lecture	Quizes and Reports
13	3	Lecture	Precipitation Titrations	Lecture	Quizes and Reports
14	3	Lecture		Lecture	
15	3	Lecture	Complexometric Titrations Integrated Review & Applications		

• Infrastructure	
Required Readings:	References: 1) Fundamentals of Analytical Chemistry – Skoog, West, Holler & Crouch 2) Pharmaceutical Analysis – A.H. Beckett & J.B. Stenlake 3) Quantitative Chemical Analysis – Daniel C. Harris 4) Supplementary: British Pharmacopoeia (BP), United States Pharmacopeia (USP), ICH Q2(R1)
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan

Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Name of the Instructor: Assistant Lecturer Saif yahya ahmed

Academic Program Description Form

Course description

This course description provides a summary of the most important course characteristics and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the learning opportunities available, and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University College - Ministry of Higher Education and Scientific Research
2. University Department / Center	Department of Pharmacy -
3. Course Name / Code	Human biology
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Semester/First stage
6. Semester / Year	second semester /First stage
7. Total Number of Study Hours	3 h theory/2h practical
8. Date of preparing this description	16/10/2024
9. Course Objectives:	
1. This specification defines the basic concepts in anthropology and links them to identifying humans and their diseases, as it specifies the structure and function of target cells, whitening processes, cell reproduction, and human inheritance.	
2. A comprehensive study of the body's various systems (system, spasm, labia, reproductive, inflammatory, secretory) and the diseases that may affect these systems.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

1- Understand the mechanism of action of drugs on the endocrine system and their use in correcting abnormalities in endocrine functions

2- Identify the side effects of drugs

3- Understand the mechanism of action of drugs on the endocrine system and their use in correcting abnormalities in endocrine functions. In addition, the course will cover drugs used in the treatment of tumors, bone disorders, obesity, and erectile dysfunction. Inflammatory agents and anti-inflammatory drugs will also be covered during this course.

B. Subject-Specific Skills

1-Ability to use laboratory equipment such as a microscope and learn about cell structure

2- Dealing with laboratory animals

3- Using different methods to identify the organs of the human body

Teaching and Learning Methods

Adopting small groups in the practical aspect, while the theoretical aspect is through presenting the problem and discussing to find appropriate solutions

C. Evaluation Methods

Daily written and oral exams, as well as mid-semester and semester written exams. As for practical exams, they are done through conducting laboratory skills exams.

D. Thinking Skills

1 - Accuracy in laboratory work

2- Honesty at work

3- Respect for the teaching staff

4- Good interaction between the students themselves

Teaching and Learning Methods

Using the smart board and displaying pictures and videos that bring the scientific idea closer to the students, as well as presenting a specific problem to the students and finding appropriate solutions for that through discussion with the students.

Evaluation Methods

Oral exams, which show the student's understanding of the scientific material

e. General and Transferable Skills

1- Increasing scientific competence by learning about everything new in pharmaceutical science

2- Relying on modern sources to improve the scientific level

3-Learn about laboratory equipment and dealing with laboratory animals

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Introduction and basic principles of human biology.	- Introduction and basic principles of human biology. - Branches of biology	The use of references and use the smart board	Monthly written examinations and oral examinations
2	4	Cell: Structure, properties and classification.	Cell: Structure, properties and classification. Cell organelles	The use of References and use the smart board	Monthly written examinations and oral examinations
3	3	Tissues: Structures; properties; classification and function.	Tissues: Structures; properties; classification and function. - connective - Epithelial - Muscle - Nervous	The use of references and use the smart board	Monthly written examinations and oral examinations
4	3	Nutrition.	Nutrition. - Fat - Protein - Carbohydrates - Vitamin - Minerals	The use of references and use the smart board	Monthly written examinations and oral examinations
5	3	Digestive System (	Digestive System (Mouth, Esophagus, Stomach)	The use of references and use the smart board	Monthly written examinations and oral examinations
6	3	Digest System (intestine).	Digest System (intestine).	The use of references and use the smart board	Monthly written examinations and oral examinations
7	2	Circulatory System; Blood.	Circulatory System; Blood. - Systemic circulation	The use of references and use the smart board	Monthly written examinations and oral examinations

			- Pulmonary circulation - Blood components(plasma , red blood cells, white blood cells, and platelets)		
8	2	Inflammation.	Inflammation. - Types of inflammation - Inflammatory mediators	The use of references and use the smart board	Monthly written examinations and oral examinations
9	2	Immunity and the blood.	Immunity and the blood. - Human immunity - Cellular immunity	The use of references and use the smart board	Monthly written examinations and oral examinations
10	5	Immunity to disease.	Immunity to disease. - Active immunization - Passiveimmunization	The use of references and use the smart board	Monthly written examinations and oral examinations

12. Infrastructure	
Required Readings:	
	Human Biology by Willy Cushwa
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: ResearchGate
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:
Dr. Lafta Fayez Kadhim

Al-Zahrawi University



College of Pharmacy

**Higher Education Institution Performance Review
(Academic Program Review)**

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy College
3. Course Name / Code	Mathematics and biostatistics
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester – 1st Grade
7. Total Number of Study Hours	30 hours (2 hours per week)
8. Date of preparing this description	2025-2026
9. Course Objectives : The program is for one course in which the student reviews the basics of mathematics such as solving simple equations and percentage applications. The student also learns the basics of biostatistics and how to describe and analyze clinical data.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1. Review the basics of mathematics and its applications in pharmacy.**
- 2. Understand the basics of statistics.**
- 3. Learn how to analyze and describe data.**
- 4. Learn how to do a biostatistical screening.**

B. Subject-Specific Skills

- 1. Gain skill in calculating doses and how to dilute them.**
- 2. Gain skill in designing clinical trials.**
- 3. Gain skill in describing data.**
- 4. Gain skill in analyzing data.**

Teaching and Learning Methods

- 1. Show pictures and diagrams.**
- 2. Thinking and discussion method.**
- 3. Learning through videos and visual aids.**
- 4. Making acting scenes.**
- 5. Exploratory thinking**

C. Evaluation Methods

- 1. Submit weekly reports.**
- 2 Exam grades are written and oral.**

D. Thinking Skills

- 1. Using modern methods in preparing lectures and presenting them in PowerPoint format**
- 2. Preparing homework on topics related to the scientific material.**
- 3. Showing educational videos on the given material and using visual education.**

E. General and Transferable Skills

- 1. Discussion and dialogue to diagnose the problem.**
- 2. Discussion and dialogue to find solutions.**
- 3. Written tests.**
- 4. Oral assessment.**

11. Course Structure					
Week	Hour	Required Learning Outcome	Unit Name / Course or Topic	Learning Method	Evaluation Method
1	2	Knowledge	Mathematical functions	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
2	2	Knowledge	Fractions and its applications	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
3	2	Knowledge	Percentage and its applications in pharmaceutical calculations	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
4	2	Knowledge	Data plotting in pharmaceutical calculations	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
5	2	Knowledge	Differentiation and integration formulas	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
6	2	Knowledge	Introduction to biostatistics	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
7	2	Knowledge	Data description (numerical data)	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
8	2	Knowledge	Data description (categorical data)	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
9	2	Knowledge	Types of clinical trials	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
10	2	Knowledge	Binomial distribution of data	Using the whiteboard and the projector	Daily Quiz and Verbal Questions

11	2	Knowledge	Principles of data analysis	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
12	2	Knowledge	Parametric tests for data analysis	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
13	2	Knowledge	Non-parametric tests for data analysis	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
14	2	Knowledge	Chi-square test and Fischer exact test	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions
15	2	Knowledge	Correlation and regression	Using the whiteboard and the projector screen	Daily Quiz and Verbal Questions

Infrastructure	
Required Reading:	References: Biostatistics: A foundation for the analysis in health science 10 th edition.
Special Requirements (Workshops, Journals, Software, Websites)	Electronic Websites: https://www.graphpad.com/guides/prism/latest/user-guide/index.htm
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

م.م. Assistant Lecturer Hasnain Abdulhamid Athar

Course Description for Medical Terminology (Theory)

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

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Medical Terminology / 104PtMt
4. Programs in which it is included	Bachelor of Science in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester / First Year – 2025–2026
7. Total Number of Study Hours	2 hours per week
8. Date of preparing this description	April 22, 2026
9. Course Objectives:	
	• Introduce students to the basic medical terminology used in the health and pharmaceutical fields. • Enable students to understand and use medical terminology in scientific and professional contexts. • Develop students' ability to analyze medical terms into their linguistic components. Enhance communication skills using accurate scientific language.
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- Understand the components of basic medical terms (roots, suffixes, prefixes).
- Comprehend and use common medical terms in appropriate medical contexts.

B. Subject-Specific Skills

- Analyze medical terms into their components and understand their structure.

Teaching and Learning Methods

- Lectures, group discussions.

C. Evaluation Methods

- Quizzes, final exam.

D. Thinking Skills

- Apply analytical thinking to interpret complex medical terminology.

Teaching and Learning Methods**Evaluation Methods****e. General and Transferable Skills**

- Develop scientific communication skills.
- Use medical terminology in reports and professional settings.

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11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Students will understand the basic knowledge of medical terminology from prefix and suffix	Introduction and body organization	Quiz and exams	Lectures, Group discussions
2	1	able Students will be the most identify to Important for terminologies respiratory the system	Respiratory system	Quiz and exams	Lectures, Group discussions
3	1	Students will be able to identify the most Important terminologies for the urinary system	Urinary system	Quiz and exams	Lectures, Group discussions
4	1	Students will be able to identify the most important terminologies for the integumentary system	Integumentary system	Quiz and exams	Lectures, Group discussions
5	1	Students will be able to identify the most important terminologies for the reproductive system	The reproductive System	Quiz and exams	Lectures, Group discussions
6	2	Students will be able to identify the most important terminologies for the gastrointestinal system	The gastrointestinal Tract	Quiz and exams	Lectures, Group discussions
7	2	Students will be able to identify the most important terminologies for the Cardiovascular system	The heart and cardiovascular system	Quiz and exams	Lectures, Group discussions
8	1	Students will be able to identify the most important terminologies for women's reproductive system	Gynecology, pregnancy, and childbirth	Quiz and exams	Lectures, Group discussions

9	1	Students will be able to identify the most important terminologies for the vision System	The eye	Quiz and exams	Lectures, Group discussions
10	1	Students will be able to identify the most important terminologies for the nervous System	The nervous system and behavioral disorders	Quiz and exams	Lectures, Group discussions
11	1	Students will be able to identify the most important terminologies for the musculoskeletal system	Musculoskeletal System	Quiz and exams	Lectures, Group discussions
12	1	Students will be able to identify the most important terminologies for the lymphatic and immune system	Lymphatic and immune system	Quiz and exams	Lectures, Group discussions

12. Infrastructure	
Required Readings:	References: - Edward CC, (Ed.); A Short Course in Medical Terminology; 1st Ed.; - Introduction to Medical Terminology, 1st Edition Authors: Linda Stanhope and Kimberly Turnbull - Basic Medical Language. - Medical Language for Modern Health Care. - Mastering Healthcare Terminology. - Medical Terminology for Health Care Professionals. - Medical terminology for dummies
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.goodreads.com/en/book/show/2758424-a-short-course-in-medical-terminology
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13.	
Prerequisites	
Minimum Number of Students	
Maximum Number of Students	

Name of the Instructor:
Asst. Lec.: Mohammed Shaheed Sachit

**Higher Education Institution Performance Review
((Academic Program Review))**

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This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description

1. Educational Institution	Al Zahrawi University College Ministry of Higher Education and Scientific Research
2. University Department / Center	Pharmacy Department / Pharmaceuticals Branch
3. Course Name / Code	Pharmaceutical Calculations / PPCT12
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Teaching system - courses - first stage - .second semester - one course
7. Total Number of Study Hours	2 hours per week / total (30) hours
8. Date of preparing this description	2024-2025
9. Course Objectives:	
1- Enabling students to learn about pharmaceutical calculations 2- Enabling students to develop pharmaceutical knowledge and skills through the use of many tools, glassware and devices that facilitate the process of compounding and preparing medical .prescriptions and pharmaceutical preparations	
10- Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Enable students to recognize and examine the types of numbers and abbreviations commonly used in medical prescriptions.
- 2- Enable students to understand the components of a typical prescription, the different unit system and the relationship between them.
- 3- Enable students to acquire and understand weight and volume measuring tools.
- 4- Enable students to recognize how to calculate drug doses on different bases.
- 5- Enable students to acquire and understand how to reduce and enlarge medical prescriptions.

B. Subject-Specific Skills

- 1- Enabling students to possess pharmaceutical accounting capabilities
- 2- Enabling students to acquire scientific report writing skills
- 3- Enabling students to possess laboratory work skills and conduct scientific experiments.
- 4- Enabling students to read and interpret all medical and pharmaceutical terms and symbols

Teaching and Learning Methods

1. Using the smart board
2. Scientific tests used in laboratories
3. Writing scientific reports related to practical experiments

C. Evaluation Methods

- 1- Midterm and final exams
- 2- Short exams
- 3- Discussions in small groups

D. Thinking Skills

1. Student-teacher dialogue method.
2. Preparing weekly reports.
3. Conducting discussions of the results.
4. Exploratory thinking.

Teaching and Learning Methods

1. Chang at Lestrangle
2. Seminars at Hamork
3. Tests
4. Field Festival
5. Educational Posters

Evaluation Methods

Grades, research and reports, tests.

e. General and Transferable Skills

- 1. The student should be able to employ the knowledge he has received.**
- 2. The student should be able to master the profession of pharmacy.**
- 3. The student should be able to embody what he has acquired in professional development.**

11. Course Structure

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Perform calculations for pharmaceutical dilution	Changing product .concentrations Using concentrated solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
2	2	Perform calculations for increasing the concentration of pharmaceutical .preparations	Changing product .concentrations Using concentrated solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
3	2	Performing calculations for the preparation and use of concentrated standard solutions	Changing product .concentrations Using concentrated solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
4	2	Distinguish between different terms for balanced solutions.	Ionically and acidically balanced solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
5	2	Application of physical and chemical fundamentals in calculations of balanced solutions	Ionically and acidically balanced solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
6	2	Application of special calculations for preparing balanced solutions	Ionically and acidically balanced solutions	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment

7	2	Milli-Equivalent Calculation for Different Pharmaceutical Formulas	Milligram, milliequivalent, millimole and .milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
8	2	Convert between milligrams and milliequivalents	Milligram, milliequivalent, millimole and milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
9	2	Accounts for milli-equivalent issues	Milligram, milliequivalent, millimole and milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
10	2	Calculations for millimoles and milliosmoles.	Milligram, milliequivalent, millimole and milliosmole	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
11	2	Applications for mixing different concentrations of pharmaceutical forms	Change product concentrations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
12	2	Performing calculations for intravenous solutions for adults and children	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
13	2	Performing calculations for additives to intravenous solutions	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical	Daily exam. Practical results assessment

				problems.	
14	2	Performing calculations for the flow rate of intravenous solutions	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment
15	2	Application of flow rate tables for intravenous solutions	Intravenous solutions, injections, flow rate calculations	Use the board and the projector. Conduct experiments and solve mathematical problems.	Daily exam. Practical results assessment

12. Infrastructure	
Required Readings:	References: 1 – Ansel, “pharmaceutical calculation” Wolters Kluwer. 2010 2 - Aulton’s pharmaceuticals: The design and manufacture of medicines, 3ed Michael E. Aulton (author) Churchill, Livingstone-Elsever
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

Dr. Azher A. Ibrahim

PhD. Clinical Chemistry

Course Description (Human anatomy Theoretical/second semester)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Ministry of Higher Education and Scientific Research Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Human anatomy (Theoretical)
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	2nd Semester, first Stage
7. Total Number of Study Hours	2 hours per week for each group
8. Date of preparing this description	2024-2025
9. Course Objectives: To integrate the key concepts and fundamental principles of Human Biology and Histology. By the end of the semester, students should be able to understand the basic structure and organization of the human body, including cells, tissues, organs, and organ systems	
10 Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

tissues, organs, and organ systems.

A.2: Understand the basic types of human tissues, their microscopic structures, functions, and distribution in the body.

B. Subject-Specific Skills

B.1: Distinguish between the different types of tissues and recognize their structural and functional characteristics.

B.2: Develop the ability to relate the microscopic structure of cells and tissues to their physiological functions and understand the relationship between structural changes and disease conditions.

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Written examinations to assess students' knowledge and understanding of Human Biology and Histology.

D. Thinking Skills

D.1: Encourage students to identify and analyze problems related to Human Biology and Histology.

D.2: Develop students' ability to interpret biological and histological findings and propose appropriate solutions or explanations.

E. General and Transferable Skills

D1. The student should be able to think logically to solve problems

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge Experiment skill	Introduction to General Anatomy	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
2	2	Knowledge Experiment skill	Anatomical Terms & Models	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
3	2	Knowledge Experiment skill	Skeleton: Bones and Joints	Blackboard ,Screen Presentations and lab experiment	Daily exam and oral questions
4	2	Knowledge Experiment skill	Circulatory System	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
5	2	Knowledge Experiment skill	Glandular Epithelium & Endocrine System	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
6	2	Knowledge Experiment skill	Digestive System (Part 1 - Upper GIT): Oral cavity, pharynx, esophagus, stomach	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
7	2	Knowledge Experiment skill	Digestive System (Part 2 - Lower GIT & Accessory Organs): Small intestine, large intestine, rectum, anus. Salivary glands, pancreas, liver, gallbladder.	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
8	2	Knowledge Experiment skill	Respiratory System	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions

9	2	Knowledge Experiment skill	Nervous System	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
10	2	Knowledge Experiment skill	Urinary System	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
11	2	Knowledge Experiment skill	Lymphoid Tissue	Blackboard , Screen Presentations and lab experiment	Daily exam and oral questions
12	2	Knowledge Experiment skill	Lymphoid Nodule (MALT) & Tonsils	Blackboard ,Screen Presentations and lab experiment	Daily exam and oral questions
13	2	Knowledge Experiment skill	Male Reproductive System	Blackboard ,Screen Presentations and lab experiment	Daily exam and oral questions
14	2	Knowledge Experiment skill	Female Reproductive System:	Blackboard ,Screen Presentations and lab experiment	Daily exam and oral questions
15	2	Knowledge Experiment skill	Integumentary System (The Skin)	Blackboard ,Screen Presentations and lab experiment	Daily exam and oral questions

12. Infrastructure	
Required Readings:	References: <i>Junqueira's Basic Histology</i> <i>Clinically Oriented Anatomy – Moore</i>
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Muntadher Zyara

Course Description (Histology Theory)

Review of Higher Education Institution Performance (Academic Program Review)

Course Description

This course description provides a concise summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether they have made the most of the available learning opportunities. It is essential to link these outcomes with the program description.

1. Educational Institution	Al-Zahrawi University College - Ministry of Higher Education and Scientific Research
2. University Department / Center	Department of Pharmacy
3. Course Name / Code	Histology
4. Programs in which it is included	Bachelor of Science in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester/first stage / 2024 – 2025
7. Total Number of Study Hours	2 hours per week
8. Date of preparing this description	2024 – 2025

9. Course Objectives:

The primary objective of the course is to provide students with a comprehensive understanding of the microscopic structure (histology) and functional organization of major human tissues, organs, and body systems.

Specifically, the course aims to:

- **Understand Systemic Microanatomy:** Examine the detailed histology of key organ systems, including the circulatory, lymphoid, nervous, respiratory, digestive, endocrine, reproductive (male and female), urinary, and integumentary (skin) systems.
- **Correlate Structure and Function:** Relate cellular and tissue structures to their specific physiological roles (e.g., filtration and absorption in the nephron, spermatogenesis in the testes, and follicular development in the ovaries).
- **Identify Tissue Variations:** Differentiate between functional subtypes of tissues and structures, such as thick vs. thin skin, central vs. peripheral nervous tissues, and conducting vs. respiratory portions of the lungs.

1. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

Microscopic Structure: Identify the histology of major organs across all 10 body systems covered in the syllabus.

Histophysiology: Explain how tissue structures support functions like filtration, absorption, gas exchange, and secretion.

Developmental Processes: Describe cellular stages in spermatogenesis, follicular maturation, and ovulation.

Tissue Differentiation: Distinguish between tissue variations, including thick/thin skin and central/peripheral nervous tissue.

B. Subject-Specific Skills

Histological Identification: Recognize and differentiate microscopic tissue structures and cell types across major body systems under a light microscope.

Functional Tissue Correlation: Analyze how specific histological features contribute to organ function (e.g., filtration barriers, secretory pathways, and absorptive surfaces).

Comparative Tissue Analysis: Distinguish between structural variations within the same organ or system (e.g., thick vs. thin skin, conducting vs. respiratory zones, central vs. peripheral nerve tissue).

Stage & Process Mapping: Trace cellular developmental stages in tissue sections, such as spermatogenesis and ovarian follicle maturation.

Teaching and Learning Methods

- Discussion and thinking style.
- Scientific tests used in laboratories.
- Learning through exploratory lectures

C. Evaluation Methods

- Submission of weekly reports.
- Examination grades.
- Discussion sessions and presentations.

D. Thinking Skills

- 1: Dialogue style between the student and the professor.
- 2: Preparation of weekly reports.
- 3: Conducting discussions of results.
- 4: Exploratory thinking.

Teaching and Learning Methods

Grades.
Discussion and dialogue.
Examinations.

Evaluation Methods

1. Grades, research, and reports
2. Exams

E. General and Transferable Skills

- 1: The ability to apply acquired knowledge.
- 2: The ability to master teaching and learning skills.
- 3: The ability to reflect gained knowledge into professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	* Structure of the vascular system (Heart wall, Arteries, Veins & Capillaries)	Blackboard and Projector Usage	Daily Exam and Oral Questions
2	2	Knowledge	* Structure of the lymphatic system (Lymphatic capillary)	Blackboard and Projector Usage	Daily Exam and Oral Questions
3	2	Knowledge	* Structure & function of the (Thymus gland, Spleen & Lymph nodes)	Blackboard and Projector Usage	Daily Exam and Oral Questions
4	2	Knowledge	* Lymphoid nodule (MALT) & Tonsils	Blackboard and Projector Usage	Daily Exam and Oral Questions
5	2	Knowledge	* Central & Peripheral nervous system	Blackboard and Projector Usage	Daily Exam and Oral Questions
6	2	Knowledge	* Conducting portion (Nose, Nasopharynx, Trachea, Bronchus & Bronchioles) & Respiratory portion (Lung)	Blackboard and Projector Usage	Daily Exam and Oral Questions
7	2	Knowledge Experiment skill	* Digestive steps; General structure of the digestive tract (Oral cavity, Mouth, Esophagus & Stomach); Small intestine, Large intestine, Rectum & Anus	Blackboard and Projector Usage	Daily Exam and Oral Questions
8	2	Knowledge Experiment skill	* Glands associated with the digestive tract (Salivary glands, Pancreas, Liver & Gallbladder)	Blackboard and Projector Usage	Daily Exam and Oral Questions
9	2	Knowledge Experiment skill	* General structure & Histophysiology of the pituitary gland	Blackboard and Projector Usage	Daily Exam and Oral Questions
10	2	Knowledge Experiment skill	* General structure of the Adrenal, Thyroid, Parathyroid, Islet of Langerhans & Pineal glands	Blackboard and Projector Usage	Daily Exam and Oral Questions
11	2	Knowledge Experiment skill	* General structure of the testes; Stages of spermatogenesis	Blackboard and Projector Usage	Daily Exam and Oral Questions

12	2	Knowledge Experiment skill	* Excretory genital ducts- Excretory genital glands (Seminal vesicles, Prostate & Cowper's glands)	Blackboard and Projector Usage	Daily Exam and Oral Questions
13	2	Knowledge Experiment skill	* General structure of ovary, Oviduct, Uterus & Vagina; Stages of follicle development; Ovulation	Blackboard and Projector Usage	Daily Exam and Oral Questions
14	2	Knowledge Experiment skill	* Structure & Function of the (kidney & nephron); Histology of the nephron (filtration, absorption & excretion); Structure of the (Ureter, Bladder & Urethra)	Blackboard and Projector Usage	Daily Exam and Oral Questions
15	2	Knowledge Experiment skill	* Thick & Thin skin	Blackboard and Projector Usage	Daily Exam and Oral Questions

12. Infrastructure	
Required Readings:	References: Basic Histology by Luiz Carlos 11 th ed
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:
Teacher Aumaima Tariq Abed

Course Description of Medical Physics

First Year Class, Second Semester

Medical Physics introduces students to the fundamental physical principles that support modern medical and laboratory practice. The course integrates thermodynamics, pressure, heat, radiation, diffusion and rheology with the principles and applications of important medical instruments and diagnostic devices. It prepares students to understand the physical basis, safe use, and medical applications of technologies such as ECG, EEG, X-ray, MRI, CT, radiotherapy and blood glucose monitoring.

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	Clinical Laboratory Sciences
3. Course Name / Code	Medical Physics
4. Programs in which it is included	Bachelor Program
5. Available Forms of Attendance	Classroom attendance
6. Semester / Year	Second Semester / First Year
7. Total Number of Study Hours	30 Hours (2 hours/week $\times$ 15 weeks)
8. Total Credits	2 Credits (1 Theory + 1 Practical)
9. Date of preparing this description	2026

Course Objectives: This course aims to enable students to:

- Understand fundamental concepts of physics and their relevance to medicine and clinical laboratory sciences.
- Use physical terminology, units, standards, and common abbreviations correctly in medical applications.
- Explain basic principles of thermodynamics, pressure, temperature, heat, work, power, gases, diffusion, and rheology.
- Describe the physical principles and clinical applications of selected medical instruments and devices.
- Explain the basic principles of ECG, EEG, X-ray, MRI, CT scan, radiotherapy, and radioactive iodine.
- Recognize the medical and biological effects of radiation and the importance of radiation safety.

Learning Outcomes, Teaching and Learning Methods, and Evaluation

Knowledge and Understanding

- Describe basic physical quantities, units, standards, and methods used in medical physics.
- Explain thermodynamic systems, conservation of energy, pressure, temperature scales, gas laws, heat transfer, and radiation.
- Understand the physical principles underlying major diagnostic and therapeutic medical devices.

Subject-Specific Skills

- Relate physical principles to blood glucose monitoring, infusion devices, cardiac output measurement, pacemakers, ECG and EEG.
- Differentiate the basic operating principles of X-ray, MRI, CT scan, and radiotherapy.
- Apply basic concepts of diffusion and rheology to biological and medical systems.

Teaching and Learning Methods

- Theoretical lectures, PowerPoint presentations, demonstrations, practical examples, device-based learning, calculations, small-group discussions, and laboratory-oriented activities.

Evaluation Methods

- Written examinations, quizzes, assignments, practical exercises, device identification, calculations, oral questions, reports, and class participation.

Thinking Skills

- Interpret simple physical relationships and apply them to medical and biological problems.
- Compare medical imaging and monitoring technologies according to their underlying physical principles.

- Analyze basic safety considerations related to radiation and medical devices.

General and Transferable Skills

- Develop scientific reasoning, quantitative problem-solving, teamwork, communication, and safe laboratory practice.

11. Course Structure

Wee ks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2 HOURS	Knowledge and practical application	General Concepts and Thermodynamics Method of physics and standards; thermodynamic systems and system properties; conservation of energy principle.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
2	2 HOURS	Knowledge and practical application	Pressure, Temperature and Gas Laws Pressure; Celsius, Fahrenheit and Kelvin scales; equation of state; ideal and real gases; general gas law.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
3	2 HOURS	Knowledge and practical application	Heat, Energy, Work and Power Heat and energy; work and mechanical forms of work; power; first law of thermodynamics; Boyle's and Charles's laws.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
4	2 HOURS	Knowledge and practical application	Blood Glucose Monitoring Devices Physical principles of blood glucose monitoring; measurement concepts; device components and clinical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
5	2 HOURS	Knowledge and practical application	Parenteral Infusion Devices and Cardiac Output Measurement Principles and operation of infusion devices; flow concepts; basic physical principles of cardiac output measurement.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
6	2 HOURS	Knowledge and practical application	Implantable Cardiac Pacemakers Basic electrical principles; pacemaker components, function and clinical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
7	2 HOURS	Knowledge and practical application	Electrocardiogram (ECG) Electrical activity of the heart; ECG leads, signal recording, basic waveform principles and medical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
8	2 HOURS	Knowledge and practical application	Electroencephalography (EEG) Electrical activity of the brain; electrodes, signal acquisition, recording principles and clinical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
9	2 HOURS	Knowledge and practical application	Thermal Radiation and Heat Transfer Kirchhoff's law; Planck's law; Stefan-Boltzmann law; Wien's law; black body and albedo; radiation, convection and conduction.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
10	2 HOURS	Knowledge and practical application	X-Ray and X-Ray Spectra Production of X-rays; X-ray spectra; absorption of X-rays; principles of medical X-ray imaging.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
11	2 HOURS	Knowledge and practical application	UV, IR and Biological Effects of Radiation Ultraviolet and infrared effects; medical and biological effects of radiation; basic radiation safety concepts.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
12	2 HOURS	Knowledge and practical application	Radiotherapy and Radioactive Iodine Physical principles of radiotherapy; therapeutic radiation; radioactive iodine and its medical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
13	2 HOURS	Knowledge and practical application	Magnetic Resonance Imaging (MRI) Basic principles of magnetism, resonance, image formation, clinical applications and safety considerations.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
14	2 HOURS	Knowledge and practical application	Computed Tomography (CT Scan) Basic principles of CT imaging; X-ray attenuation, image reconstruction concepts and clinical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment

15	2 HOURS	Knowledge and practical application	Diffusion and Rheology Diffusion principles in biological systems; viscosity, flow behavior and basic rheological concepts in medical applications.	PowerPoint presentations, explanation, demonstration, discussion and practical examples	Quizzes, assignments, oral questions, practical exercises and written assessment
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Name of the Instructor: Dr. Mariam Raheem

12. Infrastructure

Required Readings / References	1. Physics for Biology and Medical Students, 2nd ed. 2. Schreiner, Steven. Medical Instruments and Devices: Principles and Practices. CRC Press, 2015.
Special Requirements (Workshops, Journals, Software, Websites)	Medical device demonstrations, laboratory equipment, audiovisual materials, scientific references, and appropriate simulation or teaching resources.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, demonstrations of medical equipment, laboratory activities, and field visits where applicable.
Prerequisites	Admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Dr. Mariam Rahem



Course Description

Organic Chemistry I, First Stage Second Course

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Alzahrawi University- College of pharmacy
• Course Name / Code	Organic Chemistry I, PPCS 12
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	Second course- 2025/2026
• Total Number of Study Hours	45 hours
• Date of preparing this description	2025-2026
• Course Objectives:	
• To enable students to understand the chemistry of carbon, and the classification, properties and reactions of organic compounds. It includes understanding the basic structure and properties of alkanes, alkenes and alkynes, in addition to the principles of stereochemistry and features of aromatic compounds.	
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

Knowledge and Understanding: Basic concepts of organic reactions, their classification and

reaction mechanisms. to be used as a guide in structure determination . Identification and application of different organic compounds.

- **Subject-Specific Skills:** Get experience in carrying out different organic reactions

Teaching and Learning Methods: using white board and projector screen

- **Evaluation Methods:** Periodic exams, reports, seminars, routine homeworks, final exams.

- **Thinking Skills:** Practical workshops, homeworks, exams

Teaching and Learning Methods: using white board and projector screen. Lectures to direct students to textbooks, notes and on-line material. Laboratory practice. Assignments and researches done and presented by the students in seminars.

Evaluation Methods : Periodic exams, seminars, and reports

e. General and Transferable Skills:

Communicate clearly by verbal and written means. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Practice independent learning needed for continuous professional development. Demonstrate creativity and time management abilities. Implement writing and presentation skills. Demonstrate critical thinking, problem solving and decision making abilities.

• **Course Structure**

Weeks	Hours	Required Learning	Unit Name / Course or Topic	Learning Methods	Evaluation Method
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		Outcomes			
1	3	Lecture	Introduction: importance of organic chemistry, atomic structure, covalent bonding, hybrid orbitals	Lecture	Quizes and reports
2	3	Lecture	Introduction: molecular geometry, polarity, intermolecular forces, physical properties	Lecture	Quizes and reports
3	3	Lecture	Alkenes: classification, IUPAC, Nomenclature, physical properties	Lecture	Quizes and reports
4	3		Alkanes: Conformations of Ethane & Cyclohexane, Chemical Reactions		
5	3	Lecture	Alkenes & Dienes: Structure, Nomenclature, Isomerism, Stability	Lecture	Quizes and reports
6	3		Alkenes & Dienes: Electrophilic Addition Reactions, Oxidation, Polymerization		
7	3	Lecture	Alkynes: Structure, Nomenclature, Acidity, Preparation and Reactions	Lecture	Quizes and reports
8	3		Cycloalkanes:		
9	3	Lecture	Stereochemistry I: Chirality, Enantiomers, Optical Activity	Lecture	Quizes and reports
10	3		Stereochemistry II: R/S Configuration, Fischer Projection, Meso compounds		
11	3		Stereochemistry III: Newman Projection, Conformations Diastereomers,		
12	3		Alkyl Halides: Classification, Preparation, Physical Properties		

13	3		Alkyl Halides: SN1, SN2, Mechanisms and Factors		
14	3		Alcohols and Ethers: Structure, Nomenclature, Physical Properties, preparation		
15	3		Alcohols and Ethers: Chemical Reactions, Epoxides, Pharmaceutical Applications		

• Infrastructure	
Required Readings:	References: 1. Organic Chemistry by Robert T. Morrison and Robert N. Boyd. 2. Organic Chemistry by McCurry: 8th ed. Thomson Learning ;CA, USA; 2000
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Course coordinator: assistant. Lecturer. Saif yahya ahmed

Head of Department:

Dr. Salam Waheed

Course Description (Physiology I Theory)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy
3. Course Name / Code	Physiology I (Theory)
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester, Second Stage (2025-2026)
7. Total Number of Study Hours	3 hours per week.
8. Date of preparing this description	2025-2026
9. Course Objectives: 1- Enable students to understand the basic principles of physiological functions of different tissues and organs of the human being. 2- Teach students how to evaluate these functions. 3- Correlate these functions with normal and abnormal conditions. 4- Emphasize the role of homeostatic and hemodynamic changes. 5- Integrate these changes into the physiological status.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

A.1: Knowledge of how different tissues and organs operate within the human body.

A.2: Understanding of the underlying mechanisms that enable these functions.

A.3: Ability to assess and measure the performance of various tissues and organs

A.4: Skills in using diagnostic tools and techniques to evaluate these functions.

A.5: Comprehension of how physiological functions relate to both healthy and pathological states.

A.6: Knowledge of common diseases and disorders that affect these functions.

A.7: Understanding of the body's mechanisms for maintaining internal stability (homeostasis).

A.8: Insight into how blood flow and pressure changes (hemodynamics) affect physiological functions.

A.9: Awareness of the integration and coordination of these changes within the body's overall physiological status.

A.10: Ability to assess and measure the performance of various tissues and organs

B. Subject-Specific Skills

B.1: Teaching skills in the subject of Physiology.

B.2: The student should have the ability to describe models.

B.3: The student should have the ability to link causes with natural effects.

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Submit weekly reports.
2. Oral assessment and practical performance evaluation.
3. Written tests

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Review the initial concepts related to the general and cellular basis of medical physiology and the study of various vital body systems	Blackboard and Screen Presentations	Daily exam and oral questions
2	3	Knowledge	Physiology of different muscles	Blackboard and Screen Presentations	Daily exam and oral questions
3-4	6	Knowledge	Physiology of Nerves A) Nerve cells	Blackboard and Screen Presentations	Daily exam and oral questions
5-6	6	Knowledge	B) Synaptic transmission	Blackboard and Screen Presentations	Daily exam and oral questions
7	3	Knowledge	Respiration A) Respiratory zones	Blackboard and Screen Presentations	Daily exam and oral questions
8	3	Knowledge	B) Gas transport between lungs and tissues	Blackboard and Screen Presentations	Daily exam and oral questions
9	3	Knowledge	Introduction to renal physiology	Blackboard and Screen Presentations	Daily exam and oral questions
10	3	Knowledge	Tubuloglomerular feedback and glomerulotubular balance	Blackboard and Screen Presentations	Daily exam and oral questions
11-12	6	Knowledge	Cardiovascular System	Blackboard and Screen Presentations	Daily exam and oral questions
13	3	Knowledge	A) Origin and spread of cardiac excitation B) Mechanical events of cardiac cycle and cardiac output	Blackboard and Screen Presentations	Daily exam and oral questions
14-15	6	Knowledge	C) Local regulatory mechanisms: Hypertension, Heart failure and angina pectoris	Blackboard and Screen Presentations	Daily exam and oral questions

12. Infrastructure	
Required Readings:	References: 1- Review of medical physiology; Ganong W.F (Ed.); 2005 2-Textbook of medical physiology by Guyton AC; latest edition.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Aqeel Qays Abd Uljaleel

Course Description of Biosafety - Second Year Class, First Semester

Biosafety introduces the principles and practices used to prevent accidental exposure to biological hazards and to protect students, staff, patients, and the environment. The course covers risk assessment, containment, personal protective equipment, safe handling of biological materials, decontamination, waste management, and emergency response. It prepares pharmacy students to apply safe laboratory practices and responsible biosafety behavior in academic, clinical, and pharmaceutical settings.

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Biosafety
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Classroom attendance
6. Semester / Year	First Semester / Second Year
7. Total Number of Study Hours	30 Hours (2 hours/week × 15 weeks)
8. Date of preparing this description	2024

Course Objectives: This course aims to enable students to:

- Understand the fundamental principles, terminology, and scope of biosafety and biosecurity.
- Recognize common biological hazards and routes of occupational exposure in laboratories and healthcare settings.
- Apply basic biological risk assessment and select appropriate containment measures and biosafety levels.
- Demonstrate correct use of personal protective equipment, safe laboratory practices, and exposure-prevention procedures.
- Understand principles of decontamination, disinfection, sterilization, spill management, and biomedical waste disposal.
- Apply safe procedures for handling, storage, labeling, and transport of biological specimens and materials.
- Develop appropriate responses to accidents, sharps injuries, spills, and other biosafety incidents, including reporting and follow-up.

Learning Outcomes, Teaching and Learning Methods, and Evaluation

Upon successful completion of this course, the student will be able to:

- Define biosafety, biohazard, containment, biosecurity, and risk assessment.
- Classify biological hazards and explain Biosafety Levels 1–4.
- Select suitable PPE and apply standard laboratory safety procedures.
- Describe safe specimen handling, decontamination, sterilization, and waste management.
- Explain the safe use of biosafety cabinets and other containment measures.
- Apply biosafety principles in pharmacy and pharmaceutical laboratory activities.

Knowledge and Understanding

- Explain biosafety, risk assessment, containment, and biosecurity principles.
- Describe biological hazards, exposure routes, and prevention of laboratory-acquired infection.
- Understand Biosafety Levels 1–4 and the role of primary and secondary containment.
- Recognize principles of decontamination, waste management, incident response, and safety regulations.

Subject-Specific Skills

- Perform a basic biological risk assessment for routine laboratory work.
- Select and correctly use PPE and appropriate containment measures.
- Handle, label, store, and transport biological specimens safely.
- Apply correct procedures for decontamination, spills, sharps, and biomedical waste.
- Document and report biosafety incidents and immediate corrective actions.

Teaching and Learning Methods

Lectures, PowerPoint presentations, demonstrations, safety scenarios, case-based learning, group discussions, videos, and practical exercises.

A. Evaluation Methods

Written examinations, quizzes, assignments, practical demonstrations, case discussions, reports, and class participation.

Thinking Skills

- Analyze laboratory activities to identify biological hazards, exposure routes, and risk.
- Select suitable controls using containment principles, standard precautions, and the hierarchy of controls.
- Evaluate biosafety incidents and recommend prevention, response, reporting, and follow-up measures.

Teaching and Learning Methods

Case-based learning, risk-assessment exercises, laboratory scenarios, group discussions, demonstrations, and problem solving.

Evaluation Methods

Risk-assessment cases, written examinations, quizzes, assignments, practical demonstrations, presentations, and discussion.

e. General and Transferable Skills

- Communicate safety instructions and incident information clearly and responsibly.
- Work collaboratively and safely within laboratory and healthcare teams.
- Develop professionalism, responsibility, documentation, preparedness, and a strong safety culture.

11. Course Structure					
Wee ks	Hours	Required Learning Outcome s	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3 HOURS	Knowledge and practical application	Introduction to Biosafety and Biological Hazards Definitions and scope of biosafety; safety culture; common biological hazards; responsibilities of laboratory personnel.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
2	3 HOURS	Knowledge and practical application	Biological Risk Assessment Hazard identification; likelihood and consequence; exposure pathways; risk characterization; hierarchy of risk-control measures.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
3	3 HOURS	Knowledge and practical application	Biosafety Levels and Laboratory Containment Principles and requirements of BSL-1, BSL-2, BSL-3 and BSL-4; primary and secondary containment; laboratory access control.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
4	3 HOURS	Knowledge and practical application	Personal Protective Equipment and Safe Laboratory Practice Selection and correct use of gloves, coats, masks, eye and face protection; hand hygiene; good microbiological practices.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
5	3 HOURS	Knowledge and practical application	Biological Agents and Routes of Exposure Bacteria, viruses, fungi, parasites and biological toxins; inhalation, ingestion, inoculation and mucous-membrane exposure.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
6	3 HOURS	Knowledge and practical application	Safe Specimen Handling and Aseptic Techniques Collection, handling and processing of specimens; minimizing aerosols; aseptic technique; safe pipetting and centrifugation.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
7	3 HOURS	Knowledge and practical application	Decontamination, Disinfection and Sterilization Principles and selection of disinfectants; autoclaving; sterilization; surface and equipment decontamination; validation concepts.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
8	3 HOURS	Knowledge and practical application	Biomedical Waste Management Classification, segregation, collection, treatment and disposal of infectious waste; contaminated materials; environmental	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment

			protection.		
9	3 HOURS	Knowledge and practical application	Sharps Safety and Occupational Exposure Response Needle-stick and sharps prevention; immediate first aid; exposure reporting; post-exposure evaluation and follow-up.pharmacist recommendations	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
10	3 HOURS	Knowledge and practical application	Biosafety Cabinets and Safety Equipment Classes of biological safety cabinets; correct use and limitations; centrifuge safety; airflow and containment; equipment maintenance.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
11	3 HOURS	Knowledge and practical application	Blood-Borne Pathogens and Infection Prevention Standard precautions; blood and body-fluid exposure; prevention of laboratory-acquired infection; vaccination and occupational health principles.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
12	3 HOURS	Knowledge and practical application	Storage, Labeling and Transport of Biological Materials Safe storage; labeling and inventory control; leak-proof packaging; internal and external transport; cold-chain and documentation principles.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
13	3 HOURS	Knowledge and practical application	Biosafety in Pharmacy and Pharmaceutical Laboratories Biosafety applications in pharmacy, microbiology, quality-control and pharmaceutical laboratories; contamination control and safe handling of cultures and specimens.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
14	3 HOURS	Knowledge and practical application	Biosecurity, Dual-Use Awareness, Ethics and Regulations Biosecurity principles; controlled access and accountability; dual-use concerns; responsible conduct; institutional and international biosafety guidance.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment
15	3 HOURS	Knowledge and practical application	Emergency Response, Incident Reporting and Integrated Review Management of spills and accidents; emergency procedures; incident investigation; corrective and preventive actions; integrated biosafety case review.	PowerPoint presentations, demonstrations, risk-assessment exercises, discussion, case-based learning and practical safety scenarios	Quizzes, assignments, practical safety exercises, case discussion, oral questions and written assessment

12. Infrastructure	
Required Readings:	Required references: WHO Laboratory Biosafety Manual, CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL), standard biosafety textbooks, institutional safety manuals, and approved laboratory guidelines.
Special Requirements (Workshops, Journals, Software, Websites):	Biosafety manuals and guidelines, laboratory safety videos, risk-assessment forms, safety data sheets, PPE demonstrations, biosafety signage, and institutional incident-reporting resources.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, biosafety workshops, PPE and spill-response demonstrations, laboratory safety drills, professional training, and field visits where applicable.

13.	
Prerequisites	Admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Name of the Instructor: Dr. Ali Reshan

Course Description Template for Computer Science

First Year – Second Semester

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Computer Science CSC17
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester / First year
7. Total Number of Study Hours	45 hours per course
8. Date of preparing this description	2025-2026

Course Objectives: This course aims to provide students with a strong foundation in Computer Science by introducing core concepts of computer systems, programming fundamentals, algorithms, data representation, software development, and problem-solving techniques. The course also focuses on developing logical thinking, analytical skills, and practical knowledge required to understand modern computer technologies and their applications in real-world environments.

9. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

- Explain the fundamental concepts of Computer Science and Information Technology.
- Understand computer hardware, software, operating systems, and networking basics.
- Describe programming concepts, algorithms, and data structures.
- Understand problem-solving methods using computational thinking.
- Explain the ethical and professional responsibilities in computing.

1. Subject-Specific Skills

- Develop programming skills using modern programming languages.
- Apply algorithms and logical thinking to solve computational problems.
- Design and implement simple software applications.
- Use computer applications, databases, and development tools effectively.
- Analyze and debug software errors using systematic approaches.

Teaching and Learning Methods

- Theoretical lectures using PowerPoint presentations.
- Practical demonstrations and laboratory activities.
- Interactive classroom discussions and teamwork activities.
- Homework assignments, projects, and research tasks.

2. Evaluation Methods

- Midterm and final examinations.
- Practical programming tests.
- Classroom participation and presentations.
- Assignments, projects, and homework.

Thinking Skills

- Applying analytical and critical thinking in solving computer problems.
- Developing logical reasoning through programming exercises.
- Enhancing creativity in software and system design.
- Using teamwork and communication skills in technical projects.

3. General and Transferable Skills

Enable students to apply computing knowledge in practical environments.
Improve communication and teamwork skills.
Develop self-learning and research abilities.
Prepare students for professional and academic development in Computer Science.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Introduction to Computers and Operating Systems	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	3	Knowledge	Introduction to Microsoft Office 2010	and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	3	Knowledge	Creating and Saving Documents in Microsoft Word	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	3	Knowledge	Formatting Text, Fonts, and Paragraphs	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5	3	Knowledge	Inserting Tables, Pictures, and Shapes	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	3	Knowledge	Page Setup and Printing	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Headers, Footers, and Page Numbers	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	3	Knowledge	Spell Check, Templates, and Cover Pages	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	3	Knowledge	Introduction to Microsoft Excel .	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

10	3	Knowledge	Data Entry and Working with Cells	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11	3	Knowledge	Basic Calculations and Functions	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
12	3	Knowledge	Formatting and Creating Charts	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

13	3	Knowledge	Introduction to PowerPoint	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	3	Knowledge	Creating Slides and Designing Presentations	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments Group discussion, oral exams, and assignments
15	3	Knowledge	Inserting Pictures, Effects, and Animations	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12. Infrastructure	
Required Readings:	References: • Shelly Cashman Series: Microsoft Office 2010 Gary B. Shelly, Misty E. Vermaat. Cengage Learning, 2011. • Microsoft Office 2010 Step by Step Joyce Cox, Joan Lambert. Microsoft Press, 2010. • Microsoft Word 2010 Complete Gary B. Shelly, Thomas J. Cashman, Misty E. Vermaat. Cengage Learning, 2011. • Microsoft Office 2010: Introductory Concepts and Techniques Gary B. Shelly, Misty E. Vermaat. Cengage Learning, 2010. • Microsoft Office 2010 Product Guide Microsoft Corporation, 2010.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Microsoft Press Store: Books, eBooks, online resources
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	• Organizing workshops and training courses in computer applications and Microsoft Office programs for graduates. • Conducting field visits to computer laboratories and information technology centers. • Arranging visits to software companies and computer maintenance centers.

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/

Maximum Number of Students	Admission exceeds the capacity plan.
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Name of the Instructor:

Assistant lecturer Maryam Raheem

Course Description of Democracy & Human Rights

First Year Class, First Semester

This course introduces students to the fundamental concepts of democracy and human rights, their historical development, characteristics, sources, and major forms. It examines political participation, civil and political rights, international human-rights law, the Universal Declaration of Human Rights, and the rights of women and children, with attention to religious, Sharia, and legal perspectives.

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	Clinical Laboratory Sciences
3. Course Name / Code	Democracy & Human Rights
4. Programs in which it is included	Bachelor Program
5. Available Forms of Attendance	Classroom attendance
6. Semester / Year	First Semester / First Year
7. Total Number of Study Hours	30 Hours (2 hours/week × 15 weeks)
8. Total Credits	2 Credits (2 Theory + 0 Practical)
9. Date of preparing this description	2026

Course Objectives: This course aims to enable students to:

- Define human rights and identify their main characteristics, sources, and historical stages of development.
- Understand democracy, its origins, concepts, characteristics, foundations, forms, advantages, and limitations.
- Recognize how political rights are practiced within democratic systems.
- Understand civil and political rights and the main categories of human rights in international law.
- Become familiar with the Universal Declaration of Human Rights and international covenants and treaties concerning human rights.
- Discuss women's and children's rights and compare selected religious, Sharia, and legal perspectives on rights.

Knowledge and Understanding

- Explain the meaning, emergence, characteristics, requirements, pillars, and types of democracy.
- Describe majority-rule systems, common democratic principles, and civil and political rights.
- Identify major types of human rights recognized in international law and the role of the Universal Declaration of Human Rights.

Subject-Specific Skills

- Differentiate among major democratic concepts and systems.
- Discuss human-rights issues using political, legal, international, and religious perspectives.
- Analyze issues related to women's and children's rights and the relationship between Sharia and law.

Teaching and Learning Methods

- Theoretical lectures, PowerPoint presentations, guided discussion, reading activities, case examples, debates, and small-group learning.

Evaluation Methods

- Written examinations, quizzes, assignments, oral questions, presentations, discussion participation, and short reports.

Thinking Skills

- Compare different concepts and models of democracy.
- Analyze human-rights questions from legal, social, political, and religious perspectives.
- Evaluate the relationship between democratic principles, political participation, and protection of human rights.

General and Transferable Skills

- Develop critical thinking, respectful dialogue, civic awareness, communication, teamwork, and responsible participation.

11. Course Structure

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2 HOURS	Knowledge, understanding and critical discussion	Definition of Democracy Meaning of democracy; basic terminology and introductory concepts.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
2	2 HOURS	Knowledge, understanding and critical discussion	Origins and Different Concepts of Democracy Historical emergence of democracy; different concepts and interpretations of democracy.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
3	2 HOURS	Knowledge, understanding and critical discussion	Characteristics of the Democratic System Main characteristics and features of democratic political systems.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
4	2 HOURS	Knowledge, understanding and critical discussion	Conditions, Foundations and Pillars of Democracy Requirements, foundations, essential pillars and conditions necessary for democratic practice.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
5	2 HOURS	Knowledge, understanding and critical discussion	Types of Democracy and Democracy in Islam Major types of democracy; democracy in Islamic thought and context.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
6	2 HOURS	Knowledge, understanding and critical discussion	Majority-Rule Systems Concept and forms of majority rule; political decision-making and representation.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
7	2 HOURS	Knowledge, understanding and critical discussion	Advantages and Disadvantages of Democracy Positive aspects, limitations, challenges and criticisms of democratic systems.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
8	2 HOURS	Knowledge, understanding and critical discussion	Common Principles and Systems of Democracy Shared democratic principles; major democratic systems and institutional arrangements.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
9	2 HOURS	Knowledge, understanding and critical discussion	Civil and Political Rights Concept, scope and examples of civil and political rights.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
10	2 HOURS	Knowledge, understanding and critical discussion	Types of Human Rights in International Law I Classification and major categories of human rights under international law.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment

11	2 HOURS	Knowledge, understanding and critical discussion	Types of Human Rights in International Law II Continuation of human-rights categories and their international legal framework.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
12	2 HOURS	Knowledge, understanding and critical discussion	Universal Declaration of Human Rights Background, principles, structure and significance of the Universal Declaration of Human Rights.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
13	2 HOURS	Knowledge, understanding and critical discussion	Differences in Rights Across Religions Perspectives on rights in different religions and related ethical and social considerations.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
14	2 HOURS	Knowledge, understanding and critical discussion	Women's and Children's Rights Major principles concerning the rights and protection of women and children.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment
15	2 HOURS	Knowledge, understanding and critical discussion	Women's Rights between Sharia and Law Women's rights from Sharia and legal perspectives; areas of relationship and comparison.	PowerPoint presentations, lecture, guided discussion, reading and case examples	Quizzes, assignments, oral questions, discussion and written assessment

Name of the Instructor: Dr. Salem Ezerjawi

12. Infrastructure

Required Readings / References	1. Hamid Hanoun, Political Systems (الأنظمة السياسية). 2. Hashim Al-Milani, Democracy from the Greeks to the Postmodern World (الديمقراطية من الإغريق إلى عالم ما بعد الحداثة). 3. Dr. Maher Saleh, Human and Child Rights and Democracy (حقوق الإنسان والطفل والديمقراطية).
Special Requirements (Workshops, Journals, Software, Websites)	Relevant legal and human-rights documents, international declarations and conventions, audiovisual materials, academic readings, and discussion resources.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, seminars, student debates, awareness activities, and relevant academic or community events where applicable.
Prerequisites	Admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Course Description Template for Medical microbiologyI second Year first Semester (Theoretical)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Medical microbiologyI Theoretical PCLS 24
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	first Semester / second year
7. Total Number of Study Hours	2 hours weekly
8. Date of preparing this description	2025-2026

Course Objectives: The course aims to develop an understanding of the fundamental principles of medical microbiology by focusing on the classification, morphology, pathogenicity, and transmission of medically important microorganisms including bacteria, viruses, fungi, and parasites. It emphasizes the relationship between microorganisms and human disease, host defense mechanisms, and the basic laboratory methods used for identification and diagnosis of infectious agents. Additionally, the course highlights the importance of infection prevention, antimicrobial agents, sterilization, disinfection, and public health control measures, supported by practical examples and clinically relevant cases commonly encountered in healthcare settings.

9. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

- 1** Explain the fundamental principles of medical microbiology and the role of microorganisms in human health and disease.
- 2** Describe the classification, morphology, pathogenicity, and modes of transmission of medically important bacteria, viruses, fungi, and parasites.
- 3** Apply principles of host–microbe interaction, immune response, and laboratory diagnostic methods to understand the prevention, identification, and control of infectious diseases.
- 4** Demonstrate understanding of microbiological practices including specimen collection, microbial identification, antimicrobial susceptibility testing, sterilization, disinfection, and infection control measures.

1. Subject-Specific Skills

- 1** Developing proficiency in microscopic examination, staining techniques, and recognition of the morphological characteristics of medically important microorganisms.
- 2** Acquiring skills in collection, handling, culturing, and identification of clinical specimens using basic microbiological laboratory methods.
- 3** Gaining the ability to interpret laboratory findings, microbial growth patterns, and diagnostic test results for common infectious diseases.
- 4** Developing skills in recognizing appropriate sterilization, disinfection, infection control measures, and principles of antimicrobial susceptibility testing.

Teaching and Learning Methods

- 1** Theoretical lectures.
- 2** Scientific posters and interactive classroom activities.
- 3** Field visits to hospital labs.
- 4** Homework assignments (coursework).

2. Evaluation Methods

- 1** Midterm and final examinations.
- 2** Oral examinations.
- 3** Classroom activities and homework assignments.

3. Thinking Skills

- 1** Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- 2** Applying group discussion techniques to enhance understanding of the subject matter.
- 3** Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- 1** Enabling students to apply the knowledge they have acquired in practical settings.
- 2** Enhancing students' self-confidence through participation in discussions and seminars.
- 3** Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Importance of microbiology, History of microbiology	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	2	Knowledge	Anatomy of bacteria: Surface appendage, Capsule, Cell wall of G.+ve & G –ve bacteria, Cytoplasmic membrane.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	2	Knowledge	Bacterial physiology: Physical and chemical growth determinate, growth and growth curves, bacterial reproduction.	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	2	Knowledge	Genetics: Definition, genetic element, mutation (spontaneous, gene transfer, transformation, conjugation, and gene transduction).	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5	2	Knowledge	Recombinant DNA biotechnology.	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	2	Knowledge	Sporulation and germination.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Sterilization (chemical + physical Methods).	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	2	Knowledge	Chemotherapy.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	2	Knowledge	Morphology of Bacteria, Staining and Classification.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10	2	Knowledge	Staphylococci species: <i>Streptococcus pyogenes</i> ; <i>Streptococcus pneumoniae</i>	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

11	2	Knowledge	Aerobic Spore-forming bacteria Bacillus species (<i>B. anthracis</i> , <i>B. subtilis</i> , <i>B. ceseus</i>).	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
12	2	Knowledge	<i>Clostridium perfringens</i> ; <i>Clostridium tetani</i> ; <i>Clostridium botulium</i>	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
13	2	Knowledge	<i>Corynebacterium diphtheriae</i>	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	2	Knowledge	<i>Propionibacterium acnes</i> , <i>Listeria</i>	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments Group discussion, oral exams, and assignments
15	2	Knowledge	<i>Mycobacterium tuberculosis</i> ; <i>M. leprae</i>	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
16	2	Knowledge	Chlamydiae; Actinomycetes	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12. Infrastructure	
Required Readings:	References: Medical microbiology I
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.pathelective.com/
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Field visits to hospital labs

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Assistant lecturer Dr. Muntadher Hameed Thwaini

Course Description

Organic Chemistry II, First Course, second stage

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Alzahrawi University /Pharmacy College
• Course Name / Code	Organic Chemistry II, PPCS 23
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	First course-2025/2026
• Total Number of Study Hours	24 hours
• Date of preparing this description	2025-2026
• Course objective: • Synthesis and properties of benzene, arenes and aldehydes and ketones, in addition to enable students to understand the chemistry of aromatic compounds, and the classification properties and reactions of aromatic organic compounds. It includes understanding the basic structure to phenols and amines. and features of aromatic compounds.	
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

Knowledge and Understanding

.Basic concepts of aromatic organic reactions, their classification and reaction mechanisms. to be used as a guide in structure determination . Identification and application of different organic compounds.

- **Subject-Specific Skills:**
- Get experience in carrying out different aromatic organic reactions

Teaching and Learning Methods: using white board and projector screen

- **Evaluation Methods:** Periodic exams, reports, seminars, routine homeworks, final exams.

- **Thinking Skills: Practical workshops, homeworks, exams**

Teaching and Learning Methods:

using white board and projector screen. Lectures to direct students to textbooks, notes and on-line material. Laboratory practice. Assignments and researches done and presented by the students in seminars.

Evaluation Methods : Periodic exams, seminars, and reports

e. General and Transferable Skills:

Communicate clearly by verbal and written means. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Practice independent learning for continuous professional development. Demonstrate creativity and time management abilities. Implement writing and presentation skills. Demonstrate critical thinking, problem solving and decision making abilities.

• **Course Structure for the Second Stage, Theoretical Subject (First Course)**

Week	Hours	Required Learning Outcomes	Unit Name Course or Topic	Learning Method	Assessment Method
1	3	Knowledge	Aromatic hydrocarbons	Use of the board and display screen	Daily examination and oral questions and discussion
2-3	6	Knowledge	Carboxylic acids	Use of the board and display screen	Daily examination and oral questions and discussion

					and homework assignments
4	3	Knowledge	Carboxylic acids derivatives Part: I	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
5	3	Knowledge	Carboxylic acids derivatives Part: II	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
6	3	Knowledge	Functional derivatives of carboxylic acids	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
7-8	6	Knowledge	Amines I	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
9	3	Knowledge	Amines II	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
10-11	6	Knowledge	Aldehydes	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
12	3	Knowledge	Ketones	Use of the board and display screen	Daily examination and oral questions
13	3	Knowledge	Phenols Part: I	Use of the board and display screen	Daily examination and oral questions

14-15	6	Knowledge	Phenols Part: II	Use of the board and display screen	Daily examination and oral questions
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• Infrastructure	
Required Readings:	References: 1. Organic chemistry by Robert T.Morrison and Robert N.Boyd. 2. Organic chemistry by McCurry: 5th ed. Thomson Learning;CA, USA; 2000
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Course coordinator: Lecturer Assistant Ahmed M. Motlk

Academic Course description: Physical Pharmacy I/ Theoretical / Second Stage / First Course

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy / Pharmaceuticals Branch
3. Course Name / Code	Physical Pharmacy I / PPCT 23
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	First course / 2025- 2026
7. Total Number of Study Hours	3 hours weekly
8. Date of preparing this description	2025 - 2026
9. Course Objectives:	
The student studies the basic information about matter and its types, as well as the principles of solubility, types of solutions, ionic equilibrium, buffered and isotonic systems, and their applications in pharmacy.	

1. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

1. Enable students to recognize states of matter.
2. Enable students to acquire and understand the solubility and types of solutions
3. Enable students to acquire and understand electrolytic and non-electrolytic solutions.
4. Enable students to acquire and understand ionic equilibrium and buffer and isotonic solutions.

B. Subject-Specific Skills

- 1 . Enabling students to acquire skills in solving mathematical problems related to the course.
2. Enabling students to possess skills in dealing with different forms of the material.
3. Acquiring the skill of extracting the required information from its approved sources.

Teaching and Learning Methods

- 1 .Using the smart board.
- 2 .Teaching and giving theoretical lectures
- 3 .Educational seminars and posters

C. Evaluation Methods

1. Midterm and final exams
2. Oral and written exams
3. Classroom activities and posters

D. Thinking Skills

- 1 .Thinking skills through translating, analyzing, evaluating and extracting ideas.
2. Extracting the correct methods for dealing with the physical and chemical properties of materials .

e. General and Transferable Skills

1. Acquire skill in using the computer
2. Give confidence to the student through presenting scientific research
3. Give confidence to the student through discussing reports
4. Acquire skill in dealing
5. Acquire skill in leadership

10. Course Structure					
Evaluation Method	Learning Methods	Unit Name / Course or Topic	Required Learning Outcomes	hours	Weeks
Monthly and daily examinations and discussion	Using the smart board	States of matter	Binding forces between molecules, States of matter, The gaseous state	3	1
Monthly and daily examinations and discussion	Using the smart board	States of matter	Solids and crystalline state, The liquid crystalline state, The supercritical fluid state	3	2
Monthly and daily examinations and discussion	Using the smart board	States of matter	Phase equilibria and phase rule; thermal analysis, Solid .dispersions	3	3
Monthly and daily examinations and discussion	Using the smart board	Solutions of non-electrolytes	Physical properties of substances, Types of solutions, Concentration expressions	4	4
Monthly and daily examinations and discussion	Using the smart board	Solutions of non-electrolytes	Ideal and real solutions, Colligative properties, Molecular weight determination.	3	5
Monthly and daily examinations and discussion	Using the smart board	Solutions of electrolytes	Properties of solutions of electrolytes, Theory of dissociation, Theory of strong electrolytes.	3	6
Monthly and daily examinations and discussion	Using the smart board	Solutions of electrolytes	Ionic strength, The Debye- Hückel theory, Coefficients for expressing colligative properties	3	7
Monthly and daily examinations and discussion	Using the smart board	Solubility and distribution phenomena	Solvent-solute interactions, Solubility of liquids in liquids	3	8
Monthly and daily examinations and discussion	Using the smart board	Solubility and distribution phenomena	Solubility of solids in liquids	3	9
Monthly and daily examinations and discussion	Using the smart board	Solubility and distribution phenomena	Determining thermodynamic and kinetic solubility, Poor aqueous solubility	3	10

Monthly and daily examinations and discussion	Using the smart board	Solubility and distribution phenomena	Measuring solubility, Distribution of solutes between immiscible solvents	3	11
Monthly and daily examinations and discussion	Using the smart board	Ionic equilibria	Brønsted–Lowry theory, Ionization and dissociation, Classification of solvents, Lewis electronic theory	3	12
Monthly and daily examinations and discussion	Using the smart board	Ionic equilibria	Acid-base equilibria, Calculation of pH and acidity constants	3	13
Monthly and daily examinations and discussion	Using the smart board	Buffered and isotonic solutions	The buffer equation, Buffer capacity	3	14
Monthly and daily examinations and discussion	Using the smart board	Buffered and isotonic solutions	Buffers in pharmaceutical and biological systems	3	15

11. Learning and teaching resources

References:	• Reference text: Martin's Physical Pharmacy and Pharmaceutical Sciences Seventh Edition
Websites	• https://www.chem.purdue.edu/gchelp/howtosolveit/Equilibrium/Calculating_pH_and_pOH.htm#pKb • https://pharmatech-rx.com/category/physical-pharmacy/ • https://pharmdecks.com/modules/drug-delivery-and-biopharmaceutics/lesson/solubility-dissolution/

Name of the Instructor: Dr. Firas Ghafil Abbas

Course Description (Physiology II Theory)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy
3. Course Name / Code	Physiology II (Theory)
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester, Second Stage (2025-2026)
7. Total Number of Study Hours	3 hours per week
8. Date of preparing this description	2025-2026
9. Course Objectives: 1- Enable students to understand the basic principles of physiological functions of different tissues and organs of the human being. 2- Teach students how to evaluate these functions. 3- Correlate these functions with normal and abnormal conditions. 4- Emphasize the role of homeostatic and hemodynamic changes. 5- Integrate these changes into the physiological status.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

A.1: Knowledge of how different tissues and organs operate within the human body.

A.2: Understanding of the underlying mechanisms that enable these functions.

A.3: Ability to assess and measure the performance of various tissues and organs

A.4: Skills in using diagnostic tools and techniques to evaluate these functions.

A.5: Comprehension of how physiological functions relate to both healthy and pathological states.

A.6: Knowledge of common diseases and disorders that affect these functions.

A.7: Understanding of the body's mechanisms for maintaining internal stability (homeostasis).

A.8: Insight into how blood flow and pressure changes (hemodynamics) affect physiological functions.

A.9: Awareness of the integration and coordination of these changes within the body's overall physiological status.

A.10: Ability to assess and measure the performance of various tissues and organs

B. Subject-Specific Skills

B.1: Teaching skills in the subject of Physiology.

B.2: The student should have the ability to describe models.

B.3: The student should have the ability to link causes with natural effects.

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Submit weekly reports.
2. Oral assessment and practical performance evaluation.
3. Written tests
4. Group practical project

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Introduction to Endocrinology	Blackboard and Screen Presentations	Daily exam and oral questions
2	3	Knowledge	Hypothalamus	Blackboard and Screen Presentations	Daily exam and oral questions
3	3	Knowledge	Pituitary gland	Blackboard and Screen Presentations	Daily exam and oral questions
4	3	Knowledge	Thyroid gland	Blackboard and Screen Presentations	Daily exam and oral questions
5	3	Knowledge	Adrenal cortex and Medulla	Blackboard and Screen Presentations	Daily exam and oral questions
6	3	Knowledge	Female Reproductive system	Blackboard and Screen Presentations	Daily exam and oral questions
7	3	Knowledge	Female Reproductive system	Blackboard and Screen Presentations	Daily exam and oral questions
8	3	Knowledge	Male Reproductive system	Blackboard and Screen Presentations	Daily exam and oral questions
9	3	Knowledge	Hormonal Control of Calcium metabolism and the physiology of bone	Blackboard and Screen Presentations	Daily exam and oral questions
10	3	Knowledge	Endocrine functions of the pancreas	Blackboard and Screen Presentations	Daily exam and oral questions
11	3	Knowledge	Gastrointestinal functions: digestion and absorption of carbohydrates, proteins, lipids, absorption of water and electrolytes, vitamins and Minerals	Blackboard and Screen Presentations	Daily exam and oral questions

12	3	Knowledge	Regulation of Gastrointestinal function ; Introduction; gastrointestinal hormones	Blackboard and Screen Presentations	Daily exam and oral questions
13	3	Knowledge	Liver and biliary system	Blackboard and Screen Presentations	Daily exam and oral questions
14	3	Knowledge	Blood Physiology	Blackboard and Screen Presentations	Daily exam and oral questions
15	3	Knowledge	Blood Physiology	Blackboard and Screen Presentations	Daily exam and oral questions

12. Infrastructure	
Required Readings:	References: 1- Review of medical physiology; Ganong W.F (Ed.); 2005 2-Textbook of medical physiology by Guyton AC; latest edition.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Aqeel Qays Abd Uljaleel

Course Description of Arabic Language

Second Year Class, Second Semester

The Arabic Language course develops students' ability to use correct Arabic in academic and professional contexts. It focuses on sentence structure, essential grammatical and orthographic rules, and the preparation of scientific reports in Arabic. The course also introduces students to the analysis and appreciation of selected classical and modern Arabic poetic texts.

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	Clinical Laboratory Sciences
3. Course Name / Code	Arabic Language
4. Programs in which it is included	Bachelor Program
5. Available Forms of Attendance	Classroom attendance
6. Semester / Year	Second Semester / second Year
7. Total Number of Study Hours	30 Hours (2 hours/week × 15 weeks)
8. Total Credits	2 Credits (2 Theory)
9. Practical Credits	None
10. Date of preparing this description	2026

Course Objectives (Learning Outcomes):

- Enable students to learn the skills required to construct grammatically correct Arabic sentences and recognize how incorrect sentence construction can affect meaning.
- Enable students to prepare scientific reports in the Arabic language.

Knowledge and Understanding

- Recognize the main structures of verbal and nominal sentences in Arabic.
- Understand the grammatical roles of the subject and predicate, Inna and its sisters, Kana and its sisters, the active subject and passive-subject substitute, and different forms of the object.
- Understand the principal rules governing the written forms of Hamza.
- Recognize selected features of classical and modern Arabic poetry through textual analysis.

Subject-Specific Skills

- Construct grammatically correct verbal and nominal sentences.
- Apply basic Arabic grammatical and orthographic rules in academic writing.
- Identify common linguistic errors that alter or weaken meaning.
- Analyze selected poetic texts and explain their language, meaning, and literary features.
- Prepare clear scientific reports in appropriate Arabic.

Teaching and Learning Methods

- Theoretical lectures, PowerPoint presentations, grammatical exercises, sentence analysis, reading activities, textual analysis, guided discussion, and writing exercises.

Evaluation Methods

- Written examinations, quizzes, grammar exercises, assignments, textual analysis, oral questions, scientific-report writing, and class participation.

Thinking Skills

- Analyze sentence structure and identify grammatical relationships.
- Distinguish correct from incorrect linguistic constructions and evaluate their effect on meaning.
- Interpret poetic texts and connect linguistic form with literary meaning.

General and Transferable Skills

- Develop academic writing, communication, reading comprehension, textual interpretation, critical thinking, and scientific-report writing skills in Arabic.

11. Course Structure

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2 HOURS	Knowledge, language skills and application	Introduction to the Arabic Language General introduction to the Arabic language and its importance in academic communication.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
2	2 HOURS	Knowledge, language skills and application	The Verbal Sentence Structure of the Arabic verbal sentence and its basic components.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
3	2 HOURS	Knowledge, language skills and application	The Nominal Sentence Structure of the Arabic nominal sentence and its basic components.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
4	2 HOURS	Knowledge, language skills and application	The Subject and Predicate (Al-Mubtada' wa Al-Khabar) Rules and grammatical functions of the subject and predicate in nominal sentences.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
5	2 HOURS	Knowledge, language skills and application	Inna and Its Sisters Rules governing Inna and its related particles and their effects on nominal sentences.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
6	2 HOURS	Knowledge, language skills and application	Kana and Its Sisters Rules governing Kana and its related verbs and their effects on nominal sentences.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
7	2 HOURS	Knowledge, language skills and application	Rules of the Active Subject and Passive-Subject Substitute The grammatical rules of the subject (Fa'il) and the deputy subject in passive constructions (Na'ib al-Fa'il).	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
8	2 HOURS	Knowledge, language skills and application	Rules for Writing the Hamza Principal orthographic rules governing the different written forms and positions of Hamza.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
9	2 HOURS	Knowledge, language skills and application	The Direct Object and Absolute Object Rules and uses of the direct object (Al-Maf'ul Bih) and absolute object (Al-Maf'ul Al-Mutlaq).	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
10	2 HOURS	Knowledge, language skills and application	Imru' al-Qais: Analysis of a Poetic Text Reading and analysis of a selected poetic text by Imru' al-Qais.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
11	2 HOURS	Knowledge, language skills and application	Badr Shakir al-Sayyab: Analysis of a Poetic Text Reading and analysis of a selected poetic text by Badr Shakir al-Sayyab.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
12	2 HOURS	Knowledge, language skills and application	Muhammad Mahdi al-Jawahiri: Analysis of a Poetic Text Reading and analysis of a selected poetic text by	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment

			Muhammad Mahdi al-Jawahiri.		
13	2 HOURS	Knowledge, language skills and application	Abu al-Tayyib al-Mutanabbi: Analysis of a Poetic Text Reading and analysis of a selected poetic text by Abu al-Tayyib al-Mutanabbi.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
14	2 HOURS	Knowledge, language skills and application	Amr ibn Kulthum: Analysis of a Poetic Text Reading and analysis of a selected poetic text by Amr ibn Kulthum.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment
15	2 HOURS	Knowledge, language skills and application	Labid ibn Rabi'ah: Analysis of a Poetic Text Reading and analysis of a selected poetic text by Labid ibn Rabi'ah.	Lecture, PowerPoint, examples, exercises, reading, textual analysis and discussion	Quizzes, exercises, assignments, oral questions and written assessment

12. Infrastructure:

Required Readings / References	1. Dr. Abd al-Rajhi, University Arabic for Non-Specialists (العربية الجامعية لغير المتخصصين). 2. Dr. Muhyi Hilal, Arabic Language for Non-Specialist Departments (اللغة العربية للأقسام غير الاختصاص). 3. Ibn Aqil's Commentary, Part One (شرح ابن عقيل، الجزء الأول).
Special Requirements (Workshops, Journals, Software, Websites)	Arabic-language dictionaries, grammar references, selected literary texts, academic writing materials, audiovisual resources, and appropriate electronic learning resources.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Literary seminars, Arabic-language workshops, student reading and writing activities, and guest lectures where applicable.
Prerequisites	Admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Ministry of Higher Education and Scientific Research

Al-Zahrawi University - College of Pharmacy

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

Computer 4

Second Year - Second Semester

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from students, demonstrating whether they have made maximum use of the available learning opportunities. It should be linked to the academic program description.

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Computer 4
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester / Second Year
7. Total Number of Study Hours	45 hours per course (3 hours/week x 15 weeks)
8. Total Credits	2 Credits (1 Theory + 2 Practical hours/week)
9. Date of preparing this description	2025-2026

10. Course Objectives

Computer 4 is an applied digital-health and pharmaceutical data course designed to build on the informatics foundations developed in Computer 3. It introduces second-year pharmacy students to advanced spreadsheet analysis, database concepts, data visualization, electronic medication-management systems, digital health applications, introductory artificial intelligence, and responsible data-informed decision-making. The course emphasizes practical pharmacy examples while maintaining appropriate attention to privacy, ethics, security, data quality, and professional accountability.

A. Knowledge and Understanding

- Explain principles of pharmaceutical and healthcare data management, data quality, and structured datasets.
- Understand advanced spreadsheet concepts and their application to pharmacy, laboratory, inventory, and medication-use data.
- Describe relational database concepts, data fields, records, keys, queries, and the role of databases in pharmacy information systems.
- Explain the functions of digital medication-management systems, clinical decision support, mobile health, telepharmacy, automation, and introductory artificial intelligence.
- Understand core principles of data governance, privacy, security, ethics, bias, validation, and professional accountability in digital health.

B. Subject-Specific Skills

- Create, clean, organize, analyze, and visualize pharmacy-related datasets using spreadsheet tools.
- Apply logical, lookup, conditional, statistical, and date/time functions to practical pharmaceutical datasets.
- Use pivot tables, filters, charts, and dashboards to summarize and communicate information.
- Design a simple structured database and perform basic data queries for pharmacy-related records.
- Critically evaluate digital-health and AI-supported outputs and use them responsibly in academic and pharmacy contexts.

Teaching and Learning Methods

- Theoretical lectures using PowerPoint presentations.
- Practical demonstrations and computer laboratory activities.
- Guided spreadsheet, database, dashboard, and digital-health exercises using pharmacy-related examples.
- Case discussions, individual/group assignments, and an integrated practical project.

Evaluation Methods

- Written examinations and quizzes.
- Practical computer laboratory tests.
- Spreadsheet, database, visualization, and digital-health assignments.
- Case-based activities, presentations, classroom participation, and an integrated project.

Thinking Skills

- Select appropriate digital methods for organizing, analyzing, and presenting pharmaceutical data.
- Interpret data patterns and identify errors, missing values, misleading displays, and quality problems.
- Evaluate the reliability, limitations, bias, and safety implications of digital and AI-enabled tools.
- Apply critical thinking to technology-supported pharmacy decisions while recognizing the need for professional verification.

General and Transferable Skills

- Develop data literacy, digital professionalism, problem-solving, communication, teamwork, and independent learning.
- Communicate quantitative information clearly through tables, charts, dashboards, and concise reports.
- Use digital technologies ethically, securely, and responsibly in future pharmacy practice and research.

11. Course Structure

Week	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge, practical skills, analysis, and application	Pharmaceutical Data Literacy and Data Quality Types of pharmacy and healthcare data; variables; structured versus unstructured data; accuracy, completeness, consistency, validation, missing data, and data-quality problems.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
2	3	Knowledge, practical skills, analysis, and application	Advanced Spreadsheet Organization and Data Cleaning Excel tables, data validation, text-to-columns, removing duplicates, find/replace, error checking, consistent coding, and preparation of clean pharmacy datasets.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
3	3	Knowledge, practical skills, analysis, and application	Logical and Conditional Spreadsheet Functions IF, IFS, AND, OR, COUNTIF(S), SUMIF(S), AVERAGEIF(S), conditional formatting, and pharmacy-oriented decision rules.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
4	3	Knowledge, practical skills, analysis, and application	Lookup, Reference, and Date/Time Functions XLOOKUP/VLOOKUP concepts, INDEX/MATCH concepts, absolute references, date/time calculations, expiry-date and inventory examples.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
5	3	Knowledge, practical skills, analysis, and application	Descriptive Analysis of Pharmaceutical Data Counts, percentages,	Lecture, PowerPoint, demonstration, guided computer-lab practice,	Quiz, oral questions, practical exercise, assignment, case

			mean, median, minimum, maximum, standard deviation concepts, frequency tables, and interpretation using medication or laboratory datasets.	and pharmacy case discussion	activity, and/or project work
6	3	Knowledge, practical skills, analysis, and application	Data Visualization for Pharmacy and Healthcare Choosing appropriate charts; column, bar, line, pie, scatter and histogram concepts; labeling, avoiding misleading graphs, and communicating findings clearly.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
7	3	Knowledge, practical skills, analysis, and application	Pivot Tables, Pivot Charts, and Interactive Summaries Summarizing larger datasets, grouping, filtering, slicers, pivot charts, and practical examples involving medicine use, inventory, or survey data.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
8	3	Knowledge, practical skills, analysis, and application	Introduction to Dashboards and Pharmacy Performance Indicators Designing a simple dashboard; key indicators; inventory levels, expiry monitoring, medication-use summaries, and clear visual communication.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
9	3	Knowledge, practical skills, analysis, and application	Database Fundamentals and Relational Data Tables, records, fields, primary keys, relationships, data types, normalization concepts, and examples of patient, medicine, prescription, and inventory data.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
10	3	Knowledge, practical skills, analysis, and application	Database Queries, Forms, and Reports Basic query concepts; filtering and retrieving records; simple forms and reports; practical pharmacy database exercises using available database software or equivalent tools.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
11	3	Knowledge, practical skills, analysis, and application	Digital Medication Management and Automation Electronic prescribing, pharmacy information systems, barcode systems, automated dispensing, inventory automation, medication reconciliation support, and medication-safety applications.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
12	3	Knowledge, practical skills, analysis, and application	Digital Health, Mobile Health, and Telepharmacy Patient portals, mobile applications, remote monitoring, telepharmacy services, adherence technologies, accessibility, benefits, limitations, and appropriate professional use.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
13	3	Knowledge, practical	Artificial Intelligence and	Lecture, PowerPoint,	Quiz, oral questions,

		skills, analysis, and application	Data-Informed Pharmacy Practice Basic AI and machine-learning concepts; generative AI; potential applications in drug information, documentation, education, research, and workflow; verification of outputs and human oversight.	demonstration, guided computer-lab practice, and pharmacy case discussion	practical exercise, assignment, case activity, and/or project work
14	3	Knowledge, practical skills, analysis, and application	Data Governance, Privacy, Cybersecurity, Ethics, and AI Bias Confidentiality, access control, secure data handling, phishing and cyber risks, data ownership, ethical use, algorithmic bias, transparency, accountability, and responsible AI use.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work
15	3	Knowledge, practical skills, analysis, and application	Integrated Digital Pharmacy Project and Course Review Students integrate spreadsheet analysis, visualization/dashboard skills, database concepts, and critical evaluation of a digital-health or AI-supported pharmacy scenario; presentation and comprehensive review.	Lecture, PowerPoint, demonstration, guided computer-lab practice, and pharmacy case discussion	Quiz, oral questions, practical exercise, assignment, case activity, and/or project work

12. Infrastructure

Required Readings / References	• International Pharmaceutical Federation (FIP): Digital Health in Pharmacy Education and FIP Development Goal 20 resources. • American Association of Colleges of Pharmacy (AACP) digital health, informatics, and AI education resources. • Microsoft Excel / Microsoft 365 training resources and instructor-prepared practical exercises. • Introductory database and data-visualization learning materials selected by the instructor. • Current peer-reviewed and professional resources on pharmacy informatics, digital health, and responsible AI.
Special Requirements (Workshops, Journals, Software, Websites)	Computer laboratory with Internet access; Microsoft Excel / Microsoft 365 or equivalent spreadsheet software; database software such as Microsoft Access, LibreOffice Base, or equivalent; presentation software; projector; electronic learning resources; and access to appropriate academic databases.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Workshops in pharmaceutical data analysis, dashboard preparation, digital medication safety, cybersecurity, telepharmacy, and responsible AI; demonstrations or guest lectures from pharmacy/health information technology professionals where available.

13. Admission

Prerequisites	Computer 1, Computer 2, and Computer 3 / admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Name of the Instructor: Assistant Lecturer Maryam Raheem

Course Description Template for Medical microbiology II second Year second Semester

Performance Review of Higher Education Institution ((Academic Program Review)) (Theoretical)

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Medical microbiology II Theoretical PPCG 32
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester / second year
7. Total Number of Study Hours	2 hours weekly
8. Date of preparing this description	2025-2026
Course Objectives: The course aims to develop an understanding of the fundamental principles of medical microbiology by focusing on the classification, morphology, pathogenicity, and transmission of medically important microorganisms including bacteria, viruses, fungi, and parasites. It emphasizes the relationship between microorganisms and human disease, host defense mechanisms, and the basic laboratory methods used for identification and diagnosis of infectious agents. Additionally, the course highlights the importance of infection prevention, antimicrobial agents, sterilization, disinfection, and public health control measures, supported by practical examples and clinically relevant cases commonly encountered in healthcare settings.	
9. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1** Explain the fundamental principles of medical microbiology and the role of microorganisms in human health and disease.
- 2** Describe the classification, morphology, pathogenicity, and modes of transmission of medically important bacteria, viruses, fungi, and parasites.
- 3** Apply principles of host–microbe interaction, immune response, and laboratory diagnostic methods to understand the prevention, identification, and control of infectious diseases.
- 4** Demonstrate understanding of microbiological practices including specimen collection, microbial identification, antimicrobial susceptibility testing, sterilization, disinfection, and infection control measures.

1. Subject-Specific Skills

- 1** Developing proficiency in microscopic examination, staining techniques, and recognition of the morphological characteristics of medically important microorganisms.
- 2** Acquiring skills in collection, handling, culturing, and identification of clinical specimens using basic microbiological laboratory methods.
- 3** Gaining the ability to interpret laboratory findings, microbial growth patterns, and diagnostic test results for common infectious diseases.
- 4** Developing skills in recognizing appropriate sterilization, disinfection, infection control measures, and principles of antimicrobial susceptibility testing.

Teaching and Learning Methods

- 1** Theoretical lectures.
- 2** Scientific posters and interactive classroom activities.
- 3** Field visits to hospital labs.
- 4** Homework assignments (coursework).

2. Evaluation Methods

- 1** Midterm and final examinations.
- 2** Oral examinations.
- 3** Classroom activities and homework assignments.

3. Thinking Skills

- 1** Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- 2** Applying group discussion techniques to enhance understanding of the subject matter.
- 3** Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- 1** Enabling students to apply the knowledge they have acquired in practical settings.
- 2** Enhancing students' self-confidence through participation in discussions and seminars.
- 3** Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Amoebae	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	2	Knowledge	Flagellates	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	2	Knowledge	Ciliates	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	2	Knowledge	Sporozoa	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5	2	Knowledge	Cestodes	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	2	Knowledge	Trematodes	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Nematodes	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	2	Knowledge	Introduction to Virology	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	2	Knowledge	Reproduction of Viruses	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10	2	Knowledge	Antiviral Therapy	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11	2	Knowledge	Innate Immune Response	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
12	2	Knowledge	Cytokines	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

13	2	Knowledge	Adaptive Immune Response	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	2	Knowledge	Antibodies and Antigens Characteristics Features	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments Group discussion, oral exams, and assignments
15	2	Knowledge	Complement System	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
16	2	Knowledge	Hypersensitivity Reactions	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12. Infrastructure	
Required Readings:	References: Medical microbiology II
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.pathelective.com/
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Field visits to hospital labs

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Assistant lecturer Dr. Muntadher Hameed Thwaini

Course Description

Organic Chemistry III, second course Second Stage

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Alzahrawi University College/ pharmacy collage
• Course Name / Code	Organic Chemistry III, PPCS 24
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	Second course 2025-2026
• Total Number of Study Hours	24 hr.
• Date of preparing this description	2023-2024
• Course objectives:	
• Synthesis and properties of heterocyclic compounds , in addition to enabling students understand the chemistry of aromatic heterocyclic compounds and the classification, properties, and reactions of aromatic heterocyclic organic compounds. It includes understanding the basic structure to furan, pyrrole, thiophene. and features of heterocyclic aromatic compounds.	
• Learning Outcomes, Teaching and Learning Methods, and Evaluation	

Knowledge and Understanding

Basic concepts of heterocyclic aromatic organic reactions, their classification and reaction mechanisms. to be used as a guide in structure determination . Identification and application of different organic compounds.

- **Subject-Specific Skills:**
- Get experience in carrying out different heterocyclic aromatic organic reactions

Teaching and Learning Methods:

using white board and projector screen

- **Evaluation Methods:**

- Periodic exams, reports, seminars, routine homeworks, final exams.

- **Thinking Skills:**

- **Practical workshops, homeworks, exams**

Teaching and Learning Methods:

using white board and projector screen. Lectures to direct students to textbooks, notes and on-line material. Laboratory practice. Assignments and researches done and presented by the students in seminars.

Evaluation Methods : Periodic exams, seminars, and reports

e. General and Transferable Skills:

Communicate clearly by verbal and written means. Retrieve and evaluate information from different sources to improve professional competencies. Work effectively in a team. Use numeracy, calculation and statistical methods as well as information technology tools. Practice independent learning for continuous professional development. Demonstrate creativity and time management abilities. Implement writing and presentation skills. Demonstrate critical thinking, problem solving and decision making abilities.

- **Course Structure for the Fifth Stage, Theoretical Subject (First Course)**

Week	Hours	Required Learning Outcomes	Unit Name Course or Topic	Learning Method	Assessment Method
1	3	Knowledge	Heterocyclic system, classes, general structures	Use of the board and display screen	Daily examination and oral questions and discussion

2	3	Knowledge	five membered ring heterocycle	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
3	3	Knowledge	Source of pyrrole, furan and thiophene.	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
4	3	Knowledge	ES-Ar reactions of pyrrole, furan and thiophene	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
5-6	6	Knowledge	6-membered aromatic heterocycles	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
7-8	6	Knowledge	Saturated 5-membered heterocycled	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
9	3	Knowledge	Saturated 5-membered heterocycled	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
10-11	6	Knowledge	Heterocycles with 2 or 3 heteroatoms	Use of the board and display screen	Daily examination and oral questions and discussion and homework assignments
13	3	Knowledge	Heterocycles with 2 or 3 heteroatoms	Use of the board and display screen	Daily examination and oral

					questions
14	3	Knowledge	Condensed heterocycles	Use of the board and display screen	Daily examination and oral questions
15	3	Knowledge	Condensed heterocycles	Use of the board and display screen	Daily examination and oral questions

• Infrastructure	
Required Readings:	References: 1- Organic Chemistry by Robert T. Morrison and Robert N. Boyd, latest edition. 2- Organic Chemistry by J. McMurry, latest ed., Thomson learning, CA, USA. 3_ An introduction to the chemistry of heterocyclic compound by Acheson, R. M. latest ed.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: : Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Course coordinator: Assistant lecturer Ahmed M. Motlk

Course Description Template for Pharmacognosy Second Year/Second Semester (Theoretical)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. College	Pharmacy
3. Course Name / Code	Pharmacognosy I PPCG 21
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester / Second year
7. Total Number of Study Hours	3 hours weekly/Total 45 per semester
8. Date of preparing this description	2025-2026
9. Course Objectives: Learn about the basics and principles of pharmacology and phytochemistry from the beginning of this science and the developments taking place at present. The program also includes plant examination and classification methods, in addition to the general methods used to extract herbal materials and laboratory examination. In addition to the quality control of herbal materials	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

1. Knowledge and Understanding

- Studying the principles of pharmacology, plant classifications, and scientific nomenclature of plants.
- Demonstrate knowledge of taxonomy, morphology, and plant collection of medicinal plants.
- Roles of medicinal plants and their active constituents.
- Explain the biosynthesis, chemistry, and pharmacological activities of major classes of phytochemicals.
- Explain the extraction, separation, isolation, and identification of bioactive natural products

A. Subject-Specific Skills

- Acquire skills in extraction methods.
- Acquire skill in isolating active compounds.
- Acquire skill in identifying separate compounds.
- 4. Acquire skills in using microscopy to identify different cells

Teaching and Learning Methods

- Theoretical lectures
- Seminars and reports
- Posters and classroom activities.
- Field visits to herbal centers in addition to the botanical garden

B. Evaluation Methods

- Semi-semester exams and final exams.
- Oral exams
- Classroom activities and assignments

C. Thinking Skills

- The use of modern methods in the preparation of lectures and presentations in the form of PowerPoint
- The use of group discussion to understand the article
- Giving homework that stimulates and activates thinking and linking information

D. General and Transferable Skills

- The student should be able to employ the knowledge he has received.
- Giving confidence to the student through the discussion of seminars.
- The student should be able to embody what he has acquired in professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	General Introduction: The Scope of Pharmacognosy, definitions, and basic principles	Use of the blackboard and display screen	Daily exam and oral questions
2	3	Knowledge	Drugs from natural sources, crude drugs, official and non-official drugs.	Use of the blackboard and display screen	Daily exam and oral questions
3	3	Knowledge	Classification of natural products.	Use of the blackboard and display screen	Daily exam and oral questions
4	2	Knowledge	Plant nomenclature and taxonomy.	Use of the blackboard and display screen	Daily exam and oral questions
5	2	Knowledge	Production of crude drugs: Cultivation, collection, drying, and storage	Use of the blackboard and display screen	Daily exam and oral questions
6	2	Knowledge	Deterioration of crude natural products.	Use of the blackboard and display screen	Daily exam and oral questions
7	3	Knowledge	Quality control: Evaluation of natural products; macroscopical evaluation; physical evaluation; chemical evaluation; biological evaluation; spectroscopical evaluation	Use of the blackboard and display screen	Daily exam and oral questions
8	3	Knowledge	Phytochemical investigation of herbal products: Extraction of the plant material; Separation and isolation of constituents; characterization of the isolated compounds.	Use of the blackboard and display screen	Daily exam and oral questions

9	3	Knowledge	Separation technique: Introduction; Mechanisms of separation and classification based on the type of technique	Use of the blackboard and display screen	Daily exam and oral questions
10	3	Knowledge	paper chromatography	Use of the blackboard and display screen	Daily exam and oral questions
11	3	Knowledge	Thin layer chromatography	Use of the blackboard and display screen	Daily exam and oral questions
12	3	Knowledge	Column chromatography	Use of the blackboard and display screen	Daily exam and oral questions
13	3	Knowledge	Ion-exchange chromatography and Gel filtration chromatography	Use of the blackboard and display screen	Daily exam and oral questions
14	3	Knowledge	Gas chromatography	Use of the blackboard and display screen	Daily exam and oral questions
15	3	Knowledge	High performance liquid chromatography	Use of the blackboard and display screen	Daily exam and oral questions
16	3	Knowledge	Electrophoresis and Affinity chromatography	Use of the blackboard and display screen	Daily exam and oral questions
Total	45				

12. Infrastructure	
Required Readings:	References: • Trease and Evans Pharmacognosy; 16th ed., 2009 • Textbook of Pharmacognosy and Phytochemistry by Biren Shah, 2010 • Chromatographic Analysis of Pharmaceuticals by John A. Adamovics: Second Edition, 2021
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.researchgate.net/publication/236229645 Modern extraction methods for preparation of bioactive plant extracts https://www.researchgate.net/publication/357660512 A REVIEW ON DIFFERENT EXTRACTION METHOD OF PLANTS INNOVATION FROM ANCIENT TO MODERN TECHNOLOGY
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops visit to herbal shops and Medical Garden

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

Assistant Professor Dr. Suhad Humadi

Al-Zahrawi University _ College of Pharmacy_ Department of Pharmaceutics
Course Description for **Physical Pharmacy II**

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy -Department of Pharmaceutics
3. Course Name / Code	Physical Pharmacy II
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester, Second Stage (2025-2026)
7. Total Number of Study Hours	Total 45 hours_3 hours per week for each group
8. Date of preparing this description	2025-2026
9. Course Objectives: Students should be able to understand drugs complexes in pharmacy, chemical kinetics and interfacial phenomena ,rheology, colloids, polymer science and their applications in pharmacy.	
Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- A.1: Students will be able to understand complexes in pharmacy.
- A.2: Students will be able to understand drugs kinetics and stability.
- A.3: Students learn interfacial phenomena.
- A.4: Students learn rheological properties of matter under different kinds of pressure.
- A.5: Students learn different types of polymers and their applications in pharmacy.

B. Subject-Specific Skills

- B.1: Enable students to solve mathematical equations related to physical pharmacy.
- B.2: Enable students to read and interpret plots related to physical pharmacy topics.
- B.3: Enable students to be independent learners.

Teaching and Learning Methods

- 1. Use of smart screen.
- 2. Teaching through lectures mode.
- 3. Seminars and posters.

C. Evaluation Methods

- 1. Mid-term and final exams.
- 2. Written and oral tests.
- 3. Seminars and posters.

D. Thinking Skills

- D1. Encourage students to think correctly through analysis of principles.
- D2. Enable students to correctly handle physical and chemical characteristics of matter.

E. General and Transferable Skills

- D1. Encourage students to give research articles.
- D 2. Encourage students to discuss scientific reports.
- D 3. Learn skills necessary to handle materials
- D 4. Learn leadership skills.
- D 5. Learn skills is necessary to obtain information related to physical pharmacy.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Complexes	Smart Screen Presentations	Daily exam and oral questions
2	3	Knowledge	Complexes	Smart Screen Presentations	Daily exam and oral questions
3	3	Knowledge	Diffusion Phenomena	Smart Screen Presentations	Daily exam and oral questions
4	3	Knowledge	Diffusion Phenomena	Smart Screen Presentations	Daily exam and oral questions
5	3	Knowledge	Chemical kinetics and stability	Smart Screen Presentations	Daily exam and oral questions
6	3	Knowledge	Chemical kinetics and stability	Smart Screen Presentations	Daily exam and oral questions
7	3	Knowledge	Interfacial phenomena	Smart Screen Presentations	Daily exam and oral questions
8	3	Knowledge	Interfacial phenomena	Smart Screen Presentations	Daily exam and oral questions
9	3	Knowledge	Rheology	Smart Screen Presentations	Daily exam and oral questions
10	3	Knowledge	Rheology	Smart Screen Presentations	Daily exam and oral questions
11	3	Knowledge	Colloidal dispersions	Smart Screen Presentations	Daily exam and oral questions
12	3	Knowledge	Colloidal dispersions	Smart Screen Presentations	Daily exam and oral questions

13	3	Knowledge	Micromeritics	Smart Screen Presentations	Daily exam and oral questions
14	3	Knowledge	Micromeritics	Smart Screen Presentations	Daily exam and oral questions
15	3	Knowledge	Polymers	Smart Screen Presentations	Daily exam and oral questions

12. Infrastructure	
Required Readings:	1-Ministry of Higher Education Reference 2-Martin's Physical Pharmacy and Pharmaceutical Sciences; 7th edition; 2017. 3-Aulton's Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022 .
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: None
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: None

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	Admission according to the central plan
Maximum Number of Students	Admission according to the central plan

Name of the Instructor: Ammar Sahib Abdulameer, Ph.D.

Course Description Template for Pharmacognosy Third Year First Semester (Theoretical)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmacognosy II Theoretical PPCG 32
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester / Third year
7. Total Number of Study Hours	3 hours weekly/ 45 hours total
8. Date of preparing this description	2025-2026
Course Objectives: The course aims to develop an understanding of active compounds in plants by examining their chemical structure, the processes through which they are formed within the plant, and their medical effects on the human body. It also focuses on analyzing how these compounds interact with biological systems and pharmaceutical drugs. Additionally, the course highlights the importance of plant-derived substances in health and disease, supported by examples of plants commonly used in alternative medicine to demonstrate their practical applications.	
9. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1** Explain the fundamental principles of phytochemistry and the chemical diversity of natural products
- 2** Classify secondary metabolites (flavonoids, terpenoids, glycosides, tannins, etc.) based on their structures and biosynthetic pathways
- 3** Explain the biosynthesis, chemistry, and pharmacological activities of major classes of phytochemicals and natural drugs
- 4** Application of plant tissue culture

1. Subject-Specific Skills

- 1** Developing proficiency in methods for extracting active compounds from plants.
- 2** Acquiring skills in the isolation and purification of active compounds.
- 3** Gaining the ability to identify and characterize separated compounds using analytical techniques.
- 4** Developing skills in understanding drug interactions between herbal substances and pharmaceutical medications.

Teaching and Learning Methods

- 1** Theoretical lectures.
- 2** Scientific posters and interactive classroom activities.
- 3** Field visits to herbal medicine centers, in addition to botanical gardens.
- 4** Homework assignments (coursework).

2. Evaluation Methods

- 1** Midterm and final examinations.
- 2** Oral examinations.
- 3** Classroom activities and homework assignments.

3. Thinking Skills

- 1** Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- 2** Applying group discussion techniques to enhance understanding of the subject matter.
- 3** Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- 1** Enabling students to apply the knowledge they have acquired in practical settings.
- 2** Enhancing students' self-confidence through participation in discussions and seminars.
- 3** Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Introduction: General biosynthesis pathways of secondary metabolites (Acetate and shikimic acid pathway)	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	3	Knowledge	Glycosides: chemical classification, physical and chemical properties, pharmacological effect	and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	3	Knowledge	Cardio-active Glycosides	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	3	Knowledge	Anthracene Glycoside	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5	3	Knowledge	Saponin glycosides	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	3	Knowledge	phenolic glycosides	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Flavonoid glycosides	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	3	Knowledge	Aldehyde glycosides, alcoholic glycosides	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	3	Knowledge	lactone glycosides, coumarins and chromones.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10	3	Knowledge	Isothiocyanate glycosides and cynophore glycosides	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11	3	Knowledge	Tannins.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12	3	Knowledge	Lignan and flavonolignan	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
13	3	Knowledge	Resins and resin combination	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	3	Knowledge	Toxic plants	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
15	3	Knowledge	Application of plant tissue culture pharmacognosy in medicinal products	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
Total	45				

12. Infrastructure	
Required Readings:	References: - Pharmacognosy by Tyler, 9th edition. - Trease & Evans Pharmacognosy 16th edition 2009 - Textbook of Pharmacognosy and Phytochemistry by Biren Shah, 2010 - Alkaloids-Secrets of life by Tadeusz Aniszewski 2007. - Pharmacognosy and Phytochemistry: Principles, Techniques, and Clinical Applications by Uchenna E., Wiley, 2025 - Molecular Pharmacognosy (2nd ed., 2019) edited by Lu-qi Huang
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://pharmabookbank.wordpress.com/wp-content/uploads/2019/03/14.2.pharmacognosy-by-biren-shahavinash-seth-1.pdf
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: - Field visits to botanical gardens - Visits to herbal shops (apothecaries)

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Assistant Professor Dr. Suhad Humadi



Course Description for Biochemistry-1st Semester (Theoretical)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. College	Pharmacy
3. Course Name / Code	biochemistry / PCLS 36
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	1st semester
7. Total Number of Study Hours	45 hrs
8. Date of preparing this description	2025-2024
9. Course Objectives: Integrating the core concepts that describe the traditional main topics in biochemistry: structure and metabolism. By the end of the semester, students should be able to understand the chemical composition and function of all the biomolecules present in living organisms.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Study of the basic chemical compounds (carbohydrates, proteins, fats, amino acids, hormones).
- 2- Study of the biological functions and the roles of the above compounds in the human body.
- 3- Study of the physical and chemical properties, and the synthesis of some of the above compounds in the human body.
- 4- Study of enzyme functions, their classifications, mechanisms of action, and their inhibition and activation (agonists and antagonists).

B. Subject-Specific Skills

- ☐ 1-Teaching skills in biochemistry.
- ☐ 2-The student should have the ability to describe and illustrate models.
- ☐ 3-The student should have the ability to link causes with natural effects..

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Oral discussions in the classroom and written exams.
2. Midterm exams and end-of-semester exams.
3. Daily assignment reports.

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Biochemistry- introduction	Blackboard and Screen Presentations	Daily exam and oral questions
2	3	Knowledge	Carbohydrates	Blackboard and Screen Presentations	Daily exam and oral questions
3	3	Knowledge	monosaccharaides	Blackboard and Screen Presentations	Daily exam and oral questions
4	3	Knowledge	disaccharides	Blackboard and Screen Presentations	Daily exam and oral questions
5	3	Knowledge	polysaccharides	Blackboard and Screen Presentations	Daily exam and oral questions
6	3	Knowledge	Lipids	Blackboard and Screen Presentations	Daily exam and oral questions
7	3	Knowledge	Fatty acids	Blackboard and Screen Presentations	Daily exam and oral questions
8	3	Knowledge	Amino acids	Blackboard and Screen Presentations	Daily exam and oral questions
9	3	Knowledge	Proteins structure	Blackboard and Screen Presentations	Daily exam and oral questions
10	3	Knowledge	Enzymology	Blackboard and Screen Presentations	Daily exam and oral questions
11	3	Knowledge	Classification of enzymes	Blackboard and Screen Presentations	Daily exam and oral questions
12	3	Knowledge	Enzymes kinetics	Blackboard and Screen Presentations	Daily exam and oral questions

13	3	Knowledge	Metabolic diseases	Blackboard and Screen Presentations	Daily exam and oral questions
14	3	Knowledge	Vitamins	Blackboard and Screen Presentations	Daily exam and oral questions
15	3	Knowledge	Nutrition	Blackboard and Screen Presentations	Daily exam and oral questions

12. Infrastructure	
Required Readings:	References: <i>Harpers illustrated biochemistry , 26 edition</i> ¹
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Dr. Balsam Ghazi Hassan

Course Description
(*Inorganic Pharmaceutical Chemistry I*) (theoretical)

نموذج وصف المقرر

**Review the performance of the higher education institution
((review of the academic program))**

وصف المقرر

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

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. College	Pharmacy college
3. Course Name / Code	<i>Inorganic Pharmaceutical Chemistry I</i> (Theoretical)
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semeste, Third Stage (2025-2026)
7. Total Number of Study Hours	4 hours per week for each group
8. Date of preparing this description	2025-2026
9. Course Objectives: Acquire knowledge of fundamental theories and applications of inorganic chemistry within the pharmaceutical context. Understand the atomic and molecular structures, and the principles of complexation in pharmaceuticals. Evaluate the biological and pharmaceutical roles of essential, trace, and non-essential ions. Gain comprehensive knowledge of inorganic therapeutic agents, including gastrointestinal agents, topical agents, dental agents, radiopharmaceuticals, and radio opaque contrast media.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation Students will learn core pharmaceutical inorganic chemistry principles. Teaching involves lectures, problem-solving sessions, and interactive discussions. Evaluation is through exams, quizzes, and assignments, assessing knowledge and application skills.	

A. Knowledge and Understanding

Students will gain a comprehensive understanding of the core principles of inorganic chemistry and their relevance to pharmaceutical science. They will understand the mechanisms of action for various inorganic agents (e.g., antacids, radiopharmaceuticals).

B. Subject-Specific Skills

Students will develop skills in applying chemical principles to predict the behavior of inorganic pharmaceutical compounds and ions in the human body.

Teaching and Learning Methods

1. **Interactive Lectures:** Used to deliver fundamental concepts regarding atomic structure, complexation, and the physiological roles of inorganic ions in the human body.
2. **Structural Visualization:** Integration of molecular visualization software (such as PyMOL) to help students examine the 3D structures, coordination geometry, and binding of metal complexes and trace elements.
3. **Clinical Case Discussions:** Focused on the practical application, therapeutic uses, and mechanisms of action of specific inorganic agents, such as antacids, radiopharmaceuticals, and contrast media.
4. **Problem-Solving Sessions:** Designed to develop analytical thinking by presenting scenarios related to the toxicity of non-essential ions and the chemical behavior of gastrointestinal acidifying agents.

C. Evaluation Methods

1. **Written Examinations (Midterm and Final):** Comprehensive closed-book exams designed to assess the students' grasp of inorganic theories, the biological roles of ions, and their pharmaceutical applications.
2. **Quizzes:** Regular, short assessments to gauge ongoing student understanding of specific weekly modules, such as dental agents or atomic structure.
3. **Assignments:** Tasks requiring students to evaluate clinical scenarios involving trace element deficiencies or heavy metal toxicity, bridging theoretical chemistry with clinical outcomes.
4. **Class Participation:** Assessing student engagement and critical thinking during interactive case studies and structural visualization exercises.

D. Thinking Skills

1. Students will develop critical thinking skills necessary for analyzing and solving complex problems related to drug synthesis, drug action, and structure-activity relationships.
2. They will learn to apply problem-solving strategies to organic reactions, mechanisms, and spectroscopic data interpretation, fostering a deeper understanding of chemical phenomena.
3. The course will encourage students to think creatively and reason through plausible solutions in the context of organic chemistry problems, similar to the diagnostic approach

used in medicine

e. General and Transferable Skills

- 1. Students will enhance their communication skills through presentations and group discussions, enabling them to convey complex scientific information clearly and concisely.**
- 2. The course will foster analytical and problem-solving skills by engaging students in activities that require them to interpret data, evaluate scientific literature, and develop solutions to organic chemistry-related problems.**
- 3. Students will develop time management and organizational skills, essential for managing workload and meeting deadlines, alongside improving their ability to work collaboratively in teams to solve problems**

Weeks	Unit Name / Course or Topic	Required Learning Outcomes	Learning Methods	Evaluation Method
1	Introduction to the Course	Understand the scope and importance of inorganic chemistry in pharmacy.	Lectures, discussions	Quizzes
2	Atomic and molecular structure /complexation	Explain atomic structure and the basics of chemical complexation.	Lectures, problem-solving	Quizzes, exams
3	Atomic and molecular structure / complexation (Continued)	Apply complexation principles to pharmaceutical formulations.	Lectures, discussions	Online Quiz
4	Essential and trace ions	Identify the physiological roles of essential and trace ions.	Lectures	Quizzes, exams
5	Non-essential ions	Understand the impact and toxicity of non-essential ions in the body.	Lectures, case studies	Quizzes
6	Gastrointestinal agents: acidifying agents	Describe the mechanism and clinical use of acidifying agents.	Lectures, demonstrations	Quizzes, exams
7	Antacids	Classify antacids and explain their chemical mechanisms.	Lectures, problem-solving	Quizzes
8	Protective adsorbents + Topical agents	Evaluate the applications of protective adsorbents and topical agents.	Lectures, discussions	Exams
9	Open Schedule /	Assess comprehensive	Review	Midterm

	Midterm Exam	understanding of weeks 1-8.	sessions	Exam
10	Dental agents + Radiopharmaceutical preparations	Explain the pharmaceutical applications of dental agents and radiopharmaceuticals.	Lectures, examples	Quizzes, exams
11	Open Schedule / Continuing Radiopharmaceuticals	Deepen understanding of radiopharmaceutical dispensing and safety.	Lectures	Quizzes
12	Radio opaque and contrast media	Understand the chemical properties and uses of contrast media in imaging.	Lectures, visual aids	Exams
13	Open Schedule / Review	Review core course concepts.	Discussions	Participation
14	Open Schedule / Final Preparations	Prepare for final assessments.	Problem-solving	Final Exams

11. Infrastructure	
Required Readings:	Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry, Delgado JN, Remers WA, (Eds); Latest edition (Recommended to add an Inorganic equivalent such as <i>Block, Roche, Soine, and Wilson's Inorganic Medicinal and Pharmaceutical Chemistry</i>).
Special Requirements (Workshops, Journals, Software, Websites):	• Software: Molecular modeling and visualization tools (e.g., PyMOL) for analyzing chemical complexation and atomic structures. • Websites: Access to scientific chemical databases such as PubChem, DrugBank, and ChemSpider for retrieving chemical properties, safety data, and clinical profiles of inorganic drugs. • Journals: Recommended reading from peer-reviewed publications such as the <i>Journal of Inorganic Biochemistry</i> and the <i>European Journal of Medicinal Chemistry</i> to expose students to current pharmaceutical research.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing seminars on laboratory safety, specifically focusing on the safe disposal and environmental management of heavy metals and non-essential ions used in pharmacy.

12.	
Prerequisites	
Minimum Number of Students	100
Maximum Number of Students	200

Name of the Instructor: Ahmed Sabeeh Mohammed

Al-Zahrawi University



College of Pharmacy

**Higher Education Institution Performance Review
(Academic Program Review)**

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy College
3. Course Name / Code	Pathophysiology – Theory PCLS 37
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester – 3 rd Grade
7. Total Number of Study Hours	30 hours (2 hours per week)
8. Date of preparing this description	2025-2026
9. Course Objectives : Understanding Pathogenesis: Grasping how diseases initiate and progress within the body, as well as the functional changes that occur in organs as a result of injury or illness. Enabling the student to interpret the clinical signs and symptoms appearing in a patient based on the biological and chemical changes that have taken place.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1 - Describing basic pathophysiology concepts at the cellular level regarding injury, self-defense mechanisms, adaptation, mutation, and cellular proliferation.**
- 2 – Understanding the fundamental factors leading to disease.**
- 3 – Describing the functional and histological impairment of various organs in the body.**
- 4 – Describing the clinical manifestations of different diseases.**

B. Subject-Specific Skills

- 1. Acquiring skill in diagnosing various diseases.**
- 2. Acquiring skill in describing various diseases in a scientific manner.**
- 3. Acquiring skill in classifying various diseases.**
- 4. Acquiring skill in assessing the severity (risk/prognosis) of various diseases.**

Teaching and Learning Methods

- 1. Show pictures and diagrams.**
- 2. Thinking and discussion method.**
- 3. Learning through videos and visual aids.**
- 4. Making acting scenes.**
- 5. Exploratory thinking**

C. Evaluation Methods

- 1. Submit weekly reports.**
- 2 Exam grades are written and oral.**

D. Thinking Skills

- 1. Dialogue method between the student and the teacher.**
- 2. Preparing weekly scenarios.**
- 3. Conducting discussions of situations that the student may have experienced during his life**

E. General and Transferable Skills

- 1. Discussion and dialogue to diagnose the problem.**
- 2. Discussion and dialogue to find solutions.**
- 3. Written tests.**
- 4. Oral assessment.**

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	General Introduction to Pathophysiology	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Water and Electrolytes	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cell Injury And Degenerations	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of Respiratory System	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of the Cardiovascular System Part 1	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of the Cardiovascular System Part 2	Knowledge	2	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of Renal System and Liver Disorders	Knowledge	2	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of the Gastrointestinal Tract	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of the Central Nervous System Part 1	Knowledge	2	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector	Disorders of the Central Nervous System Part 2	Knowledge	2	10

Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of the Reproductive System	Knowledge	2	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of Skeletomuscular System	Knowledge	2	12
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Disorders of Endocrine System	Knowledge	2	13
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Growth Disturbances	Knowledge	2	14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Inflammation, Thrombosis, Neoplasia	Knowledge	2	15

Infrastructure	
Required Reading:	References: Greene, R. J., & Harris, N. D. (2008). Pathology and Therapeutics for Pharmacists: A Basis for Clinical Pharmacy Practice (3rd ed.). Pharmaceutical Press.
Special Requirements (Workshops, Journals, Software, Websites)	Electronic Websites: https://www.mdpi.com/journal/pathophysiology https://www.medscape.com/pathology https://accesspharmacy.mhmedical.com/
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

م.م. علي عبد الواحد محمد علي البير

Course description: Pharmaceutical Technology I - Theoretical / First Course / Third year

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy/ Pharmaceuticals Branch
3. Course Name / Code	Pharmaceutical Technology I / PPCT 35
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	First course / 2025-2026
7. Total Number of Study Hours	3 hours weekly
8. Date of preparing this description	2025-2026
9. Course Objectives:	
The student is studying the fundamentals of pharmaceutical preformulation, including solubility, partitioning, powder, and compaction properties. Also learns the basic principles of preparing various liquid pharmaceutical forms such as solutions, suspensions as well as aerosols, foams and parenteral dosage forms.	

1. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

1. Enabling students to gain comprehensive knowledge of pharmaceutical preformulation including solubility, partitioning, powder, and compaction properties.
2. Enabling students to learn the principles and techniques involved in preparing and developing solutions, suspensions as well as aerosols, foams and parenteral dosage forms.

B. Subject-Specific Skills

1. Enabling students to acquire the basic principles of preparing the pharmaceutical liquid, aerolized and parenteral dosage forms.
2. Enabling students to acquire the skills of storing medicines after completing their preparation.
3. Acquiring the skill of basic principles of pharmaceutical preformulation.
4. Develop an understanding of storage, packaging, and labeling practices across all listed dosage forms to ensure quality and patient safety.

Teaching and Learning Methods

1. Using the smart board.
2. Teaching and giving theoretical lectures
3. Educational seminars and posters

C. Evaluation Methods

1. Midterm and final exams
2. Oral and written exams
3. Classroom activities and posters

D. Thinking Skills

1. Thinking skills through translation, analysis, evaluation and extraction of ideas.
2. Extracting the correct methods for preparing liquid and aerolized preparations.
3. Extracting the correct methods for preformulation of different pharmaceutical forms.

e. General and Transferable Skills

1. Acquire skill in using the computer
2. Give confidence to the student through presenting scientific research
3. Give confidence to the student through discussing reports
4. Acquire skill in dealing
5. Acquire skill in leadership

10. Course Structure					
Evaluation Method	Learning Methods	Unit Name / Course or Topic	Required Learning Outcomes	Hours	Week
Monthly and daily examinations and discussion	Using the smart board	Pharmaceutical preformulation	The concept of preformulation, Solubility, Molecular dissociation	3	1
Monthly and daily examinations and discussion	Using the smart board	Pharmaceutical preformulation	Partitioning, Dissolution rate, Hygroscopicity	3	2
Monthly and daily examinations and discussion	Using the smart board	Pharmaceutical preformulation	Physical form, Powder properties, Compaction properties	3	3
Monthly and daily examinations and discussion	Using the smart board	Solutions	Some Solvents for Liquid Preparations, Preparation of solutions, Mixing oral liquids, Oral solutions and preparations for oral solution	3	4
Monthly and daily examinations and discussion	Using the smart board	Solutions	Syrups, Elixirs, Tinctures, Proper administration and use of liquid peroral dosage forms, Topical Solutions and Tinctures	3	5
Monthly and daily examinations and discussion	Using the smart board	Solutions	Vaginal and rectal solutions, Topical tinctures, Topical oral (dental) solutions, Miscellaneous solutions, Nonaqueous solutions, Extraction methods for preparing solutions	3	6
Monthly and daily examinations and discussion	Using the smart board	Suspensions	Reasons for suspension, Features of desired in a pharmaceutical suspension, Sedimentation rate of the particles of a suspension	3	7
Monthly and daily examinations and discussion	Using the smart board	Suspensions	Physical features of the dispersed phase, Dispersion medium, Rheology of suspensions, Preparation of suspensions	3	8

Monthly and daily examinations and discussion	Using the smart board	Suspensions	Sustained-release suspensions, Extemporaneous compounding of suspensions, Mixing solids in liquids, Packaging and storage of suspensions, Examples of pharmaceutical suspensions, Dry powders for oral suspension	3	9
Monthly and daily examinations and discussion	Using the smart board	Aerosols and foams	Types of aerosols, Advantages of the aerosol dosage form, the aerosol principle, Aerosol systems, Aerosol container and valve assembly, Metered-dose inhalers, Filling operations	3	10
Monthly and daily examinations and discussion	Using the smart board	Aerosols and foams	Packaging, labeling, and storage, Proper administration and use of pharmaceutical aerosols, Examples of aerosols, Topical aerosols, Vaginal and rectal aerosols, Foams: Their types and preparation	3	11
Monthly and daily examinations and discussion	Using the smart board	Parenterals	Injections, Parenteral routes of administration, Official types of injections, Solvents and vehicles for injections	3	12
Monthly and daily examinations and discussion	Using the smart board	Parenterals	Colligative properties for injections, Methods of sterilization, Validation/verification of sterility.	3	13
Monthly and daily examinations and discussion	Using the smart board	Parenterals	The industrial preparation of parenteral products, Packaging, labeling, and storage of injections, Available injections (examples)	3	14
Monthly and daily examinations and discussion	Using the smart board	Parenterals	Small volume parenterals, large volume parenterals, Special considerations associated with parenteral therapy, Irrigation and dialysis solutions	3	15

11. Learning and teaching resources	
Required books	• Aulton's Pharmaceutics; The Design and Manufacture of Medicines; 6th edition, 2022. • Pharmaceutical Dosage Forms and Drug Delivery Systems by Howard A. Ansel; 11th edition, 2017.
Main References (Sources)	• American Pharmacy.
Websites	• https://pensatechpharma.com/areas-of-expertise/preformulation/ • https://www.pharmaexcipients.com/excipients-for-parenterals/

Name of the Instructor: Dr. Firas Ghafil Abbas

Higher Education Institution Performance Review (Academic Program Review)

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmacology I Theory PPCL 33
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester third year
7. Total Number of Study Hours	16 hours weekly
8. Date of preparing this description	2025-2026
9. Course Objectives :Knowing the drugs, their names, how they work, their clinical uses, as well as knowing the side effects on patients and drug interactions of each drug with other drugs.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1• The student should be knowledgeable about the names of different drugs.
- The student should understand the clinical applications of medications.
- The student should be aware of how drugs act within the human body.
- The student should recognize the possible side effects of medications.
- The student should be familiar with drug–drug interactions.
- The aim is to prepare well-trained and qualified professionals to serve in government health institutions.

B. Subject-Specific Skills

B 1. Teaching skill in the subject of medicine

B 2. The student should have the ability to infer and link clinical information together

B 3. The student should have the ability to link medicines to practical reality in pharmacies and hospitals

Teaching and Learning Methods

- 1. Thinking and discussion method.
- 2. Learning by exploratory lecture.

C. Evaluation Methods

- 1. Q&A sessions
- 2. weekly Quizzes.
- 3. Homework assignments

D. Thinking Skills

A1. Applying group discussion techniques to enhance understanding of the subject matter.

A2. Incorporate multimedia elements such as images, charts, and videos to enhance understanding.

A3. Conducting discussions at the end of each lecture.

Teaching and Learning Methods

- 1. Grades.
- 2. Discussion
- 3. Tests.

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Introduction to Pharmacology - Pharmacokinetics	Knowledge	3	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Pharmacodynamics	Knowledge	3	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Introduction to Autonomic Nervous System	Knowledge	3	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cholinergic Agonists	Knowledge	3	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cholinergic Antagonists	Knowledge	3	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Adrenergic Agonists	Knowledge	3	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Adrenergic Antagonists	Knowledge	3	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Principles of Antimicrobial Therapy	Knowledge	3	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Cell Wall Inhibitors	Knowledge	3	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Protein Synthesis Inhibitors	Knowledge	3	10
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Quinolones, Folic Acid Antagonists, and UTI Antiseptics	Knowledge	3	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antimycobacterial Drugs	Knowledge	3	12

Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antiprotozoal Drugs and Anthelmintics	Knowledge	3	13
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antifungal Drugs	Knowledge	3	14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antiviral Drugs	Knowledge	3	15

11. Infrastructure	
Required Readings:	References: Lippincott Illustrated Reviews Pharmacology 7th Ed.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites Lippincott® Illustrated Reviews: Pharmacology, 7e Lippincott Illustrated Reviews Health Library
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

12. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

م.م. رامي تامر كريم



Course Description for Biochemistry-2nd Semester (Theoretical)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Ministry of Higher Education and Scientific Research /Al-Zahrawi University
2. College	Pharmacy
3. Course Name / Code	Biochemistry theory \ PCLS 38
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second semester /Third-year
7. Total Number of Study Hours	45 Hours
8. Date of preparing this description	2025-2026
9. Course Objectives:	Understanding the basics of biochemistry and studying the compounds involved in the formation of organic molecules (carbohydrates, fats, proteins) and their metabolic stages within the body.
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Study of the basic chemical compounds (carbohydrates, proteins, fats).
- 2- Study of the metabolic stages and processes that occur in the body during periods of fasting and feeding.
- 3- Study of chemical reactions involving various metabolic pathways, such as the citric acid cycle.

B. Subject-Specific Skills

- ☐ 1-Teaching skills in biochemistry.
- ☐ 2-The student should have the ability to describe and illustrate models.
- ☐ 3-The student should have the ability to link causes with natural effects..

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Oral discussions in the classroom and written exams.
2. Midterm exams and end-of-semester exams.
3. Daily assignment reports.

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Glycolysis	Blackboard and Screen Presentations	Daily exam and oral questions
2	3	Knowledge	Cribs cycle	Blackboard and Screen Presentations	Daily exam and oral questions
3	3	Knowledge	gluconeogenesis	Blackboard and Screen Presentations	Daily exam and oral questions
4	3	Knowledge	Glycogen metabolism	Blackboard and Screen Presentations	Daily exam and oral questions
5	3	Knowledge	Pentose phosphate pathway	Blackboard and Screen Presentations	Daily exam and oral questions
6	3	Knowledge	Synthesis of fatty acid	Blackboard and Screen Presentations	Daily exam and oral questions
7	3	Knowledge	Fatty acid oxidation	Blackboard and Screen Presentations	Daily exam and oral questions
8	3	Knowledge	Unessential amino acids synthesis	Blackboard and Screen Presentations	Daily exam and oral questions
9	3	Knowledge	Protein catabolism and amino acid nitrogen	Blackboard and Screen Presentations	Daily exam and oral questions
10	3	Knowledge	Respiratory chain and oxidative phosphorylate	Blackboard and Screen Presentations	Daily exam and oral questions
11		Knowledge	Conversion of amino acids to specific compounds		
12	3	Knowledge	Urea cycle	Blackboard and Screen Presentations	Daily exam and oral questions
13	3	Knowledge	Amino acid diseases	Blackboard and Screen Presentations	Daily exam and oral questions
14	3	Knowledge	Porphyrins metabolism	Blackboard and Screen Presentations	Daily exam and oral questions
15	3	Knowledge	Cholesterol synthesis	Blackboard and Screen Presentations	Daily exam and oral questions

12Infrastructure	
Required Readings:	References: <i>Harpers illustrated biochemistry , 26 edition</i>
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:

13.Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Dr. Balsam Ghazi Alkassar

Al-Zahrawi University



College of Pharmacy

**Higher Education Institution Performance Review
(Academic Program Review)**

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy College
3. Course Name / Code	Medical Ethics (Theory) PCPC 31
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester – 3rd Grade
7. Total Number of Study Hours	30 hours (2 hours per week)
8. Date of preparing this description	2025-2026
9. Course Objectives : Understanding medical ethics through studying the basic medical ethics of health service providers in different medical institutions. In addition to establishing the rights and duties of pharmacists in health institutions.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

A.1 The student should learn about the basics of medical ethics when they are dealing with patients

A2- The student should learn about the correct way of dealing and positive communication with patients.

A3- The student should learn how to take the correct and appropriate ethical decision.

A4- The student should be trained to acquire ethically accepted communication skills through practical application.

A5- Preparing trained and qualified health services providers to work in health institutions.

B. Subject-Specific Skills

B.1- training the students on making medical decision depend on scientific and ethical principles.

B.2- Acquiring the skill of communicating with patients, companions, and other medical staff.

B.3 -Train them on new skills in a practical manner by narration medical Scenarios during lectures

B.4- procurement the ability to solve the problems they face with all flexibility

Teaching and Learning Methods

- 1. Show pictures and diagrams.**
- 2. Thinking and discussion method.**
- 3. Learning through videos and visual aids.**
- 4. Making acting scenes.**
- 5. Exploratory thinking**

C. Evaluation Methods

- 1. Submit weekly reports.**
- 2 Exam grades are written and oral.**

D. Thinking Skills

- 1 Dialogue method between the student and the teacher.**
- 2 Preparing weekly scenarios.**
- 3 Conducting discussions of situations that the student may have experienced during his life**

E. General and Transferable Skills

- 1. Discussion and dialogue to diagnose the problem.**
- 2. Discussion and dialogue to find solutions.**
- 3. Written tests.**
- 4. Oral assessment.**

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Introduction and General Terms of Medical Ethics	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Codes Of Medical Ethics for Pharmacist	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Professional Competence	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Beneficence and No Maleficence	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Accountability and Fidelity	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Display The Respect for Patient and Justice in The Distribution Of Health Resource	Knowledge	2	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Main Values of Medical Ethics	Knowledge	2	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Communication Skills	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Ethics of Medical Experiments and Research	Knowledge	2	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector	Interprofessional Relations In Healthcare System	Knowledge	2	10

Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Patient Centered Pharmaceutical Encounter	Knowledge	2	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Ethical Decision in Pharmacy Practice	Knowledge	2	12
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Practical Examples of Ethical Problems in the Pharmacy Profession	Knowledge	2	13
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Pharmaceutical Care in Community	Knowledge	2	14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Ethical Issues Related to Clinical Pharmacy Research	Knowledge	2	15

Infrastructure	
Required Reading:	References: - Loewy E. H. & Loewy R. S. (2nd edition). Textbook of Healthcare Ethics. Kluwer Academic Publishers (2004).
Special Requirements (Workshops, Journals, Software, Websites)	Electronic Websites: https://code-medical-ethics.ama-assn.org/ https://www.wma.net/policies-post/wma-international-code-of-medical-ethics/ https://www.who.int/health-topics/ethics-and-health#tab=tab_1
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

م.م. علي عبد الواحد محمد علي البير

Course Description
(Organic Pharmaceutical Chemistry I) (theoretical)

نموذج وصف المقرر

**Review the performance of the higher education institution
((review of the academic program))**

وصف المقرر

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

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. College	Pharmacy college
3. Course Name / Code	<i>Organic Pharmaceutical Chemistry I)</i> (theoretical)
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester, Third Stage (2025-2026)
7. Total Number of Study Hours	4 hours per week for each group
8. Date of preparing this description	2025-2026
9. Course Objectives:	
1. Acquire knowledge of fundamental theories, laws, and their applications within organic chemistry, specifically in the pharmaceutical context.	
2. Learn the structure of chemical compounds, including their chemical and physical properties, as well as chemical reactions and spectroscopic analysis.	
3. Understand the processes of drug design and development, including physicochemical and structural features that influence ADME (absorption, distribution, metabolism, and excretion) and drug-target binding, and establish structure-activity relationships	

1. Learning Outcomes, Teaching and Learning Methods, and Evaluation

Students will learn core organic pharmaceutical chemistry principles, including structure-activity relationships and drug metabolism. Teaching involves lectures, problem-solving sessions, and case studies, possibly using computational tools. Evaluation is through exams, quizzes, and assignments, assessing knowledge and application skills.

A. Knowledge and Understanding

1. Students will gain a comprehensive understanding of the core principles of organic chemistry and their relevance to pharmaceutical science.
2. They will learn to correlate the structure of organic molecules with their physical and chemical properties, including reactivity and stability.
3. A key focus will be understanding how these principles are applied in the context of drug design, drug synthesis, and the behavior of drugs within biological systems

B. Subject-Specific Skills

1. Students will develop skills in applying chemical principles to predict the behavior and properties of pharmaceutical compounds.
2. They will learn to analyze and interpret spectroscopic data to elucidate the structures of organic molecules relevant to drug design and development.
3. Students will gain proficiency in understanding the relationships between the chemical structure of a drug and its biological activity.

Teaching and Learning Methods

1. The course will employ lectures to deliver core concepts and principles of organic chemistry relevant to pharmaceutical science.
2. Interactive problem-solving sessions will provide students with opportunities to apply their knowledge and develop critical-thinking skills.
3. Case studies of drug molecules will illustrate the practical application of theoretical concepts in drug design, synthesis, and structure-activity relationships

C. Evaluation Methods

1. Student understanding will be evaluated through written examinations that assess their grasp of key concepts and their ability to apply them to pharmaceutical scenarios.
2. Problem-solving assignments will test the students' skills in areas like structure elucidation, reaction mechanisms, and predicting the properties of drug molecules.
3. Quizzes and tests will gauge students' knowledge of nomenclature, stereochemistry, and the relationships between chemical structure and biological activity

D. Thinking Skills

1. Students will develop critical thinking skills necessary for analyzing and solving complex problems related to drug synthesis, drug action, and structure-activity relationships.
2. They will learn to apply problem-solving strategies to organic reactions, mechanisms, and spectroscopic data interpretation, fostering a deeper understanding of chemical phenomena.
3. The course will encourage students to think creatively and reason through plausible solutions in the context of organic chemistry problems, similar to the diagnostic approach

used in medicine

Teaching and Learning Methods

1. Lectures will be used to deliver core concepts, and interactive models can help students visualize molecular phenomena.
2. Incorporating real-world examples from medicine, agriculture, and environmental science can enhance student engagement and help them grasp the relevance of the material.
3. The course may integrate a chemical structure teaching (CST) method, which focuses on the chemical structures of different drugs, to help students deduce possible properties and analytic methods based on functional groups.

Evaluation Methods

1. Evaluations will include traditional closed-book exams that test knowledge and understanding of organic chemistry principles.
2. Students' abilities to solve problems and apply concepts can be assessed through open-book exams and assignments.
3. Oral presentations, where students discuss organic reactions, mechanisms, and drug design strategies, may also be part of the evaluation process.

e. General and Transferable Skills

1. Students will enhance their communication skills through presentations and group discussions, enabling them to convey complex scientific information clearly and concisely.
2. The course will foster analytical and problem-solving skills by engaging students in activities that require them to interpret data, evaluate scientific literature, and develop solutions to organic chemistry-related problems.
3. Students will develop time management and organizational skills, essential for managing workload and meeting deadlines, alongside improving their ability to work collaboratively in teams to solve problems

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	4	Understand drug distribution principles and factors affecting it.	Drug distribution	Lectures, discussions, case studies	Quizzes, problem-solving
2	3	Explain the acid-base properties of drugs and their impact on drug behavior.	Acid-base properties	Lectures, problem-solving	Quizzes, exams
3	3	Apply statistical methods to predict pharmacological activity.	Statistical prediction of pharmacological activity	Lectures, computational exercises	Online Quiz
4	2	Develop QSAR models for predicting drug activity.	QSAR models	Lectures, model-building exercises	project, Online Quiz
5	1	Understand the use of molecular modeling in drug design.	Molecular modeling (Computer-aided drug design)	Lectures, demonstrations	Quizzes, participation
6	1	Describe the forces involved in drug-receptor interactions.	Drug receptor interaction: force involved	Lectures, discussions	Quizzes, exams
7	2	Explain the importance of steric features of drugs.	Steric features of drugs	Lectures, model viewing	Quizzes,
8	1	Explain the impact of optical isomerism on biological activity.	Optical isomerism and biological activity	Lectures, examples	Quizzes, exams
9	1	Understand the role of calculated conformation in drug activity.	Calculated conformation	Lectures, computational chemistry software	Online Quiz
10	1	Apply 3D-QSAR and use relevant databases.	Three-dimensional quantitative structure-activity relationships and databases	Lectures, software demonstrations	exams
11	1	Explain isosterism and its application in drug design.	Isosterism	Lectures, discussions	Quizzes,

12	1	Describe the events subsequent to drug-receptor interaction.	Drug-receptor interaction and subsequent events	Lectures, diagrams, flowcharts	Quizzes, exams
13-14	24	Understand the pathways of drug metabolism, the role of cytochrome P450 enzymes, and phase II reactions. Identify factors affecting drug metabolism.	General pathways of drug metabolism: Sites of drug biotransformation; Role of cytochrome P450 mono-oxygenases in oxidative biotransformation; Oxidative reactions; Reductive reactions; Hydrolytic reactions; Phase II reactions	Lectures, discussions, metabolic pathway mapping, case studies	Quizzes, exams, problem-solving, and presentations

12. Infrastructure	
Required Readings:	References: Wilson and Gisvold Textbook of Organic Medicinal and Pharmaceutical Chemistry, Delgado JN, Remers WA, (Eds); Latest edition.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: (Links to databases like CAS, ChemSpider, PubChem, and sites for nomenclature and compound information, Software: (Molecular modeling and QSAR software)
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13.	
Prerequisites	
Minimum Number of Students	100
Maximum Number of Students	200

Name of the Instructor:

Ahmed Sabeeh Mohammed

Performance review of higher education institution (assessment of the academic program)

وصف المقرر

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University College
2. University Department / Center	Pharmacy Department / Pharmaceuticals Branch
3. Course Name / Code	Pharmaceutical Technology II / PPCT 36
4. Programs in which it is included	Bachelor of pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	2024-2025 / second course / third stage
7. Total Number of Study Hours	3 hours theory + 2 hours practical
8. Date of preparing this description	2024-2025
9. Course Objectives:	
Teaching basic information about different pharmaceutical forms (emulsions, suppositories, topical preparations, capsules, sprays and powders) in terms of their raw materials, compositions, methods of preparation, stability and storage, in addition to identifying and .describing potential incompatibilities that may occur between pharmaceutical forms	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

1. Enabling students to have comprehensive knowledge of the concepts of different pharmaceutical doses and enabling them to acquire and understand the methods of preparing them in small scales in the laboratory and pharmacy.
2. Enabling students to identify the theoretical technological rules used in preparing pharmaceutical doses according to their raw materials, contents, preparation methods, stability, storage and uses.

B. Subject-Specific Skills

1. Enabling students to acquire the basic principles in preparing the pharmaceutical form of emulsions, suppositories, topical preparations, capsules and powder.
2. Enabling students to acquire the skills of storing medicines after completing their preparation.
3. Acquiring the skill of extracting the required information from its approved sources.

Teaching and Learning Methods

1. Using the smart board.
2. Teaching and giving theoretical lectures
3. Educational seminars and posters

C. Evaluation Methods

1. Midterm and final exams
2. Oral and written exams
3. Classroom activities and posters

D. Thinking Skills

1. Thinking skills through translating, analyzing, evaluating and extracting ideas.
2. Extracting the correct methods for preparing emulsions, suppositories, topical preparations, capsules, sprays and powders .

e. General and Transferable Skills

1. Acquire skill in using the computer
2. Give confidence to the student through presenting scientific research
3. Give confidence to the student through discussing reports
4. Acquire skill in dealing
5. Acquire skill in leadership

10. Course Structure					
Evaluation Method	Learning Methods	Unit Name / Course or Topic	Required Learning Outcomes	Hours	Week
Daily and monthly exams and discussion	Using the smart board	Emulsion	Introduction Definition, Types, Classification of emulsions, Disadvantage of emulsion, Theory of emulsion	3	1
Daily and monthly exams and discussion	Using the smart board	Emulsion	Emulsifying agents: Main properties, Types Calculation of concentration of SAA, Small Scale Large scale, main method of emulsification	4	2
Daily and monthly exams and discussion	Using the smart board	Emulsion	Stability of emulsions, storage of emulsion preservation	3	3
Daily and monthly exams and discussion	Using the smart board	Suppository	Ideal properties Types of bases, Suppository Molds,	3	4
Daily and monthly exams and discussion	Using the smart board	Suppository	Determination of the amount of base* Vaginal Inserts* Packaging and Storage*	3	5
Daily and monthly exams and discussion	Using the smart board	Semisolids	Introduction: ideal properties of ointment, base types of ointment bases (USP) comparison between the ointment bases.	4	6
Daily and monthly exams and discussion	Using the smart board	Semisolids	Selection of ideal ointment base, Preparation of ointment compendial requirements for ointments, Ophthalmic ointment, creams, gels	3	7
Daily and monthly exams and discussion	Using the smart board	Powders and Granules	Definition, Route of administration, Uses & Characterization of powders, Particle size Terminology of powder Methods for determination of particle size & Shape, Flowability, Comminution of drug, bending of powder	3	8
Daily and monthly exams and discussion	Using the smart board	Powders and Granules	Problems associated with particle size reduction, Medicated powders, Dispensing of powders, Granules & Effervescent granules	3	9
Daily and monthly exams and discussion	Using the smart board	Capsules	Definition, advantages, types, hard gelatin capsules, shell composition, properties, manufacturing of hard capsules Hard Preparation of filled hard gelatin capsules	3	10
Daily and monthly exams and discussion	Using the smart board	Capsules	Enteric coated capsules, Counting of capsules, Storage of capsules Evaluation of capsules	3	11

Daily and monthly exams and discussion	Using the smart board	Aerosols and Foams	Pharmaceutical aerosols: Definition advantages& components of an aerosols Pharmaceutical Foams: definition, advantages& types	6	12 - 13
Daily and monthly exams and discussion	Using the smart board	Pharmaceutical incompatibility	Types of incompatibility: physical incompatibility, chemical incompatibility	6	14- 15

11. Learning and teaching resources	
Required books	Ansel's pharmaceutical dosage forms and drug delivery 10th Edition by Loyd Allen (Author)
Main References (Sources)	- American Pharmacy. - Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3ed Michael E. Aulton (Author). Churchill, Livingstone- Elsevier

Name of the Instructor:

Course Description Template for Pharmacognosy Third Year Second Semester (Theoretical)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. College	Pharmacy
3. Course Name / Code	Pharmacognosy III Theoretical PPCG 33
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester / Third year
7. Total Number of Study Hours	3 hours weekly/ 45 hours total
8. Date of preparing this description	2025-2026
9. Course Objectives: This course provides students with a comprehensive understanding of alkaloids, antibiotics, phytotherapy, and nutraceuticals as important areas of pharmacognosy. It covers the classification, physical and chemical properties, natural sources, and pharmacological effects of alkaloids, with emphasis on major groups including pyridine and piperidine, tropane, imidazole, quinoline, isoquinoline, indole, purine, alkaloidal amines, and steroidal alkaloids. The course also introduces antibiotics of natural origin, including their sources, biosynthetic pathways, isolation and purification, and antibiotics derived from amino acid, acetate, and carbohydrate metabolism. In addition, students are introduced to the principles of phytotherapy, the use of medicinal plants in selected healthcare systems, and important natural products used in pharmacy and medicine. The course also covers the basic concepts of nutraceuticals, with emphasis on food or food-derived substances that may provide health benefits and contribute to the prevention and management of disease.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

1. Knowledge and Understanding

- Describe the general characteristics, chemical classification, physical and chemical properties, natural sources, and pharmacological effects of the major classes of alkaloids.
- Recognize the major classes of alkaloids and identify important medicinal examples of each class.
- Explain the natural sources, biosynthetic pathways, isolation, and purification of antibiotics, including those derived from amino acid, acetate, and carbohydrate metabolism.
- Define the basic principles of phytotherapy and describe the role of medicinal plants and important natural products in pharmacy and medicine.
- Define nutraceuticals and describe their potential role in maintaining health and in the prevention and management of disease.

2. Subject-Specific Skills

- Classify alkaloids according to their chemical structures and major chemical groups.
 - Differentiate between the major classes of alkaloids based on their chemical characteristics, natural sources, and pharmacological effects.
 - Relate important alkaloid-containing medicinal plants to their major active constituents and therapeutic uses.
 - Differentiate antibiotics according to their natural sources and biosynthetic origins.
 - Relate antibiotic biosynthetic pathways to the major groups of naturally derived antibiotics.
 - Apply basic pharmacognostic knowledge to recognize the medicinal importance of natural products used in phytotherapy.
 - Differentiate between phytotherapeutic products and nutraceutical products based on their characteristics and uses.
- Interpret basic scientific information related to the therapeutic uses of alkaloids, antibiotics, medicinal plants, and nutraceuticals.

Teaching and Learning Methods

- Theoretical lectures
- HomeWorks
- Field visits to herbal centers in addition to the botanical garden
- Demonstrative videos
- Interactive Q/A

3. Evaluation Methods

- Semi-semester exams and final exams.
- Oral exams
- Classroom activities and assignments

4. Thinking Skills

- The use of modern methods in the preparation of lectures and presentations in the form of PowerPoint
- Demonstrative videos
- The use of group discussion to understand the article
- Giving homework that stimulates and activates thinking and linking information
- Open discussion (Q/A)

5. General and Transferable Skills

- The student should be able to employ the knowledge he has received.
- Giving confidence to the student through the class's open discussion.
- The student should be able to embody what he has acquired in professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Alkaloids: Introduction, chemical classification , Physical and chemical properties, pharmacological effect	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	3	Knowledge	Pyridine and piperidine alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	3	Knowledge	Tropane alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	3	Knowledge	Imidazole alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments Group discussion, oral exams, and assignments
5	3	Knowledge	Quinoline alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	3	Knowledge	Iso-quinoline alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Indole alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	3	Knowledge	Purine alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	3	Knowledge	Alkaloidal amines and steroidal alkaloids	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10	2	Knowledge	Antibiotics: Natural sources; biosynthetic pathways, isolation and purification.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11	2	Knowledge	Antibiotics derived from amino acids metabolisms	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12	1	Knowledge	Antibiotics derived from acetate metabolisms	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
13	1	Knowledge	Antibiotics derived from carbohydrate metabolisms	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	6	Knowledge	Phytotherapy: Introduction, principles, medicinal plants in selected health care systems. Important natural products used in pharmacies & medicine	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
15	6	Knowledge	Nutraceutical: any substance (food or part of a food provides medical or health benefits including the prevention and treatment of disease	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
Total	45				

12. Infrastructure	
Required Readings:	References: - Fundamentals of pharmacognosy and phytotherapy by Michael Heinrich....3rd edition, 2018. - Rational phytotherapy: A physicians' guide to herbal medicine, 3rd edition - Handbook of nutraceuticals and functional foods by Robert E. Wildman, 2nd edition. - Pharmacognosy by Tyler, 9th edition. - Trease & Evans Pharmacognosy 16th edition 2009. - Phytomedicine: A Treasure of pharmacologically active products from plants by Bhat R.A. 2021. - Quick Access: Professional Guide to Conditions, Herbs & Supplements. Published by Thieme New York, 2000.1st edition
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.nccih.nih.gov/health/providers/digest/herb-drug-interactions https://www.stonybrookmedicine.edu/sites/default/files/herbal_medicines_interactions-1.pdf https://reference.medscape.com/drug-interactionchecker
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing field trips to herbal shops, and activities in the medical Garden

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Assistant Professor Dr. Suhad Humadi



Course Description for Public Health 1st semester (Theoretical)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. College	Pharmacy
3. Course Name / Code	Title of the course: Public Health Course number: 415
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester	First Semester(2025-2026)
7. Total Number of Study Hours	30 Hours
8. Date of preparing this description	2025-2026
9. Course Objectives: Objectives: This course enables the students to understand the principles of public health and the art of preventing disease, promoting health and prolonging life, through organized effort of society.	

10.Learning Outcomes :Teaching and Learning Methods and Evaluation

A.Teaching and Learning Methods

A. Subject-Specific Skills

Pharmacy practice: common sense knowledge of the community and hospital pharmacy ethics and practice basic information

- 1.Discussion and dialogue method.
- 2.Troubleshooting and treatment.
- 3.Seminars

B. Thinking Skills

1. Encourage students to find problems related to the subject of study
2. Encourage students to find solutions to those problems
3. Conduct experiments individually and collectively.
4. Compare results and troubleshoot

C. General and Transferable Skills

- 1.The student should be able to think logically to solve problems
2. The student should acquire manual work skills.
- 3.The student should be able to develop and innovate skills.

B. Evaluation Methods

A Submit weekly reports and work in the laboratory.

B. Oral assessment and practical performance evaluation.

C. Written tests

D. Group practical project

11. Course Description

Weeks	Hours	Unit Name / Course or Topic	Required Learning Outcomes	Learning Methods	Evaluation Method
1	2	Introduction in Public Health	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
2	2	General Items in Public Health	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
3	2	ICD10	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
4	2	Predisposition Factors for Infectious Disease	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
5	2	The Goals of Studying Public Health	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
6	2	Gastrointestinal Diseases	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
7	2	Skin Diseases	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
8	2	Respiratory Diseases	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
9	2	Cardiovascular Diseases	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
10	2	Factors prevent and control infectious Diseases	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
11	2	Immunity	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
12	2	Innate and Adaptive Immunity	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
13	2	T and B Cells and Complements	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
14	2	Autoimmune Disease	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
15	2	Immune Deficiency Diseases	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions

11.Infrastructure	
Required Readings:	References: Reference text: <i>Lucas AO, Gilles HM, (Eds), Short Textbook of Public Health Medicine for the Tropic, (4th Ed).</i>
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

12.Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Dr. Balsam Ghazi Hassan AL-Kassar

Al Zahrawi University-College of Pharmacy-Department of Pharmaceutics

Course Description for Biopharmacy

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Biopharmacy
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester, Fourth Stage (2025-2026)
7. Total Number of Study Hours	45 hours total-3 hours per week for each group
8. Date of preparing this description	2025-2026
9. Course Objectives: 1. Understanding Drug' Behavior in the body: Through studying the behavior of various drugs on inside the body, students learn about dose impacts, absorption rates, and duration of drug action 2. Calculation of Pharmacokinetics parameters: The objective is to find mathematical equations that describe drugs behavior inside the body using different routes of administration. 3. Knowledge of different factors affect drug absorption.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- A.1: Understanding and Determining drugs kinetics due to different elimination route.
- A.2: Understanding different factors affect drug pharmacokinetics.
- A.3: Understanding pharmacodynamic response of drugs.

B. Subject-Specific Skills

- B.1: Enable students to solve mathematical equations related to Biopharmacy.
- B.2: Enable students to read and interpret plots related to Biopharmacy.
- B.3: Enable students to be independent learners.

Teaching and Learning Methods

- 1. Lectures.
- 2. Teamwork.
- 3. Quizzes and exams.

C. Evaluation Methods

- 1. Mid-term and final exams.
- 2. Written and oral tests.
- 3. Seminars and posters.

D. Thinking Skills

- D1. Encourage students to think correctly through analysis of principles of Biopharmacy.
- D2. Enable students to correctly handle Pharmacokinetics data.

E. General and Transferable Skills

- D1. Encourage students to give research articles.
- D 2. Encourage students to discuss scientific report.
- D 3. Learn skills necessary to handle data.
- D 4. Learn leadership skills.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Intro to Pharmaceutical Sciences and Biopharmacy	Blackboard and Screen Presentations	Daily exam and oral questions
2	3	Knowledge	Math Review and Pharmacokinetics Jargon	Blackboard and Screen Presentations	Daily exam and oral questions
3	3	Knowledge	Physiologic Factors Related to Drug Absorption	Blackboard and Screen Presentations	Daily exam and oral questions
4	3	Knowledge	Factors Affecting Oral Drug Absorption	Blackboard and Screen Presentations	Daily exam and oral questions
5	3	Knowledge	IV Bolus One Compartment	Blackboard and Screen Presentations	Daily exam and oral questions
6	3	Knowledge	IV Bolus Multicompartment	Blackboard and Screen Presentations	Daily exam and oral questions
7	3	Knowledge	PK of Drug Absorption	Blackboard and Screen Presentations	Daily exam and oral questions
8	3	Knowledge	PK of Drug Distribution and Protein Binding	Blackboard and Screen Presentations	Daily exam and oral questions
9	3	Knowledge	Drug elimination and clearance	Blackboard and Screen Presentations	Daily exam and oral questions
10	3	Knowledge	Drug elimination and clearance	Blackboard and Screen Presentations	Daily exam and oral questions
11	3	Knowledge	PK of IV Infusion	Blackboard and Screen Presentations	Daily exam and oral questions
12	3	Knowledge	Bioavailability and Bioequivalence	Blackboard and Screen Presentations	Daily exam and oral questions

13	3	Knowledge	Non-linear pharmacokinetics	Blackboard and Screen Presentations	Daily exam and oral questions
14	3	Knowledge	Multiple-Dose Regimens	Blackboard and Screen Presentations	Daily exam and oral questions
15	3	Knowledge	Dosage adjustment in renal diseases	Blackboard and Screen Presentations	Daily exam and oral questions

12. Infrastructure	
Required Readings:	References: Applied Biopharmaceutics and Pharmacokinetics, 6 th ed. Shargel.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	Admission according to the central plan
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Ammar Sahib Abdulameer, PhD

Course Description Template for Clinical pharmacy I fourth Year First Semester (Theoretical)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Clinical pharmacy I Theoretical PPCG 32
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester / fourth year
7. Total Number of Study Hours	2 hours weekly
8. Date of preparing this description	2025-2026

Course Objectives: The course aims to develop an understanding of the principles of clinical pharmacy by focusing on the safe, effective, and rational use of medications in patient care. It emphasizes the application of pharmacotherapeutic knowledge to prevent, identify, and resolve drug-related problems while considering patient-specific factors such as age, disease state, organ function, and concurrent therapies. Additionally, the course highlights the role of the clinical pharmacist in optimizing treatment outcomes through evidence-based decision making, medication monitoring, patient counseling, and interprofessional collaboration, supported by practical examples and clinical case scenarios commonly encountered in healthcare settings.

9. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

- 1** Explain the fundamental principles of clinical pharmacy and the role of the clinical pharmacist in promoting safe, effective, and rational medication use.
- 2** Describe the pharmacotherapy of common diseases and classify major therapeutic drug classes based on their mechanisms of action, indications, contraindications, and adverse effects.
- 3** Apply principles of patient assessment, medication review, and evidence-based therapeutics to identify, prevent, and resolve drug-related problems.
- 4** Demonstrate understanding of clinical pharmacy services including patient counseling, medication monitoring, dosage adjustment, drug interaction management, and pharmaceutical care planning.

1. Subject-Specific Skills

- 1** Developing proficiency in patient medication history taking, prescription review, and identification of drug-related problems.
- 2** Acquiring skills in designing, monitoring, and optimizing pharmacotherapeutic regimens for common disease states.
- 3** Gaining the ability to assess laboratory data, clinical parameters, and patient responses to evaluate medication efficacy and safety.
- 4** Developing skills in recognizing and managing drug interactions, adverse drug reactions, contraindications, and medication counseling needs.

Teaching and Learning Methods

- 1** Theoretical lectures.
- 2** Scientific posters and interactive classroom activities.
- 3** Field visits to community pharmacies.
- 4** Homework assignments (coursework).

2. Evaluation Methods

- 1** Midterm and final examinations.
- 2** Oral examinations.
- 3** Classroom activities and homework assignments.

3. Thinking Skills

- 1** Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- 2** Applying group discussion techniques to enhance understanding of the subject matter.
- 3** Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- 1** Enabling students to apply the knowledge they have acquired in practical settings.
- 2** Enhancing students' self-confidence through participation in discussions and seminars.
- 3** Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Introduction to community pharmacy.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	2	Knowledge	Respiratory problems: Cough & Common cold.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	2	Knowledge	Respiratory problems: Allergic rhinitis, Otitis media, Laryngitis & Pharyngitis.	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	2	Knowledge	G.I.T problems: Diarrhea, Constipation, Heart burn.	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5	2	Knowledge	G.I.T problems: Indigestion, IBS and Hemorrhoids.	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	2	Knowledge	Pediatric care practice: Oral thrush, pinworms and head lice.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Skin conditions: Acne, Scabies, Psoriasis, Hair loss.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	2	Knowledge	Skin conditions: Fungal infection, Eczema and Dermatitis, Dandruff, Cold sore, Corns and Callus.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	2	Knowledge	Women's health care: Cystitis and vaginal thrush, primary dysmenorrhea and Premenstrual syndrome.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10	2	Knowledge	CNS related problems: Headache, Insomnia, Motion sickness, Nausea and vomiting.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11	2	Knowledge	Eye & ENT problems	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
12	2	Knowledge	Oral hygiene, mouth ulcer.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

13	2	Knowledge	Obesity and body weight control.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	2	Knowledge	Pain and musculoskeletal disorders.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments Group discussion, oral exams, and assignments
15	2	Knowledge	Nicotine replacement therapy (NRT).	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
16	2	Knowledge	Dietary supplements.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
17	2	Knowledge	An update in reclassification of OTC drugs (simvastatin, tamsulosin & azithromycin).	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
18	2	Knowledge	Medication adherence and errors.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12. Infrastructure	
Required Readings:	References: - Community Pharmacy Handbook 1st Edition Jon Waterfield - Community Pharmacy, 6e, 2026. - Symptoms in pharmacy 6th - symptoms in the pharmacy a guide to the management of common illnesses and disease prevention
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.fip.org/fip-education
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Field visits to community pharmacies

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Assistant lecturer Dr. Muntadher Hameed Thwaini

Course Description Template for Pharmaceutical Chemistry, fourth Year First Semester

Performance Review of Higher Education Institution ((Academic Program Review)) (Theoretical)

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmaceutical Organic Chemistry II: Theoretical PPCS 47
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First semester / Fourth year
7. Total Number of Study Hours	6 hours weekly
8. Date of preparing this description	2025-2026
1) Course Objectives: This course offers an in-depth exploration of the pharmaceutical chemistry and pharmacology of major drug classes that target key physiological systems. The curriculum focuses on the relationship between chemical structure and biological activity (SAR), the mechanism of action at specific receptors, and the therapeutic applications of these agents in treating various diseases.	
9. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

Demonstrate deep knowledge of the chemistry, synthesis, and SAR of specific therapeutic classes, such as: **Autonomic Nervous System Drugs: Adrenergic and Cholinergic agents. Cardiovascular Drugs: ACE inhibitors, Beta-blockers, and Calcium channel blockers' Drugs: Antipsychotics, Anticonvulsants, and Sedative-hypnotics. Analgesics: Opioid and Non-steroidal anti-inflammatory drugs (NSAIDs).**

1. Subject-Specific Skills

These skills involve critical thinking and problem-solving within the context of drug chemistry:

- **SAR Analysis:** Analyze the **Structure-Activity Relationship (SAR)** of a drug to predict how chemical modifications (e.g., adding a fluorine atom or a methyl group) will alter its potency or toxicity.
- **Metabolic Prediction:** Predict the most likely **metabolic pathways** and metabolites of a drug molecule based on its functional groups to identify potential "toxic metabolites."
- **Rational Drug Design:** Design a **Prodrug** strategy for a specific molecule to overcome physical barriers, such as poor water solubility or low gastric stability.

Teaching and Learning Methods

1. Theoretical lectures.
2. Scientific posters and interactive classroom activities.
3. Homework assignments (coursework).

2. Evaluation Methods

- 1 Midterm and final examinations.
- 2 Oral examinations.
- 3 Classroom activities and homework assignments.

3. Thinking Skills

- 1 Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- 2 Applying group discussion techniques to enhance understanding of the subject matter.
- 3 Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- 1 Enabling students to apply the knowledge they have acquired in practical settings.
- 2 Enhancing students' self-confidence through participation in discussions and seminars.
- 3 Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Cholinergic agents , cholinergic receptors and their subtype	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2-3	5	Knowledge	Cholinergic agonists; stereochemistry and SAR; products; cholinesterase inhibitors	and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	5	Knowledge	Cholinergic blocking agents; SAR; solanaceous alkaloid and analogues; synthetic cholinergic blocking agents and products; ganglionic blocking agents (neuromuscular blocking agents.)	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5-7	9	Knowledge	Adrenergic agents (adrenergic neurotransmitters), adrenergic receptor; drugs affecting adrenergic neurotransmission; sympathomimetic agents, adrenergic receptor antagonists	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8-9	5	Knowledge	CNS depressant; benzodiazepines and related compounds; barbiturate; CNS depressant with skeletal muscle relaxant properties; antipsychotics; anticonvulsants CNS stimulants	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10-11	5	Knowledge	Drugs affecting the Renin Angiotensin pathway and calcium blockers, vasodilators.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
12-13	7	Knowledge	Structure–activity relationships at H ₁ receptors ;first-generation antihistamine classes ; second-generation antihistamines; recent antihistamine developments: the“ dual-acting” antihistamines;	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

			histamine H ₂ antagonists: structural derivation of the “H ₂ antagonists”		
14-15	5	Knowledge	Cyclooxygenases; Therapeutic Classifications; SAR.	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12. Infrastructure	
Required Readings:	References: 1) Foye's Principles of Medicinal Chemistry Roche PhD (Author), S. William PhD Zito 7 th Edition PhD by Victoria PhD F. , College of Pharmacy, Houston Uni, Texas, USA. 2) Wilson and Gisvolds textbook of organic medicinal and pharmaceutical chemistry, John M. B.; John H.B. (twelfth edition). 3) An Introduction to Medicinal Chemistry 7th Edition by Graham L. Patrick, University of the West of Scotland, UK
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Web sites for pharmaceutical molecules
13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Lecturer assistant Ahmed M. Motlk

Name of the Instructor:

Lecturer assistant Ahmed M. Motlk

Academic Program Description Form

Reviewing the performance of the higher educational institution ((academic program review))

Course description

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmacology II Theory (PPCL 44)
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester 2025-2026
7. Total Number of Study Hours	4 hours weekly
8. Date of preparing this description	2025-2026
9. Course Objectives :Knowing the drugs, their names, mechanism of action, their clinical uses, as well as knowing the side effects on patients and drug-drug interactions, drug food interaction and drug disease interaction.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

1- The student should be familiar with the drugs and their names

A-2- The student should be familiar with the clinical uses of drugs

A-3- The student should be familiar with how drugs work inside the body

A-4- The student should be familiar with the side effects of drugs

A-5- The student should be familiar with drug interactions with other drugs

A-6- Preparing trained and qualified cadres to work in government health institutions

A-7- Preparing trained and qualified cadres to work in pharmaceutical institutions

B. Subject-Specific Skills

B 1. Teaching skill in the subject of medicine

B 2. The student should have the ability to infer and link clinical information together

B 3. The student should have the ability to link medicines to practical reality in pharmacies and hospitals

Teaching and Learning Methods

1. Thinking and discussion method.
2. Scientific tests used in laboratories.
3. Learning by exploratory lecture.

C. Evaluation Methods

1. Submit weekly reports.
2. Exam grades.
3. Graduation research

D. Thinking Skills

A1. Student-teacher dialogue method.

A2. Preparing weekly reports.

A3. Conducting discussions of the results.

A4. Exploratory thinking.

Teaching and Learning Methods

1. Grades.
2. Discussion and dialogue.
3. Tests.

Evaluation Methods

Grades, research and reports, tests

E. General and Transferable Skills

D 1. The student is able to employ the knowledge he has received.

D 2. The student is able to master the teaching and learning profession.

D 3. The student is able to embody what he has acquired in professional development.

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Gastrointestinal Drugs	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	GERD & VOMITIN G	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Laxatives and Therapy for Constipation	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	The antipsychotic drugs	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drugs for Neurodegenerative Diseases	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antidepressants	Knowledge	3	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Opioids	Knowledge	3	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Anxiolytic and Hypnotic Drug	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antiepileptic Drugs	Knowledge	3	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Anesthetic drugs GA & LA	Knowledge	3	10
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	CNS stimulants	Knowledge	2	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antihypertensives	Knowledge	3	12
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antianginal Drugs	Knowledge	2	13

Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	The treatment of heart failure (HF)	Knowledge	3	14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antiarrhythmic drugs	Knowledge	3	15

11. Infrastructure	
Required Readings:	References: Lippincott Illustrated Reviews Pharmacology 7th Ed.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites https://youtu.be/4gYSkghN8EY?si=0_PuR3rjg-JkWm-o
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

12. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

Mahmood Jasem Jawad

Academic Program Description Form

Reviewing the performance of the higher educational institution ((academic program review))

Course description

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmacology III Theory PPCL 45
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester 2025-2026
7. Total Number of Study Hours	4 hours weekly
8. Date of preparing this description	2025-2026
9. Course Objectives :Knowing the drugs, their names, mechanism of action, their clinical uses, as well as knowing the side effects on patients and drug-drug interactions, drug food interaction and drug disease interaction.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

1- The student should be familiar with the drugs and their names

A-2- The student should be familiar with the clinical uses of drugs

A-3- The student should be familiar with how drugs work inside the body

A-4- The student should be familiar with the side effects of drugs

A-5- The student should be familiar with drug interactions with other drugs

A-6- Preparing trained and qualified cadres to work in government health institutions

A-7- Preparing trained and qualified cadres to work in pharmaceutical institutions

B. Subject-Specific Skills

B 1. Teaching skill in the subject of medicine

B 2. The student should have the ability to infer and link clinical information together

B 3. The student should have the ability to link medicines to practical reality in pharmacies and hospitals

Teaching and Learning Methods

1. Thinking and discussion method.
2. Scientific tests used in laboratories.
3. Learning by exploratory lecture.

C. Evaluation Methods

1. Submit weekly reports.
2. Exam grades.
3. Graduation research

D. Thinking Skills

A1. Student-teacher dialogue method.

A2. Preparing weekly reports.

A3. Conducting discussions of the results.

A4. Exploratory thinking.

Teaching and Learning Methods

1. Grades.
2. Discussion and dialogue.
3. Tests.

Evaluation Methods

Grades, research and reports, tests

E. General and Transferable Skills

D 1. The student is able to employ the knowledge he has received.

D 2. The student is able to master the teaching and learning profession.

D 3. The student is able to embody what he has acquired in professional development.

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	The Pituitary Gland and Hypothalamus Hormones	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	The Thyroid Gland Hormones	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Estrogens and Androgens Hormones	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Progestogens and Contraceptives	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Adrenal Hormones	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drugs Employed in the Treatment of Gout	Knowledge	2	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)	Knowledge	2	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drugs Employed in the Treatment of Osteoporosis	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Anti-Rheumatic Drugs (Traditional Disease-Modifying Antirheumatic Agents and Biologic Therapies in R. Arthritis)	Knowledge	2	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Insulin and Oral Hypoglycemic Drugs	Knowledge	2	10
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Principles of Cancer Chemotherapy	Knowledge	2	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Anticancer Drugs	Knowledge	4	12

Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drugs for Disorders of the Respiratory System			13
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drugs affecting the blood.			14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antihyperlipidemic drugs			15

12. Infrastructure	
Required Readings:	References: Lippincott Illustrated Reviews Pharmacology 7th Ed.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites https://youtu.be/N0ri0gAIXwM?si=_01Mfh29YHog457C
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

11. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:
Mahmood Jasem Jawad

Course Description Template for Clinical pharmacy II fourth Year second Semester (Theoretical)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Clinical pharmacy II Theoretical PPCG 32
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester / fourth year
7. Total Number of Study Hours	2 hours weekly
8. Date of preparing this description	2025-2026
Course Objectives: The course aims to develop an understanding of the principles of clinical pharmacy by focusing on the safe, effective, and rational use of medications in patient care. It emphasizes the application of pharmacotherapeutic knowledge to prevent, identify, and resolve drug-related problems while considering patient-specific factors such as age, disease state, organ function, and concurrent therapies. Additionally, the course highlights the role of the clinical pharmacist in optimizing treatment outcomes through evidence-based decision making, medication monitoring, patient counseling, and interprofessional collaboration, supported by practical examples and clinical case scenarios commonly encountered in healthcare settings.	
9. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1** Explain the fundamental principles of clinical pharmacy and the role of the clinical pharmacist in promoting safe, effective, and rational medication use.
- 2** Describe the pharmacotherapy of common diseases and classify major therapeutic drug classes based on their mechanisms of action, indications, contraindications, and adverse effects.
- 3** Apply principles of patient assessment, medication review, and evidence-based therapeutics to identify, prevent, and resolve drug-related problems.
- 4** Demonstrate understanding of clinical pharmacy services including patient counseling, medication monitoring, dosage adjustment, drug interaction management, and pharmaceutical care planning.

1. Subject-Specific Skills

- 1** Developing proficiency in patient medication history taking, prescription review, and identification of drug-related problems.
- 2** Acquiring skills in designing, monitoring, and optimizing pharmacotherapeutic regimens for common disease states.
- 3** Gaining the ability to assess laboratory data, clinical parameters, and patient responses to evaluate medication efficacy and safety.
- 4** Developing skills in recognizing and managing drug interactions, adverse drug reactions, contraindications, and medication counseling needs.

Teaching and Learning Methods

- 1** Theoretical lectures.
- 2** Scientific posters and interactive classroom activities.
- 3** Field visits to community pharmacies.
- 4** Homework assignments (coursework).

2. Evaluation Methods

- 1** Midterm and final examinations.
- 2** Oral examinations.
- 3** Classroom activities and homework assignments.

3. Thinking Skills

- 1** Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- 2** Applying group discussion techniques to enhance understanding of the subject matter.
- 3** Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- 1** Enabling students to apply the knowledge they have acquired in practical settings.
- 2** Enhancing students' self-confidence through participation in discussions and seminars.
- 3** Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Gout and Hyperuricemia	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
2	2	Knowledge	Rheumatoid Arthritis	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
3	2	Knowledge	Osteoporosis	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
4	2	Knowledge	Osteoarthritis	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5	2	Knowledge	Hypertension	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
6	2	Knowledge	Ischemic Heart Diseases	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
7	3	Knowledge	Heart Failure	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
8	2	Knowledge	Asthma	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
9	2	Knowledge	COPD	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
10	2	Knowledge	Diabetes Mellitus part I	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11	2	Knowledge	Diabetes Mellitus part II	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
12	2	Knowledge	Peptic Ulcer Disease	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

13	2	Knowledge	Tuberculosis	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14	2	Knowledge	Infective Meningitis	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments Group discussion, oral exams, and assignments
15	2	Knowledge	Urinary Tract Infection	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
16	2	Knowledge	Anemia	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

12. Infrastructure	
Required Readings:	References: • DiPiro's Pharmacotherapy Handbook 12E 2023 ALGrawany • CLINICAL PHARMACY 2025-2026
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.fip.org/fip-education
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: • Field visits to community pharmacies

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan.

Name of the Instructor:

Assistant lecturer Dr. Muntadher Hameed Thwaini

Al-Zahrawi University

College of Pharmacy



**Higher Education Institution Performance Review
(Academic Program Review)**

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy College
3. Course Name / Code	Communication Skills – Theory PCPC 44
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester – 4th Grade
7. Total Number of Study Hours	30 hours (2 hours per week)
8. Date of preparing this description	2025-2026
9. Course Objectives : Introduce pharmacy students to the fundamental concepts of communication skills and highlight their importance in pharmacy practice. The student should be able to define communication skills in healthcare settings, describe the importance of communication skills in pharmacy practice, and identify different types of communication used by pharmacists.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

Knowledge and Understanding 1 - Define communication and communication skills in healthcare settings. 2 - Describe the importance of communication skills in pharmacy practice
Subject-Specific Skills 1 - Identify different types of communication used by pharmacists. 2 - Recognize communication-related problems that may affect patient safety.
Teaching and Learning Methods
1. Thinking and discussion method. 2. Scientific tests. 3. Learning by exploratory lecture.
Evaluation Methods
1. Submit weekly reports. 2. Exam grades. 3. Graduation research
Thinking Skills 1. Student-teacher dialogue method. 2. Preparing weekly reports. 3. Conducting discussions of the results. 4. Exploratory thinking.
Teaching and Learning Methods
1. Grades. 2. Discussion and dialogue. 3. Tests.
Evaluation Methods Grades, research and reports, tests
General and Transferable Skills 1. The student is able to employ the knowledge he has received. 2. The student is able to master the teaching and learning profession. 3. The student is able to embody what he has acquired in professional development.

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Patient-Centered Communication in Pharmacy Practice	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Principles of Effective Communication Skills	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Seven Stars Pharmacists	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Elements of Interpersonal Communication	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Nonverbal type of communication	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Barriers to communication	Knowledge	2	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Listening and empathic responding during communication	Knowledge	2	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Assertiveness. Interviewing and assessment	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Helping patients to manage therapeutic regimens	Knowledge	2	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Patient counseling; counseling check list; point-by-point discussion	Knowledge	2	10
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	counseling scenario. Medication safety and communication skills	Knowledge	2	11
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Strategies to meet specific needs	Knowledge	2	12
Daily Quiz and Verbal Questions	Using the whiteboard and the projector	Communicating with children and elderly about medications	Knowledge	2	13

	screen				
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Communication skills and inter-professional collaboration. Electronic communication in healthcare	Knowledge	2	14
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Ethical Behavior When Communicating with Patients	Knowledge	2	15

Infrastructure	
Required Readings:	References: Beardsley, R. S., Kimberlin, C. L., & Tindall, W. N. (2019). Communication Skills in Pharmacy Practice: A Practical Guide for Students and Practitioners. 7th Edition. Lippincott Williams & Wilkins.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://www.scribd.com/presentation/885959760/Communication-skill-for-pharmacy-practice https://www.youtube.com/watch?v=agHgdXfjato
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

م.م. علي عبد الواحد محمد علي البير



Course Description for General Toxicology Second Semester (Theory)

Performance Review of Higher Education Institution ((Academic Program Review))

Course Description:

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the program description

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	College of Pharmacy
3. Course Name / Code	General Toxicology (Theory)
4. Programs in which it is included	Bachelor of Science in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second Semester/forth stage / 2025 – 2026
7. Total Number of Study Hours	2 hours per week
8. Date of preparing this description	7/4/2026
9. Course Objectives:	
	• Study the principle of exposure to different chemical and environmental agents, their sources, mechanisms of toxicity, and the dangers they pose to humans. • Enable students to understand the necessary measures to protect living organisms from suspected toxic hazards.
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- A.1: The student should be able to identify the different mechanisms of poisoning that occur in the human body.
- A.2: The student should describe the relationship between the toxic substance and the human body.
- A.3: The student should recognize the degree and severity of toxicity and the lethal dose (LD50).
- A.4: The student should explain the kinetics and dynamics of the toxic substance.
- A.5: The student should distinguish between the different methods of eliminating the toxic substance.
- A.6: The student should deduce the outcome of using the antidote (Anti-dote)

B. Subject-Specific Skills

- B.1: Teaching skills in the field of toxicology.
- B.2: The ability to explain the differences between toxins and various drugs in both written and oral forms.
- B.3: The ability to link natural causes to their effects.

Teaching and Learning Methods

- Discussion and thinking style.
- Scientific tests used in laboratories.
- Learning through exploratory lectures

C. Evaluation Methods

- Submission of weekly reports.
- Examination grades.
- Discussion sessions and presentations.

D. Thinking Skills

- D.1: Dialogue style between the student and the professor.
- D.2: Preparation of weekly reports.
- D.3: Conducting discussions of results.
- D.4: Exploratory thinking.

Teaching and Learning Methods

Grades.
Discussion and dialogue.
Examinations.

Evaluation Methods

1. Grades, research, and reports
2. Exams

E. General and Transferable Skills

- E-1: The ability to apply acquired knowledge.
- E-2: The ability to master teaching and learning skills.
- E-3: The ability to reflect gained knowledge into professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Knowledge	Introduction: General considerations, host factors, environmental factors with toxic effects	Blackboard and Projector Usage	Daily Exam and Oral Questions
2	2	Knowledge	Mechanism of toxicity	Blackboard and Projector Usage	Daily Exam and Oral Questions
3	2	Knowledge	Carcinogenesis and Mutagenesis: part 1	Blackboard and Projector Usage	Daily Exam and Oral Questions
4	2	Knowledge	Carcinogenesis and Mutagenesis: part 2	Blackboard and Projector Usage	Daily Exam and Oral Questions
5	2	Knowledge	Toxic responses of the liver: part 1	Blackboard and Projector Usage	Daily Exam and Oral Questions
6	2	Knowledge	Toxic responses of the liver: part 2	Blackboard and Projector Usage	Daily Exam and Oral Questions
7	2	Knowledge	Toxic responses of the kidney: part 1	Blackboard and Projector Usage	Daily Exam and Oral Questions
8	2	Knowledge	Toxic responses of the kidney: part 2	Blackboard and Projector Usage	Daily Exam and Oral Questions
9	2	Knowledge	Toxic responses of the Respiratory system	Blackboard and Projector Usage	Daily Exam and Oral Questions
10	2	Knowledge	Toxic responses of the Heart and vascular system: part 1	Blackboard and Projector Usage	Daily Exam and Oral Questions
11	2	Knowledge	Toxic responses of the Heart and vascular system: part 2	Blackboard and Projector Usage	Daily Exam and Oral Questions
12	2	Knowledge	Toxic effects of Metals: part 1	Blackboard and Projector Usage	Daily Exam and Oral Questions

13	2	Knowledge	Toxic effects of Metals: part 2	Blackboard and Projector Usage	Daily Exam and Oral Questions
14	2	Knowledge	Toxic effects of Pesticides: part 1	Blackboard and Projector Usage	Daily Exam and Oral Questions
15	2	Knowledge	Toxic effects of Pesticides: part 2	Blackboard and Projector Usage	Daily Exam and Oral Questions

12. Infrastructure	
Required Readings:	References: Casarett and Doull Toxicology: The Basic Science of Poisons; Latest Edition.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: https://chemistry.com.pk/books/casarett-doulls-toxicology-the-basic-science-of-poisons-9e/
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor: Asst. Lec. Mohammed shaheed

Performance review of higher education institution (assessment of the academic program)

وصف المقرر

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University College
2. University Department / Center	Pharmacy Department / Pharmaceuticals Branch
3. Course Name / Code	Industrial Pharmacy I / PPCT 48
4. Programs in which it is included	Bachelor of pharmacy
5. Available Forms of Attendance	Daily attendance
6. Semester / Year	2024-2025 / second course / fourth stage
7. Total Number of Study Hours	3 hours weekly
8. Date of preparing this description	2024-2025
9. Course Objectives:	
Students were taught the necessary steps before preparing pharmaceutical forms, including grinding, mixing, drying and filtration, in addition to sterilization to achieve appropriate treatments for pharmaceutical forms. They also learned the principles of preparing sterile preparations, methods of administration, composition and quality control.	
1. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

1. To be able to know different principles of pharmaceutical processing, mixing solids, liquids, mixing mechanisms and devices.
2. To be able to differentiate between different types of mills and application of grinding in pharmacy, in addition to measuring particle size and factors affecting their grinding. Along with a set of grinding techniques.
3. To be able to describe drying, moisture measurement, classification of dryers and drying theories.
4. To gain experience in the requirements of drugs to obtain sterile products along with the approval in development, production, processing and quality control.
5. To provide different solutions for purification of pharmaceutical products by knowing the required means for filtration filters and sterilization processes.

B. Subject-Specific Skills

1. Enabling students to acquire the necessary skills before manufacturing various pharmaceutical preparations.
2. Enabling students to acquire the principles of preparing sterile preparations, methods of administration, composition and quality control.
3. Acquiring the skill of extracting the required information from its approved sources.

Teaching and Learning Methods

1. Using the smart board.
2. Teaching and giving theoretical lectures
3. Educational seminars and posters .3

C. Evaluation Methods

1. Midterm and final exams
2. Oral and written exams
3. Classroom activities and poster .

D. Thinking Skills

1. Thinking skills through translating, analyzing, evaluating and extracting ideas.
2. Extracting the appropriate and necessary processes before manufacturing pharmaceutical products of all kinds .

e. General and Transferable Skills

1. Acquire skill in using the computer
2. Give confidence to the student through presenting scientific research
3. Give confidence to the student through discussing reports
4. Acquire skill in dealing
5. Acquire skill in leadership

10. Course Structure					
Evaluation Method	Learning Methods	Unit Name / Course or Topic	Required Learning Outcomes	Hours	week
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; mixing	Fluid mixing; flow characteristics; mechanisms ;of mixing	3	1
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; mixing	Mixing equipments; batch and continuous mixing; mixer ;selection	3	2
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; mixing	Solid mixing theory and particulate solid variables; .forces and mechanisms	3	3
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; milling	Pharmaceutical application; size measurement methods; theory and energy of comminution	3	4
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; milling	Types of mills; factors ;influencing milling selection of mill techniques; specialized drying methods	3	5
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; drying	Definition of drying; purpose; humidity measurement; ;theory of drying	3	6
Daily and monthly exams and discussion	Using the smart board	Principles of pharmaceutical processing; drying	Drying of solids, and classification of dryer; .specialized drying methods	3	7
Daily and monthly exams and discussion	Using the smart board	Clarification and filtration	Theory; filter media; filter aids; selection of ;drying method	2	8
Daily and monthly exams and discussion	Using the smart board	Clarification and filtration	Non-sterile and sterile operations; integrity testing	2	9
Daily and monthly exams and discussion	Using the smart board	Clarification and filtration	Equipments and systems .(commercial and laboratory)	2	10
Daily and monthly exams and discussion	Using the smart board	Sterilization	Validation of methods; microbial death kinetics	2	11
Daily and monthly exams and discussion	Using the smart board	Sterilization	Methods of sterilization (thermal and non-thermal)	2	12

Daily and monthly exams and discussion	Using the smart board	Sterilization	Mechanisms; evaluation.	2	13
Daily and monthly exams and discussion	Using the smart board	Pharmaceutical dosage forms; sterile products	Development and Formulation	3	14
Daily and monthly exams and discussion	Using the smart board	Pharmaceutical dosage forms; sterile products	Production, processing; quality control	3	15

11. Learning and teaching resources	
Required books	Leon Lachman, "The Theory and practice of industrial pharmacy"
Main References (Sources)	Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3ed Michael E. Aulton (Author). Churchill, Livingstone- Elsevier.

Name of the Instructor: Dr. Firas Ghafil Abbas

Course Description Template for Pharmaceutical Chemistry, Fourth Year second Semester

Performance Review of Higher Education Institution ((Academic Program Review)) (Theoretical)

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected from the student to achieve, demonstrating whether they have made the maximum use of the available learning opportunities. It must be linked to the .program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Pharmaceutical Organic Chemistry III: Theoretical PPCS 48
4. Programs in which it is included	Bachelor of Pharmaceutical Sciences
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	Second semester / Fourth year
7. Total Number of Study Hours	4 hours weekly
8. Date of preparing this description	2025-2026
1) Course Objectives: 1) This course covers the medicinal chemistry and pharmacology of chemotherapeutic drugs. It details the mechanisms of anticancer agents, from traditional antineoplastics to modern biotherapeutics. 2) The curriculum also provides an in-depth analysis of major antibacterial classes (including β -lactams and sulfonamides) and concludes with an overview of antiviral and antifungal agents	
9. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

Demonstrate deep knowledge of the chemistry, synthesis, and SAR of specific therapeutic classes, such as: anti-cancer chemotherapy, anti-bacterial agents, antiviral, and antifungal agents

1. Subject-Specific Skills

These skills involve critical thinking and problem-solving within the context of drug chemistry:

- **SAR Analysis:** Analyze the **Structure-Activity Relationship (SAR)** of a drug to predict how chemical modifications (e.g., adding a fluorine atom or a methyl group) will alter its potency or toxicity.
- **Metabolic Prediction:** Predict the most likely **metabolic pathways** and metabolites of a drug molecule based on its functional groups to identify potential "toxic metabolites."
- **Rational Drug Design:** Design a **Prodrug** strategy for a specific molecule to overcome physical barriers, such as poor water solubility or low gastric stability.

Teaching and Learning Methods

1. Theoretical lectures.
2. Scientific posters and interactive classroom activities.
3. Homework assignments (coursework).

2. Evaluation Methods

- Midterm and final examinations.
- Σ Oral examinations.
- Ξ Classroom activities and homework assignments.

3. Thinking Skills

- Using modern methods to prepare and deliver lectures through PowerPoint presentations.
- Σ Applying group discussion techniques to enhance understanding of the subject matter.
- Ξ Assigning homework and research tasks to develop analytical and critical thinking skills.

4. General and Transferable Skills

- Enabling students to apply the knowledge they have acquired in practical settings.
- Σ Enhancing students' self-confidence through participation in discussions and seminars.
- Ξ Empowering students to apply what they have learned to their professional development.

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1-4	15	Knowledge	Antineoplastic agents : alkylating agents; antimetabolites; antibiotics; plants products ;miscellaneous compounds	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
5-7	5	Knowledge	Hormones and related compounds; Future anti- neoplastic agents; Monoclonal antibodies; Gene therapy of cancer.	and PowerPoint Presentations	Group discussion, oral exams, and assignments
8-10	5	Knowledge	β - lactam antibiotics(penicillins); β - lactamase inhibitors; cephalosporins and monobactams	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
11-12	9	Knowledge	Aminoglycosides and chloramphenicol; tetracyclines; macrolides; Lincomycins and polypeptides	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
13	3	Knowledge	Sulfonamide:chemistry, nomenclature, mechanism of action, resistance, toxicity, side effect, metabolism protein binding, distribution and SAR) products, sulfones	whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
14-15	6	Knowledge	Agents Inhibiting Virus Attachment, Penetration, and Early; Agents Interfering with Viral Nucleic Acid Replication; HIV Protease Inhibitors; HIV Reverse Transcriptase Inhibitors; HIV Integrase Inhibitors; Investigational Antiviral Agents	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments
16-18	6	Knowledge	Biochemical targets for antifungal chemotherapy; Polyene Membrane Disruptors; Ergosterol Biosynthesis Inhibitors; Inhibitors of Cell Wall Biosynthesis— Echinocandins;	Whiteboard and PowerPoint Presentations	Group discussion, oral exams, and assignments

			miscellaneous drugs		
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12. Infrastructure	
Required Readings:	References: 1) Foye's Principles of Medicinal Chemistry Roche PhD (Author), S. William PhD Zito 7 th Edition PhD by Victoria PhD F. , College of Pharmacy, Houston Uni, Texas, USA. 2) Wilson and Gisvolds textbook of organic medicinal and pharmaceutical chemistry, John M. B.; John H.B. (twelfth edition). 3) An Introduction to Medicinal Chemistry 7th Edition by Graham L. Patrick, University of the West of Scotland, UK
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Web sites for pharmaceutical molecules
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: none

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	

Name of the Instructor:

Lecturer assistant Ahmed M. Motlk

Course Description

Organic Pharmaceutical Chemistry IV

Fifth Year Class – First Semester

• Educational Institution	Ministry of Higher Education and Scientific Research
• University Department / Center	Al- Zahrawi University College/ pharmacy college
• Course Name / Code	Organic Pharm.Chem.IV, PPCS 59
• Programs in which it is included	Bachelor of Pharmacy
• Available Forms of Attendance	Daily
• Semester / Year	First course-2025/2026
• Total Number of Study Hours	30 hours
• Date of preparing this description	2025-2026
Course Objectives: To give the students knowledge and experience in pro-drug and hormones as part of their medicinal and pharmaceutical field. It includes classification, synthesis, biotransformation and or formulation of certain drugs to improve their action as well as to avoid some of side effects.	
Learning Outcomes, Teaching and Learning Methods, and Evaluation	

- **Knowledge and Understanding: Basic concepts of pro-drugs to be used as a guide in drug design and formulation. Principles of drug delivery systems, development, synthesis and analysis Basic concepts of drug targeting to release the drug to the basic and specific site of action to minimize the side effects.**

- **Subject-Specific Skills:** Get experience in drug design programs such as docking and molecular dynamics. Construction of combinatorial chemistry libraries and high experience in drug encoding systems.

Teaching and Learning Methods: using white board and projector screen

- **Evaluation Methods:** Periodic exams, reports, seminars, routine homework, final exams.

- **Thinking Skills:** Practical workshops, homework, exams

Teaching and Learning Methods: using white board and projector screen. Lectures to distinct students to textbooks, notes and on-line material. Laboratory practice. Assignments and research done and presented by the students in seminars.

Evaluation Methods: Periodic exams, seminars, and reports

e. General and Transferable Skills: Communicate clearly by verbal and written means. Re and evaluate information from different sources to improve professional competencies. Wo effectively in a team. Use numeracy, calculation and statistical methods as well as informat technology tools. Practice independent learning needed for continuous professional develop Demonstrate creativity and time management abilities. Implement writing and presentatio skills. Demonstrate critical thinking, problem solving and decision making abilities.

• Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Lecture	Pro-drugs concepts, covalent	Lecture	Quizzes and reports
2	2	Lecture	covalent bonds, types of pro-drugs	Lecture	Quizzes and reports
3	2	Lecture	Chemical delivery	Lecture	Quizzes and reports
4	2	Lecture	systems, polymeric drugs	Lecture	Quizzes and reports
5	2	Lecture	Drug targeting	Lecture	Quizzes and reports
6-7	4	Lecture	Drug targeting II Active groups	Lecture	Quizzes and reports
8-9	4	Lecture	Combinatorial chemistry	Lecture	Quizzes and reports
10	2	Lecture	Combinatorial chemistry II SAR concept	Lecture	Quizzes and reports
11-13	6	Lecture	Isolation, purification, detection	Lecture	Quizzes and reports
14-15	4	Lecture	encoding combinatorial libraries	Lecture	Quizzes and reports

• Infrastructure	
Required Readings:	References: Wilson and Gisvold textbook of organic medicinal and pharmaceutical chemistry
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites: Molecules journal, Journal of medicinal chemistry.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates: Distance education and electronic lectures

• Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	120
Maximum Number of Students	Admission exceeds the capacity plan: 140

Name of the Instructor: Lecturer Assistant: Ahmed M.Motlk

Course Description Template for Clinical Chemistry Fifth Year First Semester (Theoretical)

Higher Education Institution Performance Review ((Academic Program Review))

Course Description

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description

1. Educational Institution	Ministry of Higher Education and Scientific Research / Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Clinical Chemistry Theoretical / PCLS510
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily attendance-
6. Semester / Year	First Semester / Fifth year
7. Total Number of Study Hours	3 hours per week
8. Date of preparing this description	2025-2026
9. Course Objectives: In addition to introducing the student to more advanced topics in clinical chemistry, this course will provide the student with the clinical and practical skills and knowledge necessary to perform and interpret clinical laboratory tests in the clinical chemistry laboratory departments. These topics include evaluation of liver function, kidney function, some ion metabolism processes, evaluation of acid-base disorders, clinical endocrinology, and other important topics in clinical chemistry.	
10- Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

- 1- Lectures.
- 2- External resources via Classroom
- 3- Seminars.
- 4- Homework.
- 5- Tests.

B. Subject-Specific Skills

- 1- Enabling students to identify the contents of the laboratory, including tools and glassware, and how to use them.
- 2- Enabling students to deal with laboratory equipment, enable them to operate it, and benefit from its results.
- 3- Enabling students to obtain and understand weight and volume measuring tools.
- 4- Enabling students to learn how to obtain biological samples and how to deal with them.
- 5- Enabling students to understand and deduce results and how to deal with units for each result.

Teaching and Learning Methods

1. Theoretical lectures
2. Laboratory experiments
3. Seminars and reports
4. Posters and class activities

C. Evaluation Methods

1. Oral and written exams
2. Laboratory reports
3. Class activities (posters)

D. Thinking Skills

1. Using modern methods in preparing lectures and presenting them in PowerPoint format
2. Preparing homework on topics related to the scientific material.
3. Showing educational videos on the given material and using visual education.

Teaching and Learning Methods

1. Teaching and lecturing
2. Seminars and homework
3. Tests
4. Field visits

5. Educational posters

Evaluation Methods

Grades, research and reports, tests.

e. General and Transferable Skills

- 1. The student is able to employ the knowledge he has received.**
- 2. Granting confidence to the student through seminar discussions.**
- 3. The student is able to embody what he has acquired in professional development.**

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	2	Disorders of carbohydrate metabolism, hyperglycemia and diabetes, hypoglycemia Basic diagnostic test Oral glucose tolerance test	Glucose Disorders	Whiteboard and PowerPoint Presentations	Daily Examination and Oral Questions Discussion
2	2	Lipid metabolism disorders Triglycerides Total cholesterol HDL-c Challenge	Lipid Metabolism	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
3	2	Kidney function tests. Blood urea determination Creatinine determination	Kidney Functions	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
4	2	Liver Function Tests Blood Bilirubin ALT Estimation AST Estimation	Liver Functions	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
5	2	Functions of enzymes Diagnostic enzymes Alkaline phosphatase determination CK estimation	Functions of enzymes	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
6	2	Diseases of the hypothalamus and pituitary glands, disorders of anterior pituitary hormones, disorders of the adrenal gland, hypopituitarism	Endocrine glands	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
7	2	Diseases of the hypothalamus and pituitary endocrine glands, disorders of anterior pituitary hormones, disorders of the adrenal gland, hypopituitarism	Endocrine glands	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
8					

9	2	Reproductive system, disorders of male and female reproductive function, biochemical evaluation during pregnancy	Endocrinology	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
10	2	Reproductive system, disorders of male and female gonadal function, biochemical evaluation during pregnancy	Endocrinology	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
11	2	Tumor markers	Malignant Tumors	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
12	2	Drug interaction with laboratory tests	Drug effect on tests.	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
13	2	calcium metabolism disorders	The role of calcium	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
14	2	Blood acidity,	Acid-base disorders	Whiteboard and PowerPoint Presentations	Daily Exam, Oral Questions, Discussion, And homework
15					

12. Infrastructure	
Required Readings:	References: 1- Clinical Chemistry and Metabolic Medicine, Crook, 8th Edition, 2013. 2- Clinical Chemistry, Kaplan, 5th Edition, 2009
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

Dr. Azher A. Ibrahim

PhD. Clinical Chemistry

Higher Education Institution Performance Review (Academic Program Review)

This course description provides a summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available and must be linked to the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	Pharmacy
3. Course Name / Code	Clinical Toxicology – Theory PPCL 57
4. Programs in which it is included	Bachelor in Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester / Year	First Semester fifth year
7. Total Number of Study Hours	2 hours weekly
8. Date of preparing this description	2025/2026
9. Course Objectives :Knowing the poisons, their names, how they work, their presence and uses, as well as knowing the toxic effects on patients and biological interactions of each poison with the body.	
10. Learning Outcomes, Teaching and Learning Methods, and Evaluation	

A. Knowledge and Understanding

A - 1- The student should be familiar with the poisons and their names

A-2- The student should be familiar with the clinical uses of antidotes

A-3- The student should be familiar with the mechanism of toxicity (how poison works)

A-4- The student should be familiar with the toxic effects of drugs in case of over dose

A-5- The student should be familiar with biological interactions of poisons with body tissues.

A-6- Preparing trained and qualified pharmacists to work in poison control center

A-7- Preparing trained and qualified pharmacists to work in hospital emergency department

B. Subject-Specific Skills

B 1. Teaching skill in the subject of toxicologic emergencies.

B 2. The student should have the necessary information to work in poison control centers.

B 3. The student should have the ability to link medicines to practical reality in pharmacies and hospitals, and know what are the guidelines in case of drug over dose in the hospitals.

Teaching and Learning Methods

1. Thinking and discussion method.
2. Scientific tests used in laboratories.
3. Learning by exploratory lecture.

C. Evaluation Methods

1. Submit weekly reports.
2. Exam grades.
3. Graduation research

D. Thinking Skills

A1. Student-teacher dialogue method.

A2. Preparing weekly reports.

A3. Conducting discussions of the results.

A4. Exploratory thinking.

Teaching and Learning Methods

1. Grades.
2. Discussion and dialogue.
3. Tests.

Evaluation Methods

Grades, research and reports, tests

e. General and Transferable Skills

D 1. The student is able to employ the knowledge he has received.

D 2. The student is able to master the teaching and learning profession.

D 3. The student is able to embody what he has acquired in professional development.

11. Course Structure					
Evaluation Method	Learning Method	Unit Name / Course or Topic	Required Learning Outcome	Hour	Week
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Initial Evaluation and Management of the Poisoned Patient. Including pediatric poisoning and special consideration in the geriatric patient	Knowledge	2	1
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drug Toxicity: Over the counter drugs; caffeine;	Knowledge	2	2
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	theophylline; antihistamine and decongestant; non-steroidal anti-inflammatory drugs; vitamins.	Knowledge	2	3
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Prescription Medications: Cardiovascular drugs; beta blockers; ACE inhibitors; Digoxin; Calcium channel blocker; Antiarrhythmic agents; hypoglycemic drugs;	Knowledge	2	4
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Opioids; CNS depressants; tricyclic antidepressants; anticholinergic phenothiazines; CNS stimulant.	Knowledge	2	5
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Drug of Abuse: Opioids; Cocaine	Knowledge	2	6
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	phencyclidine; marijuana; Lysergic acid.	Knowledge	2	7
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Chemical and Environmental Toxins: Hydrocarbones; Household toxins;	Knowledge	2	8
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Antiseptic; Disinfectants; Camphor; moth repellents	Knowledge	2	9
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Botanicals and plants-derived toxins: Herbal preparation;	Knowledge	2	10
Daily Quiz and Verbal Questions	Using the whiteboard and the projector screen	Toxic plants; Poisonous mushrooms.	Knowledge	2	11

11. Infrastructure	
Required Readings:	References: Goldfrank's Toxicologic Emergencies 9th Ed 2011
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Organizing workshops and courses for graduates:

12. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Name of the Instructor:

Assistant lecturer Rami Thamer Kareem



Course Description for laboratory training 1st-semester (practical)

Performance review of higher education institution (assessment of the academic program)

This course description summarizes the key characteristics and anticipated learning objectives for students, assessing their utilization of available learning resources, and must be aligned with the program description.

1. Educational Institution	Al-Zahrawi University
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Laboratory training / PALB 511
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Daily Attendance
6. Semester	1 st semester
7. Total Number of Study Hours	30 hrs
8. Date of preparing this description	2026-2025
9. Course Objectives: It provides general information about the biochemical basis of disease and about the principles of laboratory diagnosis; it supplies specific guidance on the clinical value of chemical investigations, indicating their range of application and limitations as well as relating results of laboratory tests to the process of clinical diagnosis and management as these might apply to individual patients	

10. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

- 1- Study of pathological analyses that assist in diagnosing diseases.
- 2- Study of the technical conditions for each of the above analyses.
- 3- Study of the ideal conditions for patients to conduct each analysis.

B. Subject-Specific Skills

- ☐ 1-Teaching skills in laboratory training.
- ☐ 2-The student should have the ability to describe and illustrate models.
- ☐ 3-The student should have the ability to link causes with natural effects..

Teaching and Learning Methods

1. Discussion and dialogue method.
2. Troubleshooting and treatment.
3. Seminars.

C. Evaluation Methods

1. Oral discussions in the classroom and written exams.
2. Midterm exams and end-of-semester exams.
3. Daily assignment reports.

D. Thinking Skills

- D1. Encourage students to find problems related to the subject of study
- D2. Encourage students to find solutions to those problems
- D3. Conduct experiments individually and collectively.
- D4. Compare results and troubleshoot

E. General and Transferable Skills

- D1. The student should be able to think logically to solve problems
- D 2. The student should acquire manual work skills.
- D 3. The student should be able to develop and innovate skills

11.Course Description					
Weeks	Hours	Unit Name / Course or Topic	Required Learning Outcomes	Learning Methods	Evaluation Method
1	2	Laboratory training - aims of studying of lab training	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
2	2	Medical laboratory departments	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
3	2	general metabolic tests			
4	2	Diabetic markers	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
5	2	Kidney function tests	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
6	2	Lipid profile	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
7	2	Liver function tests	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
8	2	Liver enzymes	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
9	2	Bilirubine	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
10	2	Serological test	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
11	2	Blood culture	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
12	2	Microbiological tests	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
13	2	General urine and stool examination	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
14	2	Hematological test: RBC count / HB / PCV	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions
15	2	platelet count/blood typing combs' teats/bleeding time	Knowledge	Blackboard and Screen Presentations	Daily exam and oral questions

Admission: .11

Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	Admission exceeds the capacity plan

Infrastructure .11

Required Readings:	References: a manual for laboratory raining adopted by the department ¹
Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites:

Name of the Instructor: Dr. Balsam Ghazi AL-kassar

Course description applied therapeutics first-course fifth year- theory

**Review the performance of the higher education institution ((review of
(the academic program**

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

Al-Zahrawi University - Ministry of Higher Education and Scientific Research	1. Educational Institution
colleage of Pharmacy-Clinical Pharmacy Branch	2. University Department / Center
Therapeutics I -PCPC55	3. Course Name / Code
Bachelor of Pharmacy Science	4. Programs in which it is included
Daily attendance	5. Available Forms of Attendance
Teaching System - Courses - Fifth Stage - Courses	6. Semester / Year
45 hours	7. Total Number of Study Hours
2025-2026	8. Date of preparing this description
9. Course Objectives: Since its establishment, the department has worked hard and continuously based on its noble mission in society to achieve several strategic goals and objectives, the most important of which are: 1. The course aims to identify the different pathological conditions, their definition, causes, methods of diagnosis, treatment methods and groups of medicines used in treatment. 2. .Making the graduate student able to identify the pathological conditions proven in the patient's tympanum 3. .Making the graduate student able to communicate with patients in outpatient clinics for general diseases 4. .Making the graduate student able to educate patients regarding the medicines used by them 5. making the graduating student is able to match the wrong treatment methods with what is in the proven sources.	

10. Learning Outcomes, Teaching and Learning Methods, and Evaluation

A. Knowledge and Understanding

A 1 - To be able to identify proven pathological conditions in the patient's tympanum

A2- To be able to communicate with the patient in the outpatient clinics for general diseases

A3- To be able to educate the patient regarding medicines

A 4- To be able to match the wrong treatment methods with what is in the proven sources

B – Special skills in the subject

B1 – Skills of follow-up treatment methods

B2 – Skills to identify new alternative medicines

B3 – Skills to determine the most important goal of the treatment of common diseases

B4- Enabling students to possess the skills of diagnosing cases of medical errors in the use of medicines and spend it

B5- Enabling students to possess the skills of using scientific research tools in the academic and scientific field

B6- Enabling students to acquire self-learning skills to acquire new information, skills and knowledge

Learning and teaching methods

.1Style of thinking and discussion.

.2Discuss medical conditions

.3Learning by applied lecture

Evaluation methods

.1Semi-semester exams and final exams exam grades

.2Oral and written evaluation that includes hypothetical cases and ways to address them

.3Exam Scores

C –Thinking Skills

C1. The style of dialogue between the student and the professor.

C2. Conduct discussions of hypothetical cases

C3. Exploratory thinking.

C4 . Using modern methods in preparing lectures and presenting them in a PowerPoint form

C5. Preparing homework on topics related to scientific material.

Teaching and learning methods

1. Teaching and lecturing

2. Seminars and homework.

3. Discussion and dialogue.

4. Tests.

Evaluation methods
Grades, research and reports, tests.

D – General and transferred skills

D1. The student should be able to employ the knowledge he has received.

D2. The student should be able to skill the teaching and learning profession.

.D3. The student should be able to embody what he has acquired in professional development

11. Course Structure					
Weeks	Hours	Required Learning Outcomes	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3	Knowledge	Arrhythmias	Use the blackboard and display screen	Daily exam and oral questions
2	3	Knowledge	Thrombosis	Use the blackboard and display screen	Daily exam and oral questions
3	3	Knowledge	Dyslipidemia	Use the blackboard and display screen	Daily exam and oral questions
4	1	Knowledge	Stroke	Use the blackboard and display screen	Daily exam and oral questions
5	1	Knowledge	Shock	Use the blackboard and display screen	Daily exam and oral questions
6	2	Knowledge	Acute coronary syndrome	Use the blackboard and display screen	Daily exam and oral questions
7	2	Knowledge	Infective Endocarditis	Use the blackboard and display screen	Daily exam and oral questions
8	3	Knowledge	Liver cirrhosis	Use the blackboard and display screen	Daily exam and oral questions
9	2	Knowledge	Viral hepatitis	Use the blackboard and display screen	Daily exam and oral questions
10	2	Knowledge	Human immunodeficiency virus	Use the blackboard and display screen	Daily exam and oral questions
11	3	Knowledge	Inflammatory bowel diseases	Use the blackboard and display screen	Daily exam and oral questions
12	2	Knowledge	Acute kidney injury	Use the blackboard and display	Daily exam and oral

				screen	questions
13	3	Knowledge	Chronic kidney disease	Use the blackboard and display screen	Daily exam and oral question
14	2	Knowledge	Epilepsy and status epilepticus	Use the blackboard and display screen	Daily exam and oral questions
15	2	Knowledge	Multiple sclerosis	Use the blackboard and display screen	Daily exam and oral questions
16	2	Knowledge	Parkinson's disease	Use the blackboard and display screen	Daily exam and oral questions
17	2	Knowledge	Headache disorders	Use the blackboard and display screen	Daily exam and oral questions
18	1	Knowledge	Benign prostatic hyperplasia	Use the blackboard and display screen	Daily exam and oral question
19	2	Knowledge	Parenteral nutrition	Use the blackboard and display screen	Daily exam and oral questions
20	2	Knowledge	Enteral nutrition	Use the blackboard and display screen	Daily exam and oral questions
21	2	Knowledge	Psoriasis	Use the blackboard and display screen	Daily exam and oral questions

12 . Infrastructure	
- Required Readings	1) References : - Joseph T. DiPiro. Pharmacotherapy Handbook. Last edition. 2) Marie A. Chisholm-Burn. Pharmacotherapy Principles & Practice. Last edition. (For topics not available in first reference)

Special Requirements (Workshops, Journals, Software, Websites):	Electronic Websites, Internet
Social Services (Guest Lectures, Professional Training, Field Studies, Others):	Organizing workshops and courses for graduates

13. Admission:	
Prerequisites	Admission according to the central plan
Minimum Number of Students	/
Maximum Number of Students	

Name of the Instructor: Lec. Dr. Ali hassan zaki

COURSE DESCRIPTION INDUSTRIAL PHARMACY II

وصف المقرر

Industrial Pharmacy II aims to provide students with the scientific knowledge and practical skills needed to understand modern pharmaceutical manufacturing methods, deal with contemporary pharmaceutical manufacturing equipment, and become familiar with advanced drug-delivery and dosage-form production approaches. The course also supports the development of scientific research awareness in pharmaceutical manufacturing.

1. Educational Institution	Al-Zahrawi University - Ministry of Higher Education and Scientific Research
2. University Department / Center	College of Pharmacy
3. Course Name / Code	Industrial Pharmacy II / PPCT 59
4. Programs in which it is included	Bachelor of Pharmacy
5. Available Forms of Attendance	Classroom attendance
6. Semester / Year	First Semester / Fifth Year
7. Total Number of Study Hours	45 Hours (3 hours/week × 15 weeks)
8. Date of preparing this description	2026

Course Objectives: This course aims to enable students to:

- Understand modern pharmaceutical manufacturing methods and processes.
- Recognize the major pharmaceutical dosage forms and their industrial production requirements.
- Understand tablet manufacture, evaluation, coating, and coating technologies.
- Understand industrial capsule technologies, including hard capsules, soft capsules, and microcapsules.
- Understand the manufacture of liquid and semisolid pharmaceutical dosage forms.
- Develop the scientific and professional skills required for work in pharmaceutical manufacturing facilities.
- Become familiar with modern pharmaceutical manufacturing equipment and developments in drug delivery and pharmaceutical industry.

Learning Outcomes, Teaching and Learning Methods, and Evaluation

Upon successful completion of this course, the student will be able to:

- Identify and describe major pharmaceutical dosage forms.
- Explain industrial manufacturing procedures for tablets, capsules, liquids, and semisolid dosage forms.
- Explain tablet evaluation and coating processes.
- Compare hard-capsule and soft-capsule manufacturing technologies.
- Describe microencapsulation and its pharmaceutical applications.
- Apply acquired industrial-pharmacy knowledge to pharmaceutical manufacturing practice.

Knowledge and Understanding

- Recognize the major pharmaceutical dosage forms.
- Understand pharmaceutical manufacturing procedures and preparations.
- Understand the manufacture and evaluation of tablets, capsules, liquids, and semisolid dosage forms.
- Understand the role of the pharmacist in pharmaceutical manufacturing.

Subject-Specific Skills

- Acquire skills in preparing pharmaceutical formulations.
- Develop skills related to pharmaceutical manufacturing.
- Develop the ability to select appropriate pharmaceutical dosage forms.

Teaching and Learning Methods

Theoretical lectures, PowerPoint presentations, educational videos, seminars, reports, classroom activities, and laboratory demonstrations where applicable.

A. Evaluation Methods

Written examinations, short quizzes, oral questions, homework assignments, reports, classroom discussions, and other course activities.

Thinking Skills

- Apply scientific knowledge to pharmaceutical manufacturing problems.
- Compare manufacturing techniques and dosage-form technologies.
- Interpret industrial processes and select appropriate manufacturing approaches.

Teaching and Learning Methods

Lectures, seminars, homework assignments, educational videos, visual learning, class discussions, and field/industrial learning activities where applicable.

Evaluation Methods

Evaluation of examinations, quizzes, assignments, reports, seminar participation, and classroom discussion.

e. General and Transferable Skills

- Apply acquired knowledge in academic and professional settings.
- Build confidence through seminars and scientific discussion.
- Use acquired knowledge for continuing professional development.

11. Course Structure					
Wee ks	Hours	Required Learning Outcome s	Unit Name / Course or Topic	Learning Methods	Evaluation Method
1	3 HOURS	Knowledge	Solid pharmaceutical dosage forms - Tablets	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
2	3 HOURS	Knowledge	Tablet evaluation	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
3	3 HOURS	Knowledge	Tablet coating	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
4	3 HOURS	Knowledge	Techniques used in tablet coating	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
5	3 HOURS	Knowledge	Capsules - Introduction	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
6	3 HOURS	Knowledge	Industrial capsule technologies	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
7	3 HOURS	Knowledge	Hard capsules and soft capsules	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
8	3 HOURS	Knowledge	Soft-capsule manufacturing techniques	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
9	3 HOURS	Knowledge	Microcapsules / Microencapsulation	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
10	3 HOURS	Knowledge	Liquid pharmaceutical dosage forms	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments

11	3 HOURS	Knowledge	Semisolid pharmaceutical dosage forms	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
12	3 HOURS	Knowledge	Tablet evaluation - Reinforcement and applications	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
13	3 HOURS	Knowledge	Tablet coating and coating techniques - Reinforcement and review	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
14	3 HOURS	Knowledge	Capsule technologies - Reinforcement of hard- and soft-capsule manufacturing	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments
15	3 HOURS	Knowledge	Integrated review: tablets, capsules, microcapsules, liquid and semisolid dosage forms	PowerPoint presentations, board explanation, visual examples, and class discussion	Quizzes, oral questions, discussion, and assignments

12. Infrastructure	
Required Readings:	References: The Theory and Practice of Industrial Pharmacy by Leon Lachman et al.
Special Requirements (Workshops, Journals, Software, Websites):	Electronic websites, scientific journals, educational videos, and relevant pharmaceutical manufacturing resources.
Social Services (Guest Lectures, Professional Training, Field Studies, Others)	Guest lectures, professional training, workshops, and field/industrial visits where applicable.

13.	
Prerequisites	Admission according to the central academic plan
Minimum Number of Students	Not specified
Maximum Number of Students	According to the approved admission capacity

Name of the Instructor: Assistant Professor Dr. Salam Waheed Ajel