# COURSE SPECIFICATION

This course serves as an introductory base for the terminology system. It explains the basics of medical terms by analyzing their structure, including prefixes, suffixes, roots, and plurals. The student gains an understanding of medical meanings applied to the function, structure, and diseases of the human body. Abbreviations and their appropriate uses are represented.

| | |
|---|---|
| **1. Educational institution** | Alayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | Clinical pharmacy |
| **3. Course title/code** | Medical terminology/PH1104 |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | First semester 2023-2024 |
| **6. Credits (total)** | 1 hr x 15 weeks = 15 hrs |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |

**8. Course Objectives**

1. Scientific preparation of the student with regard to medical and scientific terminology related to his studies for the purpose of preparing a student capable of dealing with all medical terminology used in his studies.
2. In this course, students will learn the pronunciation, spelling, and definition of medical and pharmaceutical terms used in health care. They will use a word-building strategy that helps them discover connections. Relationships between word roots, prefixes and suffixes.
3. They will learn the meaning of each part of a complex medical and pharmaceutical term. Ability to put parts together and define a term.

## 9. Learning Outcomes, Teaching, Learning and Assessment Method

### A. Cognitive goals

1. Study simple word roots and common suffixes
2. Study of word prefixes related to pharmaceutical sciences
3. Study of basic anatomy and abnormal conditions
4. Study of the reproductive organs and urinary tract
5. Study of the digestive system
6. Study of the heart and blood vessels
7. Study of growth, development and the body
8. Study of the nervous system
9. Study of blood and diseases

### B. The skills goals special to the course

1. Analyze, evaluate and interpret the different meanings of medical terms.
2. Analysis of word structure (prefixes, roots, and suffixes)
3. Apply knowledge of medical terminology in communicating with health care staff and members Really
4. Relate medical terms to standard English descriptions for communication.
5. Interpret and follow the general rule in dealing with unfamiliar medical terms.

### Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
3- Presentation of cases
4- Handouts
5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams

### Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

### C. Affective and value goals

1- Adhere to the highest standards of ethical and professional behavior in all aspects of treatment decision-making and patient care.
2- Demonstrating commitment to patient safety.
3- Evidence-based practice.
4- Respect the patient's autonomy and preferences.
5- Collaborate effectively with other healthcare professionals for the best interest of the patient.

### Teaching and Learning Methods

1- Case studies
2- Discussions
3- Lectures

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4- Training and interaction in the hospital and community pharmacy
5- Assignments
6- PowerPoint presentation

## Assessment methods

7. Observing students' interaction with patients
8. Case-based scenarios
9. Homework
10. Electronic MCQs on the electronic platform
11. Mid-term exam
12. Final exam

## D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

1. Raising students on ethical and professional work.
2. Developing students' sense of responsibility during the period of study and work.
3. Supporting medication and pharmacy practice culture among students and community members.
4. Enhancing the spirit of cooperation and teamwork among students.

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## 10. Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 1 | A1, A2, A3, B1 | Basic word roots and common suffixes | 1- Whiteboard and PowerPoint and data show presentation<br>2- Class discussion<br>3- Presentation of cases<br>4- Handouts<br>5- Visual aids: Utilize visual aids such as pictures, charts, graphs, diagrams | 1- Short MCQs<br>2- Oral exam and direct questions in the class<br>3- Midterm exam<br>4- Electronic exams on the electronic platform<br>5- Final exam |
| 2. | 1 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2 | More word roots, suffixes and prefixes related to pharmaceutical sciences (pharmacognosy, clinical pharmacy, pharmaceutics,…etc) | | |
| 3. | 2 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2, D4 | Basic anatomical terms and abnormal conditions | | |
| 4. | 1 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2, D4 | The genitals and urinary tract | | |
| 5. | 1 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2, D4 | The gastrointestinal tract | | |
| 6. | 1 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2, D4 | The heart and cardiovascular system | | |
| 7. | 2 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2 | Symptoms, diagnoses, treatments, communication qualifiers, and statistics | | |
| 8. | 1 | A1, A2, A3, B1, B2, B3, C1, C2, C3, C4, C5 D1, D2, D4, D5 | Growth and development, and body orientation | | |
| 9. | 1 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2 | Gynecology, pregnancy, and childbirth | | |
| 10. | 1 | A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2 | The eye and the respiratory tract | | |
| 11 | 2 | A1, A2, A3, B1, B2, B3, C1, C3, C4, D1, D2 | The nervous system and behavioral disorders | | |
| 12 | 1 | A1, A2, A3, B1, B2, B3, C1, C3, D1, D2 | Blood and immunity | | |
| 13 | 1 | A1, A2, A3, B1, B2, B3, C1, C2, C3, C4, C5 D1, D2, D4, D5 | Pharmaceutical sciences | | |

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| 11. Infrastructure | |
|---|---|
| **Books Required reading** | Medical Terminology: An Illustrated Guide, the lasted edition, by Barbara Janson Cohen |
| **Main references (sources)** | Medical Terminology: An Illustrated Guide, the lasted edition, by Barbara Janson Cohen<br><br>A Short Course in Medical Terminology: Enhanced Reprint (Point (Lippincott Williams & Wilkins)) |
| **Recommended books and references (scientific journals, reports…).** | |
| **Electronic references, Internet sites…** | |

| 12. Course development plan |
|---|
| Not available. |

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## Course Description Form

## Course Description

The textile course description for second-year pharmacy students covers the four basic human tissues, emphasizing structure and function to understand drug interaction. It combines theoretical lectures with practical applications, qualifying students to study the effects of drugs at the tissue level.

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|---|---|
| 1. Educational Institution | Al Ain Iraqi University - Faculty of Pharmacy |
| 2. Scientific Department | Pharmaceutics |
| 3. Course Code | **Histology- PH1205** |
| 4. Available Attendance Forms | Courses – Attendance |
| 5. 3-semester/ year | Term 1 2023-24 |
| 6. Number of study hours (total) | 30hours |
| 7. Date this description was prepared | 1/10/2023 |

1. **Academic Program Objectives:**
   To determine the goals of a pharmacology histology program, it is important to consider the fundamental role of histology in understanding the microstructure of tissues and cells that make up organisms, and how this understanding can contribute to drug development and improved treatments.

**1. Understanding the Microstructure of Human Tissues and Cells**: Provide students with comprehensive knowledge about the structure of human tissues and cells, including the differences between different tissue types and how these tissues contribute to the functions of vital organs.

**2. Applying knowledge in drug development and treatments:** Learn how histology knowledge can be used to develop new drugs and improve treatments, including understanding how drugs can affect human tissue at the cellular level.

3**. Imaging and analysis techniques:** Providing students with the skills of using modern techniques in tissue imaging and analysis, such as light and electron microscopy, and how to apply these techniques in scientific research and drug development.

4**. Critical thinking and problem solving:** Developing critical thinking skills and students' ability to use their knowledge of histology to identify health problems and propose innovative solutions, especially in the areas of drug development and therapy.

5**. Ethics and Professional Responsibility**: Enhance students' understanding of professional ethics related to scientific research in histology and drug development, including ethical considerations for clinical trials and the use of biological data.

These goals form a solid foundation for the teaching of histology in the faculties of pharmacy, contributing to the preparation of graduates who are able to contribute effectively to the fields of scientific research, drug development, and health care improvement.

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## 2. Required program outputs and teaching, learning and evaluation methods

## A- Knowledge Objectives:

The Histology Program in the Faculties of Pharmacy aims to:

1. Enable students to gain comprehensive knowledge about human tissues, including cells, tissues, and organs.
2. Enhance understanding of how tissues and cells interact with drugs and their effects at the cellular level.
3. Develop application capability in practical scenarios to support drug development and treatment strategies.
4. Improve analysis skills to analyze histological data and interpret the results of drug trials.
5. Strengthening the evaluation capacity of scientific evidence and drug efficacy from a histology perspective.
6. Encourage creativity in the development of innovative solutions in the field of medicine, taking into account professional ethics.

These goals help prepare students who are able to contribute effectively to pharmacy and scientific research.

## B- Program Skills Objectives:

The Histology Program in the Faculties of Pharmacy aims to develop students' practical and analytical skills through:

1. Recognition and classification: Enables students to accurately identify and classify tissue and cell types.
2. Microscopy: Developing the skills of using microscopes to image and analyze tissues.
3. Experimentation: Students gain experience in conducting histological experiments and analyzing data.
4. Research: Enhance research and inquiry skills to access new knowledge.
5. Communication: Improve students' ability to convey scientific concepts clearly.
6. Critical Thinking: Develop the ability to analyze data and solve practical problems.
7. Ethics: Promoting awareness of the ethics of scientific research and the use of samples.

These objectives contribute to the preparation of qualified graduates to contribute effectively to the field of pharmacy and research.

**Teaching and Learning Methods:**

1- Lectures on Multi-Attendance Methods

2- Group discussion in the lab and lecture
3- Educational Labs
4- Hospital Training
5- Presentation and discussion of patients' cases

**Methods of Evaluation**:

Quizzes
2- Oral exam and direct questions
Midterm exam
final examination
5-The Oshki exam (an international system to test the speed of students' performance in reading and dispensing prescriptionsand the method of Dealing with Patients(

**C- Emotional and value objectives:**

The Histology Program in the Faculties of Pharmacy aims to develop:

1. Respect for life: Encourage an appreciation of life and the importance of tissues for health.
2. Ethical Awareness: Developing an understanding of ethical responsibilities in scientific research.
3. Group work: Promote cooperation between students.
4. Commitment to continuous learning: Encouraging students to continue professional development.
5. Professional Responsibility: Developing a sense of responsibility towards the community.
6. Valuing Diversity: Promoting respect for cultural and individual diversity.

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7. Self-confidence and initiative: Encourage the development of confidence and innovation.

These goals reflect the program's commitment to preparing graduates equipped with high skills and positive values towards their profession and society.

## Teaching and Learning Methods:

1. Using a smart whiteboard to present information in an interactive and visual way, which enhances students' understanding and interaction.
2. Slideshows of human tissue material on the screen to illustrate key points and intricate details, making it easier for students to visually understand concepts.
3. The study of human tissues under a microscope, enabling students to see the microstructures of tissues and understand their functions more deeply.
4. - Using scientific references to provide rich and reliable sources of knowledge, which promotes self-research and inquiry-based learning among students.

## Methods of Evaluation:

Methods of evaluation in the Histology Program at the faculties of pharmacy include:

1. Theoretical exams: to assess basic and advanced understanding of histology.
2. Lab reports: Reflect students' ability to conduct experiments and analyze results.
3. Presentations: To assess the ability to convey scientific information clearly.
4. Practical tests: Evaluate the skills of using microscopes and analyzing tissues.
5. Research projects: To measure the ability to design and carry out research in histology.
6. Self-assessment and peer assessment: Encourages critical assessment and collaborative learning.
7. Class participation and interaction: Reflects students' interest and understanding of the material.

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## 3. Personal Development Planning:

1. Participating in the training courses held within the college.
2. Participating in the vocational courses held in the college within the curriculum prescribed for him, as well as the vocational education courses held in the Pharmacists Syndicate after graduation, which helps in developing the personal skills of the graduate within the professional and functional aspect.
3. There are specific modules within the programme for personal development and to give students the opportunity and encourage them to engage in professionally relevant qualifications that allow the student to reflect on their own professional development.

## Course Development Line

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## 8. 10. Course Structure

| Week | Hours | Learning outcomes required for the program* | Module Name/ or Topic | teaching method | Valuation Method |
|---|---|---|---|---|---|
| 1 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | Integumantery System | Lecturing and discussing in-person and data show | Written and oral tests and direct questions |
| 3 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Circulatory System | | |
| 5 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | Lymphatic System | | |
| 6 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Respiratory System | | |
| 7 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Skin** System ( Oral cavity ) | | |
| 8 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Digestive System ( digestive tract ) | | |
| 9 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,D1,D2,D3 ,D4,D5 | **Digestive System ( digestive glands ,Liver** ,Pancreas ,Gall bladder ) | | |
| 10 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C5,D1,D2,D4 ,D5 | Urinary System | | |
| 13 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Reproductive System( female reproductive system ) Reproductive System( male reproductive system ) | | |
| 14 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | Accessory glands | | |
| 15 | 4 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C5,D1,D2,D4 ,D5 | Final exam | | |

**Practical course**

| Hours | Learning outcome | Module Title/ or Topic | Teaching Methods | Assessment methods |
|---|---|---|---|---|
| 2 | Understand the basic concepts of tissue and cell structure. | Introduction to Tissue | Lecture, PowerPoint presentation | Multiple Choice Examination Questions |
| 4 | Determine the structural and functional characteristics of the four basic tissue types. | Tissue types | Lecture, practical hands-on sessions using microscopes | Practical Exam, Short Answer Questions |
| 4 | Understand the histological structure of major organs and systems. | Fabric of organic systems | Interactive lecture, microscopic laboratory analysis | Lab Reports, Oral Exam |
| 3 | Apply histological knowledge to understand pathological changes. | Histopathology Fundamentals | Case studies, group discussion | Case study analysis, multiple choice questions |
| 3 | Linking tissue structures to their functions in health and disease. | Relationship between structure and function | Seminar, student offers | Bid evaluation, written exam |
| 2 | Develop technical skills in preparing and examining tissue segments. | Techniques in Tissue | Laboratory Practical Training | Practical Skills |
| 2 | Analyze tissue slices accurately. | Slide Analysis Workshop | Guided hands-on session | Practical exam, peer review |

**9.**

**Teaching methods**

1. **PowerPoint Lectures and Presentations: To present concepts and provide an overview.**
2. **Laboratory practical sessions: A practical experiment using microscopes to examine tissue samples.**
3. **Case studies and group discussions: Analyzing real-life examples of the application of theoretical knowledge.**
4. **Seminars and student presentations: Encourage deep understanding and facilitate peer-to-peer learning.**

**5. Laboratory Practical Training: Developing skills in preparing and examining slides.**

**Assessment methods**

a. **Multiple Choice Questions (MCQs) and Short Answer Questions: Assessing Comprehension of Theoretical Knowledge.**
b. **Practical Examination and Skills Testing: Assessing practical skills in preparing and analyzing tissue segments.**
c. **Lab Reports: Reflect on lab practical work and results.**
d. **Oral Exam and Presentation Evaluation: Assessing understanding and ability to communicate effectively.**

**2. - Case study analysis and peer review: applying knowledge to specific scenarios and evaluating analytical skills.**

## 10. Infrastructure

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|---|---|
| **1- Required textbooks** | **Atlas of-Histology with function and clinical correlations (Dongmei Cui ), 2011**<br>General history E.F.Barinov, O.N.Sulayeva, ,B.P.Tereschuk L.I.Khlamanova, E.V.Chereshneva,K.I.Gatina .I.A.Prylutskay 2011***a***Copyright © 2008 by Oxford University Press, Inc |
| **2- Main References** | The Histology program in the faculties of pharmacy relies on important references such as:<br><br>1. "Histology: A Text and Atlas" by Ross and Pawlina: a combination of text and images to understand tissue structure.<br>2. "Junqueira's Basic Histology" by Mescher: full explanation with photo illustrations. |

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| | 3. “Wheater's Functional Histology” by Young et al.: Provides an understanding of tissue function.<br>4. "Cell Biology and Histology" by Gartner and Hiatt: focuses on cellular and molecular aspects.<br>5. Scientific journals and research: such as the "Journal of Histology" for the latest developments in tissues.<br>6. Electronic databases: such as PubMed to access scientific research and articles.<br>7. Online Learning Resources: For additional lectures and learning materials.<br><br>These references contribute to deepening students' understanding and developing their research skills. |
| ) **Recommended books and references (scientific journals,reports ,.....)** | Internet<br>PowerPoint Presentations |
| ـ) **Electronic references,websites ,.....** | N/A |
| **11. Course Development Plan** | |
| N/A | |

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## Course Description Form

### Course Description

This course serves as an introductory rule to the terminology system. This explains the basics of medical terminology by analyzing its construction, including: prefixes, suffixes, roots, and plural forms. The student acquires an understanding of the medical

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| meanings applied to the function, structure and diseases of the human body. Abbreviations and their appropriate uses are represented. |

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|---|---|
| 1. Educational Institution | Al Ain Iraqi University - Faculty of Pharmacy |
| 2. Scientific Department/ Center | Laboratory and Clinical Sciences |
| 3. Course Code | Biology of Human-PH1101 |
| 4. Available Attendance Forms | Courses – Attendance |
| 5. 3-semester/ year | Term 1 2023-24 |
| 6. Number of study hours (total) | 15th hour |
| 7. Date this description was prepared | 1/10/2023 |

**8. Course Objectives**

The human biology course aims to:

1. Biological Foundations: Learning cells, tissues, and body organs.
2. Structure and function: The study of body systems such as nervous and circulatory.
3. Physiological processes: understanding breathing, digestion, etc.
4. Structure and function: Analysis of the impact of the structure on the function.
5. Practical application: Using knowledge to understand diseases and treatments.
6. Critical Thinking: Encourage analysis and problem solving.
7. Ethics in Research: Emphasizing ethics in biological research.

The course aims to provide students with an in-depth understanding of human biology, enabling them to apply this knowledge in the fields of medicine and research.

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

### A- Knowledge Objectives.

The objectives of human biology in the Faculty of Pharmacy include:

1. Understanding cells and tissues: Learn the structure and functions of cells and tissues.
2. The study of body systems: Understanding the structure and functions of different body systems.
3. Physiology: Analysis of vital processes such as breathing and digestion.
4. Structure and function: Evaluating the impact of anatomical structure on biological functions.
5. Clinical applications: Using knowledge to understand diseases and the effect of drugs.
6. Critical Thinking: Analyzing Information and Evaluating Scientific Evidence.
7. Ethics in research: Understanding ethical considerations in biological research.

It aims to enable students to apply knowledge in health and scientific research.

### B - Course Skills Objectives

A human biology course aimed at developing practical and analytical skills for students in the College of Pharmacy, including:

1. Observation: Identification of tissues and cells under a microscope.
2. Experimental: Perform experiments accurately and use microscopes.
3. Analysis: Interpreting data in the context of body biology.
4. Communication: Present the results clearly verbally and in writing.
5. Research: Using sources to gather information about diseases and treatments.

6. Problem solving: Applying knowledge to propose solutions to health problems.
7. Teamwork: Collaboration in experiments and data analysis.
8. Ethical: Understanding ethical questions in biological research.

These goals help prepare students to contribute to scientific research, medicine, and health care.

**Teaching & Learning**

1- Lectures on the various means of attendance
2- Guiding students to some websites to take advantage of them.
3- PowerPoint presentation

**Valuation Methods**

1- Quizzes
2- Oral exam and direct questions
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final Examination

**C- Emotional and value objectives**

A course in human biology that focuses on the development of emotional values and attitudes among students of the Faculty of Pharmacy, such as:

1. Valuing life: Deepening respect for life and its importance.
2. Ethics: Awareness of the importance of ethics in pharmaceutical science and practice.
3. Cooperation: Encourage teamwork and professional cooperation.
4. Empathy: Developing empathy for others and understanding the effects of diseases.
5. Continuous learning: Encouraging self-development and continuous learning.

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6. Critical Thinking: Developing ethical flexibility and critical thinking.
7. Diversity: Respect for biological and cultural diversity.
8. Social Responsibility: Enhancing the contribution to public health and health awareness.

**Teaching & Learning**

Methods of teaching and learning in the subject of human biology at the Faculty of Pharmacy include:

1. Interactive lectures: to enhance basic and in-depth understanding.
2. PBL: To develop problem-solving and critical thinking skills.
3. Practical laboratories: to observe tissues and enhance understanding of structure and function.
4. Presentations and Group Discussions: To deepen understanding and develop communication.
5. Self-learning and research: To use electronic and library resources effectively.
6. Research projects: To apply knowledge and promote collaboration.
7. E-learning: To facilitate access to educational resources.
8. Evaluation and Feedback: To improve performance.
9. Scenario-based learning: to apply knowledge in practical contexts.

These methods aim to actively interact students in learning and prepare them for health and medical fields.

**Valuation Methods**

Methods of evaluation in human biology at the Faculty of Pharmacy include:

1. Theoretical exams: to measure understanding of biological concepts.
2. Laboratory reports: to assess practical and analytical skills.
3. Presentations: To measure the ability to communicate scientific information.
4. Practical tests: to evaluate the use of microscopes and tissue analysis.
5. Research projects: To measure the application of theoretical knowledge in research.
6. Self-assessment and peer assessment: to develop critical assessment and collaboration.
7. Class participation: To measure interaction and interest in the material.

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| 8. Performance-based evaluation: To evaluate the application of knowledge in practical scenarios.<br><br>These modalities ensure a thorough assessment of theoretical understanding and practical skills. |
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## 10. 10. Course Structure

| Week | Hours | Learning outcomes required for the program* | Module Name/ or Topic | teaching method | Valuation Method |
|---|---|---|---|---|---|
| 1 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | **Introduction to Human Biology:** General information, definitions, branches of Biology, levels of organization in the human body. | Lecturing and discussing in-person and data show | Written and oral tests and direct questions |
| 2 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Nutrition-Part I** Definitions, important food molecules | | |
| 3 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | **Nutrition-Part II** Digestion. | | |
| 4 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Cell and cellbiology:** Cell structure, cell types, cell jobs. | | |
| 5 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Cell and cell biology:** cell division and production of reproductive cells, fertilization. | | |
| 6 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Tissues-Part I** Epithelial tissues, Connective tissues. | | |
| 7 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,D1,D2,D3 ,D4,D5 | **Tissues-PartII** Muscular tissues, Nervous tissues. | | |
| 8 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C5,D1,D2,D4 ,D5 | **Systems/Glandular System:** Types of glands and their structure. | | |

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| 9 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Systems:** Hormone s and hormonal system, adulthood and reproduction | | |
| 10 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | **Systems/ Immune system:** The parts and Job of the جهاز المناعة | | |
| 11 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | **Systems/Digesti ve system:** The general structure of the system including its organs starting from the mouth to the anus, with their Function | | |
| 12 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | **Introduction to Human Biology:** General information, definitions, branches of Biology, levels of organization in the human body. | | |
| 13 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Systems/Circulat orysy stem: The heart, circulatory system components, circulation. | | |
| 14 | 1 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Review for the Final exam | | |
| 15 | 1 | final examination | Final exam | | |

Human Biology Weekly Course Schedule

assigned to the College of Pharmacy, which determines the distribution of weekly hours, desired educational outcomes (ILOs), module or topic titles, teaching methods, and assessment methods over a semester.

| Week | Hours | Learning outcome | Module/Module Title or Topic | Teaching Methods | Assessment methods |
|---|---|---|---|---|---|
| 1 | 3 | Understand the basics of cell biology and genes. | Introduction to Human Biology and Cell Structure | Lecture, PowerPoint Presentations | Multiple Choice Examination Questions |
| 2 | 3 | To know about the main systems in the human body and their functions. | Overview of Human Body Systems | Interactive Lecture | Short Answer |
| 3 | 3 | Describe the structure and function of bony and muscular systems. | Musculoskeletal systems | Lecture, lab demonstration | Multiple Choice Examination Questions |
| 4 | 3 | Explain the mechanisms of the cardiovascular and respiratory systems. | Cardiovascular and respiratory systems | Group Discussion, Case Studies | Written assignmer oral presentation |
| 5 | 3 | Analysis of digestive and output systems. | Digestive and excretory systems | Laboratory practical training, practical sessions | Laboratory Repor Practical Examination |
| 6 | 3 | Diseases of the nervous system and sense organs | Diseases of the nervous system and sense organs | Seminar, student presentations | Bid Evaluation, Multiple Choice Questions |
| 7 | 3 | Understanding the glandular system and regulation of hormones. | Glandular system | Interactive lecture, group activities | Quiz, Peer Review |
| 8 | 3 | Exploring human reproduction and evolution. | Reproduction and development | Lecture, practical sessions | Practical Exam, Short Answer Questions |
| 9 | 3 | Understand the basic principles of immunology and the lymphatic system. | Immunology and Lymphatic System | Case Studies, Lab Presentation | Written Assignment, Lab Reports |
| 10 | 3 | Understand the principles of pharmacogenomics and its applications in pharmacology. | Introduction to Pharmacogenomics | Seminar, Guest Lecture | Quiz, Written Assignment |
| 11 | 3 | Apply knowledge to understand the impact of diseases on bodily functions. | Pathology | Group Discussion, Problem Based Learning | Case study analys multiple choice questions |
| 12 | 3 | Develop technical skills to analyze human biological samples. | Laboratory Techniques in Human Biology | Laboratory practical training, practical sessions | Practical Skills Test, Peer Review |
| 13 | 3 | Integrate knowledge through comprehensive case studies. | Case Studies in Human Biology | Interactive lecture, group discussion | Oral Exam, Comprehensive Exam |
| 14 | 3 | Review and prepare for final evaluations. | Retrospective | Review Lectures, Q&A Sessions | - |
| 15 | - | - | Final Exams | - | Final Exams |

## 11.

## 12. Infrastructure

| | |
|---|---|
| **6- Required textbooks** | Human Biology Douglas Wilkin, Ph.D Jean Brainard, Ph.D 2015 |
| **7- Main References** | For the course of Human Biology in the Faculty of Pharmacy, the basic references include:<br><br>1. “Human Biology” by Mader and Windelspecht: for the obvious fundamentals of human biology.<br>2. "Essentials of Human Anatomy & Physiology" by Marieb: Covers the major systems in the body.<br>3. “Principles of Anatomy and Physiology” by Tortora and Derrickson: Provides a deep understanding of biological systems.<br>4. "Human Physiology: An Integrated Approach" by Silverthorn: For an integrated understanding of body functions.<br>5. “Atlas of Human Anatomy” by Netter: A Visual Source for Learning Human Anatomy.<br>6. Scientific journals: such as the "Journal of Human Biology", for the latest research.<br>7. Scientific databases: such as PubMed and ScienceDirect, for extensive access to research articles.<br><br>These references promote learning and provide a basis for students in pharmaceutical research and practice. |
| ب) **Recommended books and references (scientific journals,reports ,.....)** | Previous article |
| ب) **Electronic references,websites ,.....** | |

## 13. Course Development Plan

A plan for the development of a human biology course at the Faculty of Pharmacy aimed at:

1. Content update: to reflect the latest developments in human biology.
2. Enhancing Interaction: Using interactive learning strategies.
3. Diversify assessment: Introduce diverse assessment methods.
4. Technology Integration: To improve learning and resourcing.
5. Practical focus: Improve hands-on training.

Implementation steps include content review, expert consultation, development of new materials, teacher training, and periodic evaluation. Implementation requires funding, technology, and time. Outputs include an updated course and improved learning experience.

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# Course Description Form

## Course Description

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

| | |
|---|---|
| 1. Educational Institution | Al Ain Iraqi University - Faculty of Pharmacy |
| 2. Scientific Department/ Center | Clinical Laboratory Sciences Branch |
| 3. Course Code | Human Anatomy 2 PH1201 |
| 4. Available Attendance Forms | Courses – Attendance |
| 5. 3-semester/ year | Semester II 2023-2024 |
| 6. Number of study hours (total) | 45 hours |
| 7. Date this description was prepared | 1/10/2023 |

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## 8. Course Objectives

1. Studying the general structure and trends of the human body
2. Studying the anatomy of different body systems
3. Understand and know some information in the histological and functional structure of the body organs
4. Understanding the relationship of different body systems to each other

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

### أ- Cognitive goals.

Objectives of the Human Anatomy Course at the Faculty of Pharmacy:

1. Understanding anatomy: Being aware of the structure of the body and its various systems.
2. Identify organs: Identify organs and tissues and understand their functions.
3. Spatial relationships: Understand how organs and systems are spatially connected.
4. Functional Systems: Analyze system interactions to maintain health.
5. Clinical application: The use of anatomical knowledge in clinical contexts.
6. Self-learning: Encourage self-research to deepen understanding.
7. Valuing diversity: Understanding biodiversity and its impact on physiology.

The objectives are to enable students to effectively integrate anatomical knowledge into pharmacy practice and scientific research.

### B - Course Skills Objectives

Skill Objectives for Human Anatomy at the Faculty of Pharmacy:

1. Practical Anatomy: Acquire the skills of using anatomy tools and understanding physical structure.
2. Systems Recognition: Learn to identify organs and tissues and understand their properties.
3. Structure and Function Analysis: Develop the ability to relate anatomical structure to physiological functions.

4. Effective Communication: Improve skills to clearly explain anatomical concepts.
5. Clinical application: Using anatomical knowledge to analyze clinical cases and diagnose diseases.
6. Research: Encourage research in anatomy and develop data collection and analysis skills.
7. Critical Thinking: Enhancing the ability to critically evaluate information and solve problems.
8. Continuous Learning: Urging students to self-learn and follow developments in anatomy.

It aims to enable students to efficiently integrate anatomical knowledge into pharmacy and healthcare.

**Teaching and Learning Methods**

1- Lectures on the various means of attendance
2- Group Discussion
3- Workshops and seminars
5-Presentationof cases
7-PowerPoint presentation

**Valuation Methods**

1- Quizzes
2- Oral exam and direct questions
Midterm exam
4- Electronic exams on the electronic platform
5. Final Examination

**C- Emotional and value objectives**

Emotional and value objectives for the subject of human anatomy in the Faculty of Pharmacy include:

1. Respect for Life: Appreciate the depth and beauty of human anatomy.
2. Ethical Awareness: Understanding ethics related to anatomy and medical research.
3. Empathy: Developing empathy with patients and improving health care.

4. Social Responsibility: Commitment to improving public health.
5. Valuing diversity: Valuing human diversity and its impact on health care.
6. Professional growth: Encourage continuous personal and professional development.
7. Collaboration: Promote teamwork and collaboration in educational and professional environments.
8. Cultural Sensitivity: Understanding the impact of culture on health and medical practices.

These objectives are aimed at instilling positive and professional values in pharmacy students, reinforced by respect and ethics in their future practices.

## Teaching & Learning

Teaching and learning methods for human anatomy at the Faculty of Pharmacy include:

1. Interactive lectures: to explain the basic concepts.
2. Practical laboratories: to dissect models and understand structure.
3. Using the Anatomic Atlas: To learn the finer details.
4. PBL: To develop critical thinking.
5. Self-learning: To explore additional resources.
6. Group projects: to improve communication and cooperation.
7. Practical assessment: To assess the application of knowledge.
8. Technology: to support learning with software and simulation.
9. Seminars and Workshops: To get insights from experts.
10. Feedback: To improve performance and understanding.

These strategies ensure a holistic education that combines theory and practice, fostering the professional application of knowledge.

## Valuation Methods

Methods of Evaluation in Human Anatomy at the Faculty of Pharmacy:

1. Theoretical examinations: to measure understanding of structure and anatomical functions.
2. Laboratory reports: To assess practical and analytical skills in the laboratory.
3. Presentations: To assess communication skills and explain concepts.
4. Practical tests: To measure the ability to identify organs and tissues.
5. Research projects: To assess the ability to conduct independent research.
6. Self-assessment and peer assessment: to promote critical thinking and collaborative learning.
7. Class participation: To measure interaction and interest in the material.

8. Performance-Based Evaluation: To measure the application of knowledge in clinical scenarios.

These modalities ensure an integrated assessment that includes both theoretical and practical aspects of the material.

**(d) Transferred general andqualifying skills (other skills related to employability and personal development).**

1. Educating students on humanitarian and professional work.
2. Developing a sense of responsibility among students during the period of study and work.
3. Supporting the pharmacological culture among students and members of society.
4. Foster collaboration and teamwork

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## 10. 10. Course Structure

| Week | Hours | Learning outcomes required for the program* | Module Name/ or Topic | teaching method | Valuation Method |
|---|---|---|---|---|---|
| 1 | **(1Theoretical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | Introduction to anatomy and anatomical description of an object Human | Lecturing and discussing in-person and data show | Written and oral tests and direct questions |
| 2 | **(1Theoretical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Circulatory system: Location of the vascular system (heart, arteries veins) | | |
| 3 | **(1Theoretical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | \|\|\|UNTRANSLATED_CONTENT_START\|\|\| الجهاز اللمفاوي:\|\|\|UNTRANSLATED_CONTENT_END\|\|\| thymus gland Spleen and Ganglia Lymphocyte) | | |
| 4 | **(1Theoretical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Lymph nodules and tonsils | | |
| 5 | **(1Theoretical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | | | |

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| | | | | | |
|---|---|---|---|---|---|
| | | | The nervous system. (chuckles) (scanner beeps) | | |
| 6 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Respiratory system | | |
| 7 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,D1,D2,D3 ,D4,D5 | Gastrointestinal System | | |
| 8 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C5,D1,D2,D4 ,D5 | Glands attached to the device Digestive | | |
| 9 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C7,D1,D2,D4 ,D5 | Endocrine system | | |
| 10 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | The second part of the endocrine system | | |
| 11 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,C4 ,C5,D1,D2,D4 ,D5 | The urinary system: | | |
| 12 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | Reproductive system Male | | |
| 13 | **(1Theo retical)** (2practical) | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | Reproductive system - My feminine intuition. | | |
| 14 | 3 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | musculature | | |
| 15 | 3 | A1 , A2 , A3, B1, B2,B3 ,C1,C3,D1,D2 | final examination | | |

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| 11.Infrastructure | |
|---|---|
| **8- Required textbooks** | He wrote a course for human anatomy at the Faculty of Pharmacy:<br><br>1. "Atlas of Human Anatomy" by Frank H. Netter: A detailed atlas of human anatomy.<br>2. "Clinically Oriented Anatomy" by Keith L. Moore et al.: focuses on clinical applications of anatomy.<br>3. “Gray's Anatomy for Students” by Richard Drake et al.: A comprehensive explanation of anatomy with a focus on students' needs.<br>4. "Essential Clinical Anatomy" by Keith L. Moore et al.: A brief anatomical reference covering the key points.<br>5. "Sobotta Atlas of Human Anatomy": an accurate depiction of anatomy with a focus on applied aspects.<br>6. "The Developing Human: Clinically Oriented Embryology" by Keith L. Moore and T.V.N. Persaud: Understanding embryonic anatomy and organ development.<br><br>These books provide comprehensive and in-depth knowledge of human anatomy, with a focus on the important practical and clinical aspects of pharmacy students. |
| **9- Main References** | For the Human Anatomy course at the Faculty of Pharmacy, the basic references are:<br><br>1. "Atlas of Human Anatomy" by Frank H. Netter: For accurate illustrations.<br>2. "Clinically Oriented Anatomy" by Keith L. Moore et al.: focuses on clinical aspects.<br>3. “Gray's Anatomy for Students” by Richard Drake et al.: Provides comprehensive information in plain language.<br>4. "Essential Clinical Anatomy" by Keith L. Moore et al.: A brief reference to the necessary basics. |

| | |
|---|---|
| | 5. "Sobotta Atlas of Human Anatomy": for precise anatomical details with high-quality drawings and pictures.<br>6. "The Developing Human: Clinically Oriented Embryology" by Keith L. Moore and T.V.N. Persaud: To understand embryonic development and anatomy.<br><br>These references help students gain a deep understanding of human anatomy, with important clinical applications for the field of pharmacy. |
| ج) **Recommended books and references (scientific journals,reports ,.....)** | Internet<br>PowerPoint Presentations |
| د) **Electronic references,websites ,.....** | N/A |

## 12. Course Development Plan

The plan for the development of the human anatomy course at the Faculty of Pharmacy includes:

1. Course Evaluation: Gathering feedback and analyzing performance.
2. Content Update: Integrate the latest research and review key references.
3. Improving teaching: developing interactive lectures and using technology.
4. PBL: Design clinical scenarios to apply knowledge.
5. Self-learning support: Provide online resources.
6. Evaluation Update: Diversify evaluation methods.
7. Practical development: Increasing practical training opportunities.
8. Training of teaching staff: workshops and training courses.
9. Ongoing review: Periodic evaluation of the course.

The plan aims to equip students with advanced anatomical knowledge and skills to apply in pharmacy and healthcare.

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# COURSE SPECIFICATION

This course description provides a necessary summary to introduce overview of analytical chemistry delineates between quantitative and descriptive analysis, focusing on methods for concentration expression and the ionic equilibrium constant. It explores volumetric and gravimetric analysis techniques while also delving into spectroscopic

| | |
|---|---|
| **1. Educational institution** | Al-ayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | Pharmaceutical chemistry |
| **3. Course title/code** | Analytical Chemistry **PH1103** |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | First semester 2023-2024 |
| **6. Credits (total)** | 45 hrs + 30 hrs practical |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |

**8. Course Objectives**

Introduction to analytical chemistry...the difference between quantitative and descriptive analysis - methods for expressing concentrations - the ionic equilibrium constant - volumetric analysis methods - gravimetric analysis methods - and spectroscopic methods for estimating drug compounds.

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## 9. Learning Outcomes, Teaching, Learning and Assessment Method

### A. Cognitive goals

A1- Statement of knowledge and basic principles in chemistry
A2- Conducting practical experiments of theoretical concepts
A3-Preparation of explanatory aids
A4-Preparing brief reports

### B. The skills goals special to the course

B1-Providing graduates with balanced, thoughtful knowledge and teaching them to assume ethical responsibility in professions related to health care.
B2- Providing information and technical skills to meet the diverse pharmaceutical needs in the public and private sectors.
B3- That the college becomes an educational source based on research and focusing on cooperation between pharmaceutical sciences and the pharmaceutical industry.
B4 - Emphasizing commitment to lifelong learning in order to communicate the rapid developments in pharmaceutical sciences to enable graduates to compete in the labor market and serve society.

### Teaching and Learning Methods

Seminars - daily assignments - oral exams

### Assessment methods

Oral exams and scientific reports

### C. Affective and value goals

C1 Asking questions about topics that can be discussed by students
- C 2 Asking questions that the student solves for the classroom
- C 3 Conduct quick intellectual exams
C4- Preparing reports on chemicals and their analysis methods

### Teaching and Learning Methods

-Providing the student with the basics and topics related to knowledge
-Clarification and explanation of study materials by the teaching staff
-Asking students to visit the library to obtain academic knowledge
-Request reports and seminars on the topics covered

### Assessment methods

1. Statement of knowledge and basic principles in chemistry
2. Conducting practical experiments of theoretical concepts
3. Preparing short reports

### D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1- Acquire the skill of safe handling of chemicals and glassware.

D 2- Acquire the skill of writing scientific reports and research accurately and effectively.

D 3- Acquire skill in implementing chemical diagnosis methods for chemical substances.

D 4- Acquire skill in using books and modern educational means to achieve personal development and develop educational capabilities.

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## 10. Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 3 | 1A,2A, ,4A,1B,2B,3B, ,1C,2C,3C, ,1D,2D, ,4D | Review of elementary concept important to analytical chemistry | 1- Whiteboard and PowerPoint and data show presentation<br>2- Class discussion | 1- Short MCQs<br>2- Oral exam and direct questions in the class<br>3- Midterm exam<br>4- Final exam |
| 2. | 3 | 1A, ,3A,4A,1B,2B,3B,4B,1C,2C,3C, ,1D,2D,3D, | Knowing strong and weak electrolytes , importance weight and concentration | | |
| 3. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B, 1C,2C,3C,4C,1D,2D,3D,4D | The evaluation to Analytical data, definition of terms. | | |
| 4. | 2 | 1A,2A, ,4A,1B,2B, ,4B,1C,2C,3C,4C,1D,2D,3D, | volumetric analysis classification | | |
| 5. | 3 | ,2A,3A,4A,1B,2B,3B, ,1C,2C,3C,4C,1D,2D,3D, | Knowing buffer and ionic equilibrium precipitation methods | | |
| 6. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Mid Examination | | |
| 7. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B ,1C,2C,3C,4C,1D,2D,3D,4D | application of gravimetric analysis , inorganic and organic precipitating agents | | |
| 8. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | application of gravimetric analysis , inorganic and organic precipitating agents | | |
| 9. | 3 | 1A,2A,3A,4A,1B,2B,3B, ,2C,3C,4C,1D,2D,3D,4D | methods of analysis, volumetric base -calculations acidequilibria and PH calculations | | |
| 10. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B, ,2C,3C,4C,1D,2D,3D,4D | methods of analysis, volumetric base -calculations acidequilibria and PH calculations | | |
| 11. | 3 | 1A,2A,3A,4A, ,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | titrations of complex systems | | |
| 12. | 3 | 1A,2A, ,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D, | titrations of complex systems | | |
| 13. | 3 | 1A,2A,3A,4A,1B,2B, ,4B,1C,2C,3C,4C,1D,2D ,4D | Knowing of Spectrophotometric method define | | |
| 14. | 3 | 1A, ,3A,4A,1B,2B,3B,4B,2C,3C,4C,1D,2D,3D,4D | Spectrophotometric method define ,Beer-Lamert, Application , Instrumentation | | |
| 15. | | | Final Examination | | |

## 10. Laboratory Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 2 | 1A,2A,3A, 1B,2B,3B, ,1C,2C,3C,4C,1D,2D,3D,4D | Laboratory safety rules | 1- Whiteboard and PowerPoint and data show presentation<br>2- Class discussion | 1- Short MCQs<br>2- Oral exam and direct questions in the class<br>3- Midterm exam |
| 2. | 2 | 1A,2A, ,4A,1B,2B,3B,4B,1C,2C,3C, ,1D,2D,3D,4D | Glassware laboratory | | |
| 3. | 2 | 1A, ,3A,4A,1B,2B,3B,4B,1C, ,3C,4C,1D,2D,3D,4D | Prepare solutions from solids and liquids | | |
| 4. | 2 | 1A,2A,3A,4A,1B,2B,3B, ,1C,2C,3C,4C, ,3D,4D | Volumetric analysis (Titration | | |
| 5. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B, ,2C,3C,4C,1D ,3D,4D | Titration of hydrochloric acid with sodium carbonate solution | | |
| 6. | 2 | 1A,2A,3A,4A,1B,2B, ,4B,1C,2C,3C,4C,1D,2D,3D | Titration of hydrochloric acid with sodium hydroxide solution | | |
| 7. | 2 | | Mid Examination | | |
| 8. | 2 | 1A,2A,3A, ,1B,2B,3B,4B,1C,2C,3C,4C,1D, ,3D,4D | Titration of potassium permanganate solution with sodium oxalate | | |
| 9. | 2 | 1A,2A,3A,4A,1B ,3B,4B, ,2C,3C,4C,1D,2D,3D,4D | Titration of potassium permanganate solution with ferrous sulfate | | |
| 10. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Determination of chloride by the Mohr method | | |
| 11 | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Determination of a water hardness | | |
| 12 | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Determination of Ca ion usingErchrom black T | | |
| 13. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C ,2D,3D,4D | Gravimetric analysis | | |
| 14. | 2 | 1A,2A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Gravimetric analysis | | |
| 15. | | | Final Examination | | |

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| 11. Infrastructure | |
|---|---|
| **Books Required reading** | Fundamentals of Analytical Chemistry by Stook and West, last ed. |
| **Main references (sources)** | Fundamentals of Analytical Chemistry by Stook and West, last ed. |
| **Recommended books and references (scientific journals, reports…).** | **Scientific journals** |
| **Electronic references, Internet sites…** | **Website of universities** |

| 12. Course development plan |
|---|
| Developing curricula to suit the development in the chemical structures of medicines and training students to work in chemical laboratories and use chemical reactions in the manufacture of medicines with active groups. In addition to various methods of analysis and the use of reagents. |

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# COURSE SPECIFICATION

This course description provides a necessary summary to the study of organic chemistry encompasses essential chemical groups crucial in pharmacy, such as aldehydes, ketones, carboxylic acids, amines, benzene derivatives, and phenols, focusing on their properties, nomenclature, interactions, and preparation methods. Qualitative detection methods are explored to analyze composition and differentiate compounds, emphasizing safe handling procedures and chemical detection techniques. Overall, students gain insight into both theoretical and practical aspects of organic chemistry, facilitating safe and proficient interaction with chemical compounds.

| | |
|---|---|
| **1. Educational institution** | Al-ayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | Pharmaceutical chemistry |
| **3. Course title/code** | Organic chemistry I **PH1204** |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | Second semester 2023-2024 |
| **6. Credits (total)** | 45 hrs+ 30 hrs practical |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |

**8. Course Objectives**

**1- The basics in the study of organic chemistry include a group of chemical groups of great importance in the field of pharmacy. These groups include aldehydes, ketones, carboxylic acids and their derivatives, amines, benzene derivatives, and phenols. It highlights their properties, nomenclature, interactions, and preparation methods.**

**2- Methods of qualitative detection of organic compounds are studied with the aim of examining their composition and distinguishing them. Students are also instructed to understand and follow safe and correct procedures when handling**

**chemicals and glassware, including directions on the use of protection and ventilation.**

**3- It also sheds light on how chemical compounds are detected in various ways, allowing students to understand how to verify the presence and identify different chemical species.**

**4- In general, students are guided to understand the basic and applied aspects of studying organic chemistry and how to interact with chemical compounds safely and effectively.**

## 9. Learning Outcomes, Teaching, Learning and Assessment Method

### A. Cognitive goals

A1- How to deal with organic chemical compounds and their reactions.
A2- How to deal with scientific equipment
A3- Learning using different scientific techniques
A4- Knowledge of the methods used in the preparation of organic compounds.

### B. The skills goals special to the course

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

### Teaching and Learning Methods

1- Seminars - daily assignments - written exams

### Assessment methods

Oral and written exams - scientific reports

### C. Affective and value goals

C 1- Enhancing students' understanding by linking theoretical aspects to practical aspects, by conducting investigations and studying the chemical and physical properties of compounds.

C 2- Enhancing students' ability to think and analyze effectively.

C3- Enhancing students' ability to work as a research team, to develop effective cooperation and interaction skills in a team environment.

C4- Enhancing students' ability to ask objective questions and participate in scientific discussions, to stimulate the spirit of inquiry and interaction in the educational process

## Teaching and Learning Methods

-Providing the student with the basics and topics related to knowledge
-Clarification and explanation of study materials by the teaching staff
-Asking students to visit the library to obtain academic knowledge
-Request reports and seminars on the topics covered

## Assessment methods

1. Seminars - daily assignments - written exams

## D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

1. D1- Acquire the skill of safe handling of chemicals and glassware.
2. D 2- Acquire the skill of writing scientific reports and research accurately and effectively.
3. D 3- Acquire skill in implementing chemical diagnosis methods for chemical substances.
4. D 4- Acquire skill in using books and modern educational means to achieve personal development and develop educational capabilities.

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## 10. Theory Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 3 | 1A,2A,3A,1B,3B,4B,1C,2C,3C, 4C,1D,2D, ,4D | An introduction | 1- Whiteboard and PowerPoint and data show presentation<br>2- Class discussion | 1- Short MCQs<br>2- Oral exam and direct questions in the class<br>3- Midterm exam<br>4- Final exam |
| 2. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Alkanes and methane | | |
| 3. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D | Alkanes and methane | | |
| 4. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Alkenes 1 and 2 | | |
| 5. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Alkenes 1 and 2 | | |
| 6. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Alkynes and Dienes | | |
| 7. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C ,2C,3C,4C,1D,2D,3D,4D | Alkynes and Dienes | | |
| 8. | 3 | 1A,2A,3A,4A,1B,2B,3B,1C,2C,3C,4C,1D, ,3D,4D | Stereochemistry 1 | | |
| 9. | 3 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Stereochemistry 1 | | |
| 10-11 | 6 | 2A,3A,4A,1B,2B,3B, ,1C,2C,3C,4C,1D,2D ,4D | Alcohols | | |
| 12 | 3 | 1A,2A ,4A,1B,2B,3B,4B,1C, 3C,4C,1D,2D,3D,4D | Ether | | |
| 13-14 | 6 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Alkyl halides | | |
| 15 | 3 | 1A,2A,3A,1B,2B,3B,4B,1C,2C,3C,4C,1D ,3D,4D | Cyclic alkenes | | |

ALAYEN IRAQI UNIVERSITY AUIQ

## 10. Laboratory Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Demonstration of some laboratory equipment | 1- Whiteboard and PowerPoint and data show presentation<br>2- Class discussion | 1- Short MCQs<br>2- Oral exam and direct questions in the class<br>3- Midterm exam<br>4- Final exam |
| 2. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Melting point | | |
| 3. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | unknown | | |
| 4. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Boiling point | | |
| 5. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | unknown | | |
| 6. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Elemental analysis | | |
| 7. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | unknown | | |
| 8. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Filtration | | |
| 9. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Recrystallization | | |
| 10. | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | unknown | | |
| 11 | 2 | 1A,2A,3A,4A,1B,2B,3B,,2C,3C,4C,1D,2D ,4D | Extraction | | |
| 12 | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D,3D,4D | Extraction | | |
| 13 | 2 | 1A,2A,3A,4A, ,3B,4B,1C,2C,3C, ,1D,2D,3D,4D | Distillation | | |
| 14 | 2 | 1A,2A,3A,4A,1B,2B,3B,4B,1C,2C,3C,4C,1D,2D | Sublimation | | |
| 15 | | | Exam | | |

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| 11. Infrastructure | |
|---|---|
| **Books Required reading** | Organic Chemistry by Robert T. Morrison and Robert N. Boyd .<br>Organic Chemistry by McCurry; 9th ed. Thomason learning; CA,USA; 2015 |
| **Main references (sources)** | Organic Chemistry by Robert T. Morrison and Robert N. Boyd .<br>Organic Chemistry by McCurry; 9th ed.<br>Thomason learning; CA,USA; 2015 |
| **Recommended books and references (scientific journals, reports…).** | **Scientific journals** |
| **Electronic references, Internet sites…** | **Web sites of Universities** |

## 12. Course development plan

Developing academic curricula to suit the development in the chemical structures of medicines and training students to work in chemical laboratories and use chemical reactions in the manufacture of medicines with active groups.

ALAYEN IRAQI UNIVERSITY AUIQ

# COURSE SPECIFICATION

In this course the students will understand the components of typical prescription, the different unit systems and the relation between these systems. Students will also be familiar with the methods and tools of measuring weights and volumes, and how to calculate doses on different bases. Involves brief information about old pharmacy. It

| | |
|---|---|
| **1. Educational institution** | Alayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | Pharmaceutics |
| **3. Course title/code** | Principle of pharmacy practice PH1102 |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | 1st semester 2023-2024 |
| **6. Credits (total)** | 30 hrs |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |

**8. Course Objectives**

Enable students to interpret a prescription or drug system and use the metric system and the old pharmacy system in pharmaceutical calculations. To calculate the dose and use some basic measurements and calculations. Calculations of density, specific gravity, and specific volume

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## 9. Learning Outcomes, Teaching, Learning, and Assessment Method

## 1. Cognitive goals

**1. Enabling students to be familiar with the types of numbers, the abbreviations commonly used in prescriptions, and their meanings.**
**2. Enable students to understand the components of the typical prescription, the system of different units, and the relationship between them.**
**3. Enabling students to acquire and understand tools for measuring weights and volumes.**
**4. Enabling students to learn how to calculate drug doses on different bases.**
**5. Enabling students to collect and understand how to reduce and enlarge Prescriptions**

## 2. The skills goals special to the course

1- Enabling students to have the abilities of pharmaceutical accounts.
2- Enabling students to acquire the skills of writing scientific reports.
3- Enable students to have skilled work in laboratories and conduct scientific experiments
4- Enable students to read and interpret all medical and pharmacy terms and symbols

## Teaching and Learning Methods

1- PowerPoint and Multimedia presentation
2- Class discussion
3- attendance lectures
4-Presenting discussion cases of ethical dilemmas

## Assessment methods

1- Short MCQs
2- Oral exam and direct questions in the class
3- Midterm exam
4- Electronic exams on the electronic platform
5- Final exam

## c-Affective and value goals

1. To uphold the highest standards of ethical conduct and professional conduct in all aspects of therapeutic decision-making and patient care.
2. Demonstrate commitment to patient safety.
3. Evidence-based practice.
4. Respect the patient's autonomy and preferences.
5. Collaborate effectively with other health care professionals.
6. Raising students to respect human dignity and freedom to make decisions.
7. Raising students on humanitarian and professional work.
8. Promoting and consolidating professional and ethical values among students practicing the profession of pharmacist.
9. Raising students on a culture of integrity and fighting corruption in all its forms.
10. Training students to respect the rights of patients regardless of their profession, culture, religion, gender, and custom.
11. Training students to respect the freedom of thought, expression, and creativity of others.
12. Developing students' sense of responsibility during the period of study and work.
13. Supporting drug culture among students and community members.
14. Enhancing the spirit of cooperation and teamwork among students.

## Teaching and Learning Methods

1- Case studies
2- Group discussions

| |
|---|
| 3- Lectures<br>4- Power Point presentation |
| **Assessment methods**<br>1. Homework<br>2. Electronic MCQs on the electronic platform |
| |

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## 10. Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1 | 2 | A5,B2,B4,B10,C1,D1,D4 | Principles of pharmacy calculations | Smart board | Discussions and practical outcome evaluation |
| 2 | 2 | A5,B2,B4,B10,C1,D1,D4 | Prescription and medication orders | | |
| 3 | 2 | A5,B2,B4,B10,C1,D1,D4 | Translate prescription and medication orders | | |
| 4 | 2 | A5,B2,B4,B10,C1,D1,D4 | International system of units | | |
| 5 | 2 | A5,B2,B4,B10,C1,D1,D4 | International system of units | | |
| 6 | 2 | A5,B2,B4,B10,C1,D1,D4 | Common system of measurements and intersystem conversion | | |
| 7 | 2 | A5,B2,B4,B10,C1,D1,D4 | Common system of measurements and intersystem conversion | | |
| 8 | 2 | A5,B2,B4,B10,C1,D1,D4 | Dose calculations General considerations | | |
| 9 | 2 | A5,B2,B4,B10,C1,D1,D4 | Dose calculations General considerations | | |
| 10 | 2 | A5,B2,B4,B10,C1,D1,D4 | Dose calculations Patient parameters | | |
| 11 | 2 | A5,B2,B4,B10,C1,D1,D4 | Dose calculations Patient parameter | | |
| 12 | 2 | A5,B2,B4,B10,C1,D1,D4 | Density and specific gravity and specific volume | | |
| 13 | 2 | A5,B2,B4,B10,C1,D1,D4 | Reducing and enlarging the formula | | |
| 14 | 2 | A5,B2,B4,B10,C1,D1,D4 | Reducing and enlarging the formula | | |
| | | | | | |

| 11. Infrastructure | |
|---|---|
| **Books Required reading** | Pharmaceutical Calculation, Howard C. th Edition2010 Wolters Kluwer Lippincott Williams &Wilkins. |
| **Main references (sources)** | |
| **Recommended books and references (scientific journals, reports…).** | |
| **Electronic references, Internet sites…** | |

| 12. Course development plan |
|---|
| none |

ALAYEN IRAQI UNIVERSITY AUIQ

# COURSE SPECIFICATION

The course teaches calculations for dilution and concentration of different types of liquids and those involved in preparing isotonic solutions, electrolyte solutions and intravenous admixtures. It involves computation of pharmaceutical ingredients, dosage forms, pharmaceutical formulations of extemporaneous compounding, and biological parameters of drug substances

| | |
|---|---|
| **1. Educational institution** | Alayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | pharmaceutics |
| **3. Course title/code** | Pharmaceutical calculation PH1202 |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | Second semester 2023-2024 |
| **6. Credits (total)** | 30 hr theory & 30 hr practical/ semester |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |

**8. Course Objectives**

1. The use of calculations in pharmacy is varied and broad-based. As pharmaceutical
2. calculations are concerned in several areas, including commercial and research, especially in industry, academics, and government institutions.
3. Applications of pharmaceutical calculations include: the physical and chemical properties of the drug, the biological effectiveness and the speed of absorption of the drug, the spread of the drug in the body, the metabolic changes of the drug and its excretion, statistical information for research and clinical studies of drugs, the development and formulation of drug products, the calculation of drug doses, pharmacoeconomics and other fields

## 9. Learning Outcomes, Teaching, Learning, and Assessment Method

### A. Cognitive goals

1. **Enable students to become familiar with the types of numbers, the abbreviations commonly used in prescriptions, and their meanings.**
2. **Enable students to understand the components of the typical recipe, the system of different units, and the relationship between them**
3. **Enabling students to acquire and understand tools for measuring weights and volumes**
4. **Enabling students to learn how to calculate drug doses on different bases.**
5. **Enable students to obtain and understand how to reduce and enlarge prescriptions.**

### B. The skills goals special to the course

**1-** Enable students to possess the capabilities of pharmaceutical calculations.
**2-** Enabling students to acquire the skills of writing scientific reports.
**3.** Enable students to have skilled work in laboratories and perform scientific experiments**.**
**4-** Enable students to read and interpret all medical and pharmaceutical terms and

### Teaching and Learning Methods

1- Multimedia lectures
2- Directing students to some websites to benefit from them.
3- Power Point presentation

### Assessment methods

1- Short MCQs
2- Oral exams and direct questions in the class
3- Midterm exam
4- Final exam
5- Electronic exams on the electronic platform

### C. Affective and value goals

1. Adhere to the highest standards of ethical conduct and professional conduct in all aspects of therapeutic decision-making and patient care.
2. Demonstrate commitment to patient safety.
3. Evidence-based practice.
4. Respect the patient's autonomy and preferences.
5. Collaborate effectively with other health care professionals.
6. Raising students to respect human dignity and freedom to make decisions.
7. Raising students on humanitarian and professional work.
8. Promoting and consolidating professional and ethical values among students practicing the profession of pharmacist.
9. Raising students on a culture of integrity and fighting corruption in all its forms.
10. Training students to respect the rights of patients regardless of their profession, culture, religion, gender, and custom.

11. Training students to respect the freedom of thought, expression, and creativity of others.
12. Developing students' sense of responsibility during the period of study and work.
13. Supporting drug culture among students and community members.
14. Enhancing the spirit of cooperation and teamwork among students.

**Teaching and Learning Methods**

1. Group discussions
2. Lectures
3. Power Point presentation
4. Electronic exams on the electronic platform

**Assessment methods**

1. Homework
2. Electronic exams on the electronic platform

**D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)**

1. Determine the appropriate medication at the appropriate dose for an individual or multiple disease condition.
2. Solve problems and design treatment plans and schedules to achieve goals on time.
3. To be able to work in the hospital's pharmacy and specialized departments.

ALAYEN IRAQI UNIVERSITY AUIQ

## 10. Theory Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 2 | A5,B2,B3,B4,C1,D1,D5 | Isotonic solutions | Smart & white board, handout Electronic Schools, Free Conference call | Discussion and practical work evaluation and assessments |
| 2. | 2 | . A5,B2,B3,B4,C1,D1,D5 | Apply physical chemical principles in the calculation of isotonic solutions | | |
| 3. | 2 | . A5,B2,B3,B4,C1,D1,D5 | Perform the calculations required to prepare isotonic component prescription | | |
| 4. | 2 | A5,B2,B3,B4,C1,D1,D5 | Calculate the milliequivalent weight from and atomic or formula weight | | |
| 5. | 2 | A5,B2,B3,B4,C1,D1,D5 | Convert between milligrams and milliequivalents | | |
| 6. | 2 | A5,B2,B3,B4,C1,D1,D5 | Calculate problems Involving milliequivalents | | |
| 7. | 2 | A5,B2,B3,B4,C1,D1,D5 | Calculate problems Involving millimoles and milliosmoles. | | |
| 8. | 2 | A5,B2,B3,B4,C1,D1,D5 | Perform calculations for altering product strength by dilution | | |
| 9. | 2 | A5,B2,B3,B4,C1,D1,D5 | Perform calculations for altering product strength by concentration | | |
| 10. | 2 | A5,B2,B3,B4,C1,D1,D5 | Perform calculations for preparation and use of stock solutions. | | |
| 11 | 2 | A5,B2,B3,B4,C1,D1,D5 | Apply allegation medial and allegation alternate in problem-solving. | | |
| 12 | 2 | A5,B2,B3,B4,C1,D1,D5 | Perform calculations for adults and pediatric intravenous infusions. | | |
| 13 | 2 | A5,B2,B3,B4,C1,D1,D5 | Perform calculations for intravenous additives. | | |

| | | | | | |
|---|---|---|---|---|---|
| 14 | 2 | A5,B2,B3,B4,C1,D1,D5 | Perform rate of flow calculations for intravenous fluids. | | |
| 15 | 2 | A5,B2,B3,B4,C1,D1,D5 | Utilize the correct rate of flow tables and nomograms. | | |

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## 10. Laboratory Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1 | 2 | A5,B2,B3,B4,C1,D1,D5 | Demonstration of different glass wares and equipment used in the field of pharmacy | Smart & white board | Discussion and practical work evaluation and assessments |
| 2 | 2 | A5,B2,B3,B4,C1,D1,D5 | Pharmaceutical measurements | | |
| 3 | 2 | A5,B2,B3,B4,C1,D1,D5 | Volume measurements | | |
| 4-5 | 4 | A5,B2,B3,B4,C1,D1,D5 | Preparation of aromatic waters | | |
| 6-7 | 4 | A5,B2,B3,B4,C1,D1,D5 | Preparation of simple solutions | | |
| 8-10 | 6 | A5,B2,B3,B4,C1,D1,D5 | Reducing and enlarging prescription contents | | |
| 11-12 | 4 | A5,B2,B3,B4,C1,D1,D5 | Percentages in calculating prescription contents | | |
| 13-15 | 6 | A5,B2,B3,B4,C1,D1,D5 | Stock solutions and dilution technique during dispensing technique | | |

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| 11. Infrastructure | |
|---|---|
| **Books Required reading** | .<br>Pharmaceutical calculations l “, Ansel Wolters Kluwer. , 2010. |
| **Main references (sources)** | **Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 3ed Michael E. Aulton (Author) Churchill,** |
| **Recommended books and references (scientific journals, reports…).** | |
| **Electronic references, Internet sites…** | |

| 12. Course development plan |
|---|
| Not available |

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# COURSE SPECIFICATION

This course description provides a necessary summary of the most important characteristics of the course and the learning results expected from the student to achieve, demonstrating whether he has achieved the maximum benefit from the available learning opportunities. It must be linked to the program description.

| | |
|---|---|
| **1. Educational institution** | Al-Ayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | Pharmacognosy and supporting science department |
| **3. Course title/code** | Mathematics & Biostatistics// Ph1105 |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | First semester 2023-2024 |
| **6. Credits (total)** | 3 hours in weak/ 15 weeks |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |
| **8. Course Objectives** | |
| Understand the terms, concepts and laws in biostatistics and their application in the field of pharmacy | |

ALAYEN IRAQI

## 9. Learning Outcomes, Teaching, Learning and Assessment Method

### A. Cognitive goals

1. Knowledge of mathematical terminology and its application in the field of pharmacy.
2. Knowledge of mathematical foundations and theories and their relationship to the body.
3. Knowledge of biostatistics laws and their application in the field of pharmacy

## B. The skills goals special to the course

1. Give a comprehensive idea of the laws and theories of mathematics and biostatistics

## Teaching and Learning Methods

1. Encourage reading books
2. Holding conferences and seminars
3. Participate in workshops

## Assessment methods

-Make periodic reports
-Oral and written exams
- Discussion in class by asking questions that encourage linking the subject with other subjects

## C. Affective and value goals

1 Educating students on professional humanitarian work
2 Promoting and consolidating professional and controversial values among students to practice the profession of pharmacist
3 Promote the spirit of cooperation and teamwork upon request
4 Training students to respect the freedom of thought, expression and creativity of others
5 Develop students' sense of responsibility during the study period and during work

## Teaching and Learning Methods

1 Discussion of teamwork
2 Self-report writing
3 Use the strategy of cooperation and assistance during the education process
4 Field visits to relevant ministries and educational institutions
5 Holding seminars, courses and workshops for students that encourage spiritual values

## Assessment methods

1. Surprising questions and discussion in different aspects of education

ALAYEN IRAQI UNIVERSITY AUIQ

## 10. Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Mathematics: General concepts, Coordinate and graph in plane | Power Points. Whit board | Quizzes , homework and oral examination |
| 2. | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Inequality, absolute value or magnitude | | |
| 3. | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Function and them graphs , Displacement function | | |
| 4. | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Slope and equation for lines | | |
| 5. | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Practice exercises | | |
| 6 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Biostatics: General concepts of statistics | | |
| 7 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Limits, theorem of limits | | |
| 8 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Statistical methods and theory | | |
| 9 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Continuity , continuity conditions | | |
| 10. | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Practice exercises | | |
| 11 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Probability concepts | | |
| 12 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | The concepts of central tendency | | |

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| | | | | | |
|---|---|---|---|---|---|
| 13 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Practice exercises | | |
| 14 | 3 | A 1,2,3<br>B 1<br>C 1,2,3,4,5 | Deviations and variation, application of static in medical field | | |

| **11. Infrastructure** | |
|---|---|
| **Books Required reading** | 1-Calculas(Thomas)(Eleventh edition)<br>2-Introductory Biostatistics for the helath sciences(Robert C. Duncan,…)(Second edition) |
| **Main references (sources)** | 1-Calculas(Thomas)(Eleventh edition).2011<br>2-Introductory Biostatistics for the helath sciences(Robert C. Duncan,…)(Second edition)1989 |
| **Recommended books and references (scientific journals, reports…).** | Any book or reference in mathematics as well as in biostatistics |
| **Electronic references, Internet sites…** | Depending on the type of topic discussed during the week |

| **12. Course development plan** |
|---|
| Continuous curriculum due to his request to serve the educational process Maintain the scientific equanimity through the use of valuable resources and books International |

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# COURSE SPECIFICATION

This course description provides a necessary summary of the most important characteristics of the course and the learning results expected from the student to achieve, demonstrating whether he has achieved the maximum benefit from the available learning opportunities. It must be linked to the program description.

| | |
|---|---|
| **1. Educational institution** | Al-Ayen Iraqi University - College of Pharmacy |
| **2. College department/Center** | Pharmacognosy and Supporting Sciences |
| **3. Course title/code** | Medical physics / Ph1203 |
| **4. Modes of Attendance offered** | Full-time and official attendance hours |
| **5. Semester/Year** | second semester 2023-2024 |
| **6. Credits (total)** | 4 hour per week |
| **7. Date of description form preparation//Revision of this specification** | 1/10/2023 |

**8. Course Objectives**

To understand physics concepts and terminology, and its applications in field of medicine.

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## 9. Learning Outcomes, Teaching, Learning and Assessment Method

### A.Cognitive goals

1. Knowledge of physical terminology and its application in the field of medicine
2. Know the foundations and physical theories and their relationship to the body
3. Know the components of some electronic devices that are used in the diagnosis of diseases

## B.The skills goals special to the course

1. Give a comprehensive idea of the laws and theories of medical physics

## Teaching and Learning Methods

1- Theoretical lectures
2- Educational laboratories
3- Scientific Reports
4. Desk Research

## Assessment methods

1- Midterm and final exams
2. Oral exams and laboratory research

## C.Affective and value goals

1 - Educating students on professional humanitarian work
2- Promoting and consolidating professional and ethical values among students to practice the profession of pharmacist
3. Promote the spirit of cooperation and teamwork upon request
4- Training students to respect the freedom of thought, expression and creativity of others
5- Develop a sense of responsibility among students during the study period and during work

## Teaching and Learning Methods

1. Seminars
2- Daily duties
3- Written exams

## Assessment methods

1-Oral and written exams and writing reports on practical experiences

## D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

1. Follow-up of external sources
2. Follow-up of modern scientific topics through the Internet
3. Try to solve external questions and homework by referring to modern sources and the Internet

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## 10. Course Structure

| Week | Hrs. | ILOs | Unit/Module or Topic Title | Teaching methods | Assessment methods |
|---|---|---|---|---|---|
| 1. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Method of physics, properties of systems and thermodynamics, conservation of energy principle, zeroth law | The use of scientific references and use the board | Quizzes, homework and oral examination |
| 2. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Temperature scales, equation of state, ideal gas, general law of gases, coefficient of volume expansion | | |
| 3. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Heat and energy, first law of thermodynamic, Boyles and Charles law | | |
| 4. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | The second law of thermodynamic, entropy and enthalpy, heat capacity and adiabatic process | | |
| 5. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Kinetic theory of gas, electromagnetic waves, Maxwell equations, physical optics | | |
| 6. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Radiation laws, black body radiation, heat transfer | | |
| 7. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Production of xray, U.V and IR effects, medical effects of radiation | | |

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| 8. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Ostwald's viscometer, find the molecular weight, find the concentration of unknown substance | | |
| 9. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Measuring surface tension by capillary | | |
| 10. | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Speed of sound | | |
| 11 | 2 | A1,2,3<br>B 1<br>C 1,2,3,4,5<br>D 1,2,3 | Laser application in medicine | | |

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| 11. Infrastructure | |
|---|---|
| **Books Required reading** | 1-Physics of biology and medical students.3ed.2008 |
| **Main references (sources)** | 1-Medical physics, J.R.Cameron (1992) |
| **Recommended books and references (scientific journals, reports…).** | According to the type of topic discussed during the week |
| **Electronic references, Internet sites…** | According to the type of topic discussed during the week |

| 12. Course development plan |
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| Use of updated lab equipment that help students to develop their learning skills. |

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