

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



**Al-Turath University – College of Sciences
Department of Medical Physics**

2025 - 2026

Academic Program and Course Description Guide

Institute name : Al-Turath University

Scientific Department : Medical Physics

Academic or Professional Program Name : Bachelor of Medical Physics

Final Certificate Name : Bachelor

Academic System : Bologna Process

Description Preparation Date : 15/4/2026

File Completion Date : 16/4/2026

Signature:



Head of Department Name:

Dr. Kamal Hameed Gati

Date: 17 / 8 / 2026

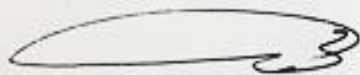
Signature:



Scientific Associate Name:

Dr. Abdul Jabbar Abbas Oda

Date: 17 / 8 / 2026



The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance

Department Name :

Date: 17 / 8 / 2026

Signature:

Approval of the Dean



إبراهيم بن محمد بن عبد الله
عميد كلية العلوم

1. Program Vision

The department aims to qualify specialists in medical physics to provide highly efficient support services in diagnostics using radiology, MRI, CT scans, and physiotherapy. They will also be qualified to work in scientific research, enabling them to serve the community and advance science in the field of medical physics, given its significant connections with other sciences, whether in the natural and industrial fields or in cutting-edge research.

2. Program Mission

The department's mission is to provide students with practical and scientific training through an intensive scientific curriculum utilizing various teaching and learning methods. This prepares students academically to meet the demands of scientific development. The Medical Physics Department works to enhance several key areas that contribute to increased scientific and educational efficiency, including:

- Providing a high-quality learning environment for students to raise their scientific and intellectual level, develop their skills, and increase their ability to work and cope with diverse situations.
- Motivating students to engage in scientific research by involving faculty and students in conducting scientific and applied research to contribute to the development of the local community.
- Strengthening relationships with various government departments, especially those benefiting from their expertise, through their participation in the summer training program, the presentation of applied research, and the holding of scientific seminars and lectures both within and outside the department.

3. Program Objectives

Program Objectives

The department's program aims to provide students with a suitable learning environment and rigorous theoretical and practical curricula that keep pace with scientific and technological advancements in laboratory fields and medical equipment by aligning learning outcomes with labor market needs.

4. Program Accreditation

None

5. Other external influences

None

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	16	%32	Institutional Requirements

College Requirements	7	34	%28	
Department Requirements	10	70	%40	
Summer Training	Exist			
Other				

*Notes may include whether a course is required or elective.

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First Year First semester 2025-2026	MEDPHY1101	Fundamentals of Mechanics	2	2
	MEDPHY1102	Electricity and Magnetism	2	2
	MEDPHY1103	Analytical Chemistry	2	2
	MEDPHY1104	Mathematics	2	
	MEDPHY1105	English Language1	2	
	MEDPHY1106	Democracy and Human Rights	2	
First Year Second semester 2025-2026	MEDPHY1201	Biomechanics	2	2
	MEDPHY1202	Biophysics	2	2
	MEDPHY1203	General Biology	2	2
	MEDPHY1204	Organic Chemistry	2	2
	MEDPHY1205	Computer Applications	1	2
	MEDPHY1206	Arabic Language1	2	
Second Year First semester 2025-2026	MEDPHY2101	Modern Physics	2	
	MEDPHY2102	Mathematical Physics	2	
	MEDPHY2103	Differential Equations	2	
	MEDPHY2104	In Organic Chemistry	2	2
	MEDPHY2105	Thermodynamics	2	2
	MEDPHY2106	Crimes of the Ba'athist Regime	2	
Second Year Second semester 2025-2026	MEDPHY2201	Sound and Wave Motion	2	2
	MEDPHY2202	Quantum Mechanics	2	
	MEDPHY2203	Physiology	2	2
	MEDPHY2204	Biochemistry	2	2
	MEDPHY2205	English Language2	2	
	MEDPHY2206	Arabic Language2	2	
	MEDPHY2207	Computer Programming	2	2

8. Expected learning outcomes of the program

Knowledge

A graduate of this department will be able to:

1. Know and understand the fundamental principles of medical physics and its applications in the medical field.
2. Be familiar with the physics of radiation, its types, and its interaction with matter, especially in relation to examinations involving the use of various types of radiation in the medical diagnosis of medical conditions.
3. Know the basics of medical imaging equipment such as X-rays, MRI, CT scans, and ultrasound (sonography), and understand the principles of radiation therapy and how it is used in the medical field.
4. Be familiar with radiation protection laws. This is considered one of the most important areas of knowledge for graduates of this department, and it is studied as part of the department's curriculum.

Skills

1. Analyzing medical data using physical and statistical methods and linking physical concepts to clinical applications.
2. Interpreting radiological examination results scientifically and solving problems in the fields of imaging and radiotherapy.
3. Evaluating the quality of medical equipment and diagnostic performance, and operating and calibrating radiology and medical imaging equipment while applying radiation safety standards in hospitals.
4. Conducting radiation dose measurements in collaboration with specialized staff in relevant medical departments and participating in radiotherapy treatment planning, thus developing expertise in this field.

Learning Outcomes

1. Professionally prepared to perform his duties in his field of work.
2. The graduate's commitment to the ethical principles and values of the profession.
3. A commitment to the continuous use of scientific research to remain relevant to his specialization.
4. A commitment to a spirit of positive interaction and a habit of continuous contribution in his field of work.

9. Teaching and Learning Strategies

The department benefits from the expertise of its faculty members, across various scientific and humanities disciplines, who contribute significantly to shaping course content through both in-person and online lectures. This approach aims to engage students, making the learning process easier, faster, and more enjoyable through the following:

- ☐ Identifying and nurturing students' innate scientific abilities, a cornerstone of the educational process, to achieve learning objectives.
- ☐ Faculty members, drawing on their academic and scientific experience, prepare lecture content to foster trust between students and instructors, a key element in enhancing the learning process.
- ☐ The department's spacious classrooms are equipped with modern technology, including advanced screens for engaging lecture presentations. This technology helps capture students' attention and engage them with the course material. Lectures often incorporate illustrative diagrams and figures, which instructors connect to practical applications, facilitating student comprehension. Using visual aids during lectures helps convey the scientific meaning of the material to students, which they might not grasp through words alone. This is precisely what the instructor does.

To maximize student attention and engagement with the presented material, instructors involve them

in discussions related to the subject matter from time to time. This keeps them engaged in the lecture, whether theoretical or practical, and increases their connection to the content. It is important to avoid any discrimination between male and female students to achieve the best educational and scientific outcomes within the lecture.

Theoretical material has a practical component, depending on its academic type. This involves using laboratories equipped with state-of-the-art scientific and computer equipment. To ensure the educational strategy is effective, it is necessary to establish working groups in the laboratories that include both genders, rather than limiting participation to one gender, thus reducing the gap between students. Continuous supervision of these groups is essential. • Using short quizzes and oral questions during lectures to assess students' comprehension of the material, while also allowing time for student discussions. This requires continuous monitoring of student grades to identify and minimize any shortcomings.

- To foster mutual trust between students and instructors, the relationship should be strengthened beyond lecture time. Students should be given ample opportunity to consult with instructors at other times to address any obstacles or problems they may encounter during their studies.

- To stimulate students' intellectual capacity, instructors should employ a lecture-based approach, moving away from rote memorization and passive learning, which weaken students' understanding and focus on the material.

10. Evaluation methods

Weekly, monthly, and daily exams, midterm exams, research reports assigned to students, and homework assignments are all part of the Bologna system, which focuses on motivating students to use all their skills both inside and outside the university, as well as final exams.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
PhD-Professor	Physics	Nuclear			1	
PhD - Assistant Professor	Physics	Optics			1	
PhD - Lecturer	Physics	Materials	Computer Programming		2	
PhD - Lecturer	Physics	Nuclear			1	
Master's - Assistant Lecturer	Physics	Materials			1	
Master's - Assistant Lecturer	Computer	Computer			1	
Master's - Assistant Lecturer	Biology	Microbiology			1	
PhD - Assistant Professor	Chemistry	Organic Chemistry				1
PhD - Assistant Professor	Arabic Language	Arabic Language				1
Master's - Assistant Lecturer	English Language	English Language				1

Professional Development

Mentoring new faculty members

New faculty members should be informed of all work requirements, such as course syllabi and their content, scientific laboratories and equipment available for teaching students, and encouraged to continue in the field of scientific research and participate in all department activities, such as scientific conferences and publishing research within the research plan approved at the beginning of each

academic year.

12. Acceptance Criterion

The department accepts students from the scientific branch only, and from the grades that are determined and approved by the Ministry of Higher Education and Scientific Research and the University Council.

13. The most important sources of information about the program

1. Sources approved by specialized universities.
2. Medical Physics – Prof. Dr. Taqi Al-Mousawi, 2024

14. Program Development Plan

1. Utilizing new concepts in the field of medical physics, a modern specialization that connects physics concepts and laws with the field of medicine.
2. Employing electronic and scientific equipment in interactions with students and faculty members of the department.
3. Equipping the department's scientific laboratories with modern practical equipment for conducting scientific experiments for students.
4. Keeping abreast of curriculum updates in coordination with partner institutions at public universities.
5. Continuing to participate in and publish scientific research in reputable, accredited journals.

15- Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year First semester 2025-2026	MPHY1101	Fundamentals of Mechanics	Core	*	*	*	*	*		*				*	
	MPHY1102	Electricity and Magnetism	Core	*	*	*	*	*	*					*	
	MPHY1103	Analytical Chemistry	Support	*	*	*		*	*	*	*			*	
	MPHY1104	Mathematics	Support	*	*	*	*	*	*	*					
	MPHY1105	English Language1	Basic	*	*	*		*	*	*					
	MPHY1106	Democracy and Human Rights	Basic	*				*				*	*	*	*
First Year Second semester 2025-2026	MPHY1201	Biomechanics	Core	*	*	*	*	*	*		*			*	
	MPHY1202	Biophysics	Core	*	*	*	*	*		*				*	
	MPHY1203	General Biology	Support	*	*	*		*	*					*	

	MPHY1204	Organic Chemistry	Support	*	*			*	*					*	
	MPHY1205	Computer Applications	Basic	*	*	*	*	*	*	*					
	MPHY1206	Arabic Language1	Basic	*				*				*	*	*	*
Second Year First semester 2025-2026	MPHY2101	Modern Physics	Core	*	*	*	*	*	*					*	
	MPHY2102	Mathematical Physics	Core	*	*	*		*	*					*	
	MPHY2103	Differential Equations	Support	*	*	*		*	*					*	
	MPHY2104	In Organic Chemistry	Support	*	*			*	*					*	
	MPHY2105	Thermodynamics	Core	*	*	*	*	*	*					*	
	MPHY2106	Crimes of the Ba'athist Regime	Basic	*				*				*	*	*	*
Second Year Second semester 2025-2026	MPHY2201	Sound and Wave Motion	Core	*	*	*	*	*	*					*	
	MPHY2202	Quantum Mechanics	Core	*	*	*		*	*						
	MPHY2203	Physiology	Support	*	*	*	*	*	*		*			*	

	MPHY2204	Biochemistry	Support	*	*	*		*	*		*			*	
	MPHY2205	English Language2	Basic	*	*	*		*	*						
	MPHY2206	Arabic Language2	Basic	*				*				*	*	*	*
	MPHY2207	Computer Programming	Basic	*	*	*		*	*	*				*	

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

Course Description Form

First Year – First Semester

1- Course Name:					
Analytical Chemistry					
2- Course Code:					
CREQ1105					
3- Semester / Year:					
2025/2026					
4- Description Preparation Date:					
1/9/2025					
5- Available Attendance Forms:					
In-person / Online					
6- Number of Credit Hours (Total) / Number of Units (Total)					
125/5					
7- Course administrator's name (mention all, if more than one name)					
Name: Assistant teacher Maarib Mudhar Farouq Email: maarib.mudhar@uoturath.edu.iq					
8- Course Objectives					
Course Objectives	1. A general introduction to the fundamentals of analytical chemistry, aimed at teaching the student the primary purpose of analytical chemistry, the basic steps of chemical analysis, and the systematic methods for conducting measurement or analytical study. 2. A comprehensive introduction to the concept of weights and volumes in chemistry to achieve a complete understanding of the mole. 3. The curriculum progresses to introducing the basic units related to concentration in analytical chemistry, the relationships between them, and the ability to interchange between them. 4. A study of chemical elements and their relationship to the mole. 5. A basic understanding of methods for measuring weight and solubility.				
9- Teaching and Learning Strategies					
Strategy	- Interactive in-class lectures including educational videos - Practical laboratory lectures - Emphasis on interactivity, student participation, question-and-answer sessions, and problem-solving as key elements in delivering the material to students - A two-hour weekly educational program primarily focused on expanding the scope numerical problem-solving				
10- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1. To learn the correct methodology for solving	Learn the fundamentals of analytical chemistry and the scientific steps of analysis.	Theoretical lectures	Monthly and daily examinations

2	2	analytical problems. 2. To learn the basic	Learn the fundamentals of analytical chemistry and the scientific steps of analysis.	Theoretical lectures	
3	2	quantitative and quantitative definitions and their impact on selecting	Solution preparation and concentration (molecular mass, moles, molarity, molality, normal state, and other concentration units)	Theoretical lectures	
4	2	analytical methods. 3. To learn the mole unit and	Solution preparation and concentration (molecular mass, moles, molarity, molality, normal state, and other concentration units)	Theoretical lectures	
5	2	how to balance chemical equations. 4. To learn the basic units.	Solution preparation and concentration (molecular mass, moles, molarity, molality, normal state, and other concentration units)	Theoretical lectures	
6	2	5. To gain a general introduction to	Unit conversion (mol, ppm, ppb, w/w, w/v, v/v)	Theoretical lectures	
7	2	solubility products and common ion	Unit conversion (mol, ppm, ppb, w/w, w/v, v/v)	Theoretical lectures	
8	2	interactions. 6. To develop students' ability to work with numbers, units, and methods of conversion between them.	Unit conversion (mol, ppm, ppb, w/w, w/v, v/v)	Theoretical lectures	
9	2	7. To learn how to select the appropriate analytical	Chemical relationships (balancing chemical equations and measuring chemical elements)		
10	2	methods for each analytical problem. 8. To develop skills in working with and	Chemical relationships (balancing chemical equations and measuring chemical elements)	Theoretical lectures	
11	2		Chemical relationships (balancing chemical equations and measuring chemical elements)	Theoretical lectures	
12	2		Chemical relationships (balancing chemical equations and measuring chemical elements)	Theoretical lectures	
13	2		Gravimetric analysis methods (solubility and common ionic effects)	Theoretical lectures	

14	2	balancing chemical equations and to learn how to calculate reactants.	Midterm exam	Theoretical lectures	
15	3	9. To develop skills in handling chemicals in the laboratory and methods for detecting simple elements.	Final Year Exam	Theoretical lectures	

11- Course Evaluation

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

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	The twinning program with Al-Nahrain University – Department of Medical Physics
Main references (sources)	Fundamentals of Analytical Chemistry, Skoog, D. West, F. J. Holler, and S. R. R. Crouch, Brooks/Cole, 2004, 8th ed.
Recommended books and references (scientific journals, reports...)	Analytical Chemistry: Theoretical and Metrological Foundations, K. Danzer, 1st ed., Springer, 2006
Electronic References, Websites	

1- Course name :
Electricity & Magnetism
2- Course code
MEDPHY1102
3- Semester\ Year
First / First Year
4- Date this description was prepared
26/4/2026
5- Available forms of attendance
In-Person & Online
6- Number of study hours (total) / Number of units (total)
60 / 120
7- Name of the course coordinator (if there is more than one, please mention it)
Fairooz Amer

8- Module Aims, Learning Outcomes and Indicative Contents

Module Aims	1. Understanding the nature of electric charges and electric fields. 2. Understanding the composition of matter. 3. Understanding the types of matter. 4. Understanding the types of electric charges. 5. Understanding Coulomb's law. 6. Understanding the electric field of charges and electric field lines. 7. Determining forces, moments, and potential energy. 8. Understanding Gauss's law. 9. Understanding electric flux and closed charges. 10. Understanding the electrostatic field.
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9-Teaching and learning strategies

strategy	- Discussing the topics covered in the curriculum textbook, supporting references, and theoretical lectures, including problem-solving and homework assignments. - Posing a series of critical thinking questions to students during lectures on specific topics. - Assigning homework assignments that require students to find their own solutions.
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10 – Course structure

Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	General Introduction	Students will be able to distinguish between different types of materials and their electrical conductivity. Students will be able to charge materials electrically. Students will be able to identify what happens inside electrically charged materials and the movement of charges within the material. Students will be able to differentiate between Coulomb's, Gauss's, and Ohm's laws and understand the implications of studying each law. Students will be able to test whether materials are conductors or non-conductors. Students will be able to distinguish between the components of an electrical circuit while drawing it. Students will be able to perform many calculations, such as calculating forces, moments, potential energy, electric flux, resistance, capacitance, etc.	Theoretical lectures and scientific laboratories, in addition to online lectures when needed.	Monthly and daily exams, student participation in the classroom, and attendance and absences are all factors considered.
Week 2	2	Electric Charges and Electric Fields			
Week 3	2	Conductors, Insulators, and Induced Charges			
Week 4	2	Exercises			
Week 5	2	Coulomb's Law			
Week 6	2	Electric Field Lines, Electric Dipole			
Week 7	2	Force and Potential Energy			
Week 8	2	Exercises			
Week 9	2	Gauss's Law			
Week 10	2	Electrostatic Field			
Week 11	2	Ohm's Law			
Week 12	2	Capacitance and Resistance			
Week 13	2	Faraday's Law			
Week 14	2	Midterm Exam			
Week 15	2	Final Exam			

Delivery Plan (Weekly Lab. Syllabus)	
Week	Material Covered
Week 1-2	Lab 1: Ohm's Law
Week 3-4	Lab 2: Non-ohmic properties
Week 5-6	Lab 3: Series and parallel connections of resistors
Week 7-8	Lab 4: Maximum power
Week 9-10	Lab 5: Lenz's Law
Week 11-12	Lab 6: Electromotive Force (EMF)
Week 13	Lab 7: Series and parallel connections of capacitors
Week 14	Mid term Exam
Week 15	Final Exam

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	Edward M. Purcell, Electricity and Magnetism, 3rd ed., 2013
Main references (sources)	University Physics with Modern Physics, 13th ed., 2011
Recommended books and supporting references (scientific journals, reports, etc.)	
Electronic references, websites	

1. Course Name:					
Mathematics					
2. Course Code:					
CREQ1101					
3. Semester / Year:					
First semester / First Year					
4. Description Preparation Date:					
1/9/2025					
5. Available Attendance Forms:					
In presence / on line					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 / 75					
7. Course administrator's name (mention all, if more than one name)					
Name: Abdul Jabbar Abbas Oudah					
Email: abduljabbar.abbas@uoturath.edu.iq					
8. Course Objectives					
Course Objectives		The aim of this course is for students to gain proficiency in arithmetic operations. In calculus, we use two main tools to analyze and describe behavior of functions: limits and derivatives. Students will use these tools to solve application problems in a variety of settings, from physics and chemistry to business and economics.			
9. Teaching and Learning Strategies					
Strategy		1. To determine the solution set of inequalities involving absolute value. 2. To determine the domain, range, and operation of some variable function and their graphs. 3. To determine the limit and continuity of a function of one variable. 4. To determine the derivative of functions of one variable. 5. To determine the solution to problems involving the differentiation of a function of one variable. 6. To determine the inverse function and its derivative. 7. To recognize applications of derivatives.			
10. Course Structure					
Week	Hours	Unit or subject name	Required Learning Outcomes	Learning method	Evaluation method
1	2	Functions and their graphs.	To determine the solution set of	Theoretical lectures and scientific laboratories, in addition to online lectures when needed.	Monthly and daily exams, student participation in the classroom, and attendance and absences are all factors considered
2	2	Trigonometric functions.	inequalities involving absolute value.		
3	2	Exponential functions, inverse functions, logarithms.	To determine the domain, range, and operation of certain		
4	2	Derivatives: Motion and the non-standard definition of limits.	variable functions and their graphs.		
5	2	Lines of limits: Interval narrowing theorem.	To determine the limit and continuity of a function of a single variable.		

6	2	Continuity and alignments.	To determine the derivative of functions of a single variable. To determine the solution to problems involving the differentiation of a function of a single variable. To determine the inverse function and its derivative. To understand applications of derivatives.		
7	2	Definition of the derivative and derivatives of functions.			
8	2	Derivatives of polynomials, the rules of multiplication and division.			
9	2	Derivatives of trigonometric functions.			
10	2	The chain rule and implicit differentiation.			
11	2	Derivatives of logarithms with applications.			
12	2	L'Hôpital's rule and graphs of functions and inverse derivatives.			
13	2	Statistics			
14	2				
15	2				

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Calculus and Analytical Geometry, Thomas International Edition, 30th Edition, 2014
Recommended books and references (scientific journals, reports...)	Shomo Series, 6th Edition, 2013
Electronic References, Websites	

13- Course Name:					
Fundamentals of Mechanics					
14- Course Code:					
MPHY1101					
15- Semester / Year:					
2025-2026					
16- Description Preparation Date:					
1/9/2025					
17- Available Attendance Forms:					
In presence / on line					
18- Number of Credit Hours (Total) / Number of Units (Total)					
200 / 8					
19- Course administrator's name (mention all, if more than one name)					
Name: Naif Hammad Mishhin Email: naifalhardan@uoturath.edu.iq					
20- Course Objectives					
Course Objectives		The subject of Fundamentals of Mechanics is one of the basic subjects physics for students studying in science colleges. Its aim is to provide student with knowledge of the fundamentals of classical physics, including the laws of motion and equilibrium, concepts of energy and work, and other important concepts.			
21- Teaching and Learning Strategies					
Strategy		The learning strategy is based on the following: 1. Providing students with theoretical foundations and concepts through lectures. 2. Daily and term tests. 3. Assigning students the task of solving and discussing assigned mathematical problems during class.			
22- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	To determine the solution set of inequalities involving absolute value.	Ch 1: Introduction to Vector Algebra, Numerical and Vector Values, Types of Vectors, Addition and Subtraction of Vectors.	presence	Student discussion
2nd	2	To determine the domain, range, and operation of certain variable functions and their graphs.	Scalar and vector multiplication, triple scalar and vector multiplication, regression, solving mathematical problems and homework problems.	presence	Student discussion
3rd	2	To determine the limit and	Ch 2: Units and their conversions, displacement, velocity, acceleration, laws	presence	Student discussion

		continuity of a function of a single variable.	of linear motion in one dimension.		
4th	2	To determine the derivative of functions of a single variable.	Free fall, solving problems and assignments.	presence	Student discussion
5th	2	To determine the solution to problems involving the differentiation of a function of a single variable.	Laws and applications of motion in two dimensions, examples and duties.	presence	Student discussion
6th	2	To determine the inverse function and its derivative.	Ch 3: Newton's Laws of Motion (First, Second, and Third Laws).	presence	Student discussion
7th	2	To understand applications of derivatives.	Applications of Newton's laws of motion.	presence	Student discussion
8th	2		Midterm exam	presence	Paper Exam
9th	2		Ch 4: Energy, Work, Examples and Duties.	presence	Student discussion
10th	2		Work and energy theory, examples and applications.	presence	Student discussion
11th	2		Gravitational potential energy: examples and applications	presence	Student discussion
12th	2		Helical spring potential energy, applications and examples	presence	Student discussion
13th	2		Cg 5, Momentum and Collisions: Examples and Applications	presence	Student discussion
14th	2		The law of conservation of momentum and collisions, examples and applications	presence	Student discussion
15th	2		Rehearsal	presence	Student discussion

23- Course Evaluation

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

24- Learning and Teaching Resources

Required textbooks (curricular books, if a	The twinning program with Al-Nahrain University – College of Science – Department of Medical Physics
Main references (sources)	College Physics, Raymond, A. Serway, Eight edition, USA, 2009
Recommended books and references (scientific journals, reports...)	Not available
Electronic References, Websites	https://openstax.org/details/books/college-physics-2e

1- Course name
Democracy and Human Rights
2- Course code
MEDPHY1105
3- Semester\ Year
First Semester / First Year
4- Date this description was prepared
26/4/2026
5- Available forms of attendance
In-Person & Online
6- Number of study hours (total) / Number of units (total)
30 / 30
7- Name of the course coordinator (if there is more than one, please mention it)
Assistance Lecture Karrar

8- Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of studying Human Rights and Democracy is to enhance understanding and awareness of human rights issues and the fundamental principles of democracy. Some of the main objectives of this course are: Understanding Human Rights: Studying human rights aims to introduce you to the basic concepts of human rights and their fundamental value in society. You will learn about the history and legal development of human rights and the international treaties and conventions related to this subject. Awareness of the Fundamental Principles of Democracy: You will learn about the concept of democracy and its core values, including the rule of law, citizenship rights, and political participation. You will also learn about different systems of government and how democratic principles are applied in different societies. Recognizing Current Challenges: You will learn about current challenges and issues in the field of human rights and democracy. You will study issues related to discrimination, social justice, women's rights, minority rights, children's rights, and refugee rights, and how to address these challenges within a democratic framework. Applying Concepts to Practice: You will learn how to apply the concepts and principles studied in Human Rights and Democracy to practical situations. You will study the different roles of human rights organizations and democratic institutions and how they work to promote human rights and strengthen democracy in societies. Developing Critical and Analytical Skills: You will learn how to analyze issues related to human rights and democracy and assess the legal, ethical, and political context surrounding them. You will practice formulating strong arguments and offering constructive criticism of unjust policies and practices. By studying human rights and democracy, you will gain the knowledge and understanding necessary to contribute to the promotion of human rights and democracy in society and to work towards creating positive change
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9-Teaching and learning strategies

strategy	1. Report writing 2. Online learning 3. Field visits
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10 – Course structure

Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	The Concept of Human Rights	To promote respect for general human rights principles, active participation in political and cultural life, and to enshrine values, beliefs, and attitudes that encourage all students to uphold their own rights and the rights of others.	In-Person & Online	Monthly and daily exams, research reports, and extracurricular activities
Week 2	2	Human Rights in Ancient Civilizations			
Week 3	2	Human Rights in Divine Laws and Religions			
Week 4	2	Sources of Human Rights			
Week 5	2	Guarantees of Human Rights and Means of Protection			
Week 6	2	The Role of Organizations in Protecting Human Rights			
Week 7	2	Globalization and Human Rights			
Week 8	2	The Concept of Democracy and Representative Democracy			
Week 9	2	The Concept of Elections and Their Legal Framework			
Week 10	2	Organizing the Electoral Process and Electoral Systems			
Week 11	2	Formation of the Electorate			
Week 12	2	Components and Obstacles of Good Governance			
Week 13	2	Advantages and Disadvantages of Democracy			
Week 14	2	Midterm exam			
Week 15	2	Final Exam			

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	Maher Saleh Alawi Al-Jubouri, Human Rights, Children, and Democracy, Legal Library, 2009
Main references (sources)	Dr. Hamid Hanoun Khalid, Human Rights, Al-Sanhouri Library, 2015
Recommended books and supporting references (scientific journals, reports, etc.)	
Electronic references, websites	

1. Course Name:	
English Language 1	
2. Course Code:	
URENG2	
3. Semester / Year:	
2025 - 2026	
4. Description Preparation Date:	
2026 / 6 / 30	
5. Available Attendance Forms:	
Blended Learning	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2	
7. Course administrator's name (mention all, if more than one name)	
Name: Yasir Ahmed Hussein	
Email: yasser.ahmed@uoturath.edu.iq	
8. Course Objectives	
Course Objectives	1. Developing Basic Communication Skills: - Enabling students to express themselves effectively in everyday situations. - Focusing on building a foundation in speaking and listening. 2. Enhancing Reading Comprehension Skills: - Improving students' ability to understand and interpret written texts. - Providing strategies for effective reading comprehension. 3. Enhancing Writing Skills: - Developing students' writing skills across various genres (e.g., essays, emails, reports). - Focusing on grammar, sentence structure, and vocabulary use. 4. Developing Listening Skills: - Enhancing students' ability to understand spoken English in different contexts. - Providing exposure to different accents and speaking speeds. 5. Effective Presentation Skills: - Equipping students with the skills to deliver clear and engaging presentations. - Focusing on aspects such as organization, delivery, and visual aids.
9. Teaching and Learning Strategies	
Strategy	• Emphasize interactive and communicative activities to encourage students to actively participate in the learning process. • Design tasks that require students to use English to achieve specific objectives thus promoting language use in practical contexts. • Consider the diversity of learning styles and paces among students in the classroom. • Integrate authentic learning materials such as newspaper articles, blog posts, videos to introduce students to real-life language use. • Implement ongoing formative assessments, such as quizzes, peer-to-peer assessments, and class discussions, to measure student progress. • Provide constructive feedback on spoken and written language, and encourage

	students to reflect on their learning experiences. • Adapt lesson plans based on students' evolving needs and interests, allowing flexibility in teaching methods.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1. Students will demonstrate the ability to initiate and conduct simple conversations in English. 2. Students will demonstrate improved reading comprehension by accurately summarizing and analyzing information from a variety of texts. 3. Students will produce well-organized written essays. 4. Students will apply grammar and sentence structure correctly in oral and written communication. 5. Students will demonstrate improved listening comprehension across a variety of accents and contexts. 6. Students will deliver clear and organized presentations	Introduction: Course overview, syllabus, and expectations.	Blended Learning	Quizzes And Exams
2	2		Unit 1: Tenses, Writing Skills, Email Writing Basics.		
3	2		Unit 2: Describing things and people using adjectives - Common grammatical structures		
4	2		Grammar: Recognizing and using irregular verbs - Social expressions..		
5	2		Writing Skills: Academic writing basics		
6	2		Midterm Exam		
7	2		Unit 3: Quantity - Articles - Medical Vocabulary (Part 1)		
8	2		Writing Basics: Summarizing texts and extracting information from various texts		
9	2		Grammar: Active and passive voice - Reported speech.		
10	2		Listening Skills: Listening to podcasts and participating in discussions.		
11	2		Speaking Skills: Sharing and discussing information about DNA		
12	2		Unit 4: Medical Vocabulary (Part 2) - Comparative and superlative adjectives.		
13	2		Writing: Talking about personal		

		using appropriate language and visual aids.	interests.		
14	2		Group Activity: Planning a class event based on shared interests.		
15	2		Final Exam Preparation Week		

11. Course Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Seminar	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Headway Plus for Pre-intermediate
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	www.youtube.com

First Year / Second Semester

1- Course name

Biophysics

2- Course code

MEDPHY1202

3- Semester\ Year

Second Semester / First Year

4- Date this description was prepared

26/4/2026

5- Available forms of attendance

In-Person & Online

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

60 / 120

7- Name of the course coordinator (if there is more than one, please mention it)

Assistant Lecture Fairouz Amer

8- Module Aims, Learning Outcomes and Indicative Contents

1- Module Aims

Explaining the scope of biology and physics.
Describing life activities from a biophysics perspective.
Working with basic biological instruments, recording data, and drawing conclusions.
Developing a scientific attitude and skills to conduct biophysics experiments using scientific procedures.
Understanding the fundamental concepts of the relationship between physics and biology.

9-Teaching and learning strategies	
strategy	The main strategy to be adopted in delivering this unit is to encourage student participation in exercises while simultaneously improving and expanding their critical thinking skills. This will be achieved through interactive classroom and educational programs, and by considering simple experiments that include sampling activities of interest to the students.

10 – Course structure					
Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	Sound in Medicine	Introducing students to the concept of sound by explaining how hearing is done using the ear and eye, the process of vision in medicine, and the benefits and uses of X-rays in medicine.	In-Person & Online	Monthly and daily exams, research reports, and extracurricular activities
Week 2	2	Lasers in Medicine			
Week 3	2	Force, Energy, and Body Function			
Week 4	2	Skeletal Physics			
Week 5	2	Heat and Cold in Medicine			
Week 6	2	Pressure in the Body			
Week 7	2	Electricity in the Human Body			
Week 8	2	Midterm Exam			
Week 9	2	Hearing and Ear Physics			
Week 10	2	Eye and Vision Physics Part 1			
Week 11	2	Eye and Vision Physics Part 2			
Week 12	2	Light and Ultraviolet Radiation in Medicine			
Week 13	2	X-rays in Medicine Part 1			
Week 14	2	X-rays in Medicine Part 2			
Week 15	2	Final Exam			

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	Medical Physics by John R. Cameron, International Publication.
Main references (sources)	Nasser, Biophysics, Randall, 1998
Recommended books and supporting references (scientific journals, reports, etc.)	
Electronic references, websites	

1. Course Name:					
Biomechanics					
2. Course Code:					
MPHY2102					
3. Semester / Year:					
2025-2026					
4. Description Preparation Date:					
1/9/2025					
5. Available Attendance Forms:					
Presence / on line					
6. Number of Credit Hours (Total) / Number of Units (Total)					
175 /7					
7. Course administrator's name (mention all, if more than one name)					
Name: Abdul Jabbar Abbas Oudah					
Email: abduljabbar.abbas@uotrath.edu.iq					
8. Course Objectives					
Course Objectives		1. Study the terminology of biomechanics, statistics, and kinetics, and explain how they relate to one another. 2. Describe the field of scientific research addressed by biomechanics. 3. Distinguish between qualitative and quantitative approaches to analysing human biomechanical movement, and explain how to formulate qualitative analysis questions for this movement.			
9. Teaching and Learning Strategies					
Strategy		Upon completion of this chapter, students are expected to acquire the following concepts: 1. An understanding of the behavior of forces and moments and the concept of equilibrium in biomechanics. 2. Tension and compression, and the relationship between stress and linear strain in biomechanics. 3. Simple harmonic kinematics, rotational biomechanical systems, and rigid body kinematics. 4. An explanation of the effects of friction, moment of inertia, and the dynamics of simple systems in biomechanics.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1			Chapter One: Definition of Force • Classification of Forces, Frictional Force, Weight, Resultant of Two or More Forces	In-Person Online	Monthly and daily exams, research reports, and extracurricular activities
Week 2			Analysis of Force into Component Forces Acting at Right Angles to Each Other.		
Week 3			Equilibrium and resultant forces.		
Week 4			Chapter Two: Linear and Angular Motion Distance and Displacement, Vector and Scalar Velocity, Instantaneous Velocity and Instantaneous Velocity, Definition		

Week 5			Average Acceleration. Definition of instantaneous acceleration units of measurement for distance traveled, displacement, velocity, and speed, equations of projectile motion, and determining the vertical or horizontal orientation of the throw.		
Week 6			Angular motion, angular displacement, average angular velocity, average angular acceleration.		
Week 7			Applications in Biomechanics.		
Week 8			Chapter Three: Linear motion, applying Newton's Second Law of Motion to determine the acceleration of a body if forces acting on the body are known, applying Newton's Second Law of Motion to determine the net force acting on a specific body, and the acceleration of the body.		
Week 9			Definition of impulse, momentum, the relationship between impulse and momentum, and the relationship between mass and weight.		
Week 10			Midterm exam.		
Week 11			Gravitational potential energy, stress, the relationship between mechanical work and energy.		
Week 12			Exercises and applications in biomechanics.		
Week 13			Chapter Five; Moment and Force Moments, Static Equilibrium, Equilibrium Equations, Interaction Between Two or More Moments.		
Week 14			Determining the unknown force (or torque), the torque acting on a body in equilibrium, and the center of gravity.		
Week 15			Exercises and applications in biomechanics.		

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Biomechanics of Sport and Exercise Third Edition, 2013 Peter M. McGinnis
Main references (sources)	https://z-lib.id/
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

1- Course Title					
Organic Chemistry					
2- Course Code					
CREQ1104					
3- Semester / Year					
2025-2026					
4- Date this Description was Prepared					
1/9/2025					
5- Available Attendance Modes					
In-person / Online					
6- Total Credit Hours / Total Units					
Credit Hours (125) / Units (5)					
7- Course Instructor(s) (If more than one name, list all)					
Asst. Prof. Dr. Ahmed Abdul Latif Ismail					
8- Course Objectives					
1. To provide students with a fundamental understanding of organic chemistry. 2. To cover essential topics such as chemical bonding, structure, nomenclature of organic compounds, reactivity, basic functional groups, and the chemistry of different functional groups. 3. To explore molecules of biological importance. 4. To serve as a universal foundation for organic chemistry knowledge for first-year students. 5. To develop students' practical organic chemistry skills.					Course Objectives
9 – Teaching and Learning Strategies					
The primary approach to delivering this module will involve enhancing student engagement through active participation in homework assignments, aiming to reinforce and expand their critical thinking skills. This will be facilitated through classroom sessions and interactive lessons, in addition to exploring simple experiments designed to integrate sampling activities tailored to student interests.					Strategy
10 - Course Structure					
Assessment Method	Learning Method	Required Learning Outcomes	Unit or Topic Name	Hours	Week
Student Discussion	In-person		Introduction to Organic Chemistry: Hybridized Atomic Orbitals	4	1st
Student Discussion	In-person		Acids and Bases	4	2nd
Student Discussion	In-person		Saturated Hydrocarbons	4	3rd
Student Discussion	In-person		Unsaturated Hydrocarbons	4	4th
Student Discussion	In-person		Alkyl Halides	4	5th
Home Assignment	In-person		Alcohols	4	6th
Student Discussion	In-person		Amines	4	7th
Exam	In-person		Midterm Exam	3	8th
Student Discussion	In-person		Ethers	4	9th
Student Discussion	In-person		Aldehydes and Ketones	4	10th
Student Discussion	In-person		Carboxylic Acids and Derivatives	4	11th

Student Discussion	In-person		Acid Halides and Esters	4	12th
Student Discussion	In-person		Acid Anhydrides and Amides	4	13th
Student Discussion	In-person		Aromatic Compounds	4	14th
Student Discussion	In-person		Substituted Benzene Ring	4	15th
Exam	In-person		Final Exam	3	16th

11- Course Assessment (Distribution of 100 marks based on student tasks such as daily preparation, quizzes, oral, monthly, and written exams, reports, etc.)

Final Exam	Activities	Homework	Attendance	Monthly Exam	Daily Quiz
50	10	10	10	10	10

12- Learning and Teaching Resources

Twinning Course Syllabus with Al-Nahrain University – College of Science – Department of Medical Physics	Required Textbooks (Prescribed Curriculum if any)
McMurry, John E., (2016). Organic Chemistry, 9th ed., Cengage Learning, pages 1518	Main References (Sources)
None	Recommended Supporting Books and References (Scientific Journals, Reports, etc.)
https://www.khanacademy.org/science/organic-chemistry https://www.masterorganicchemistry.com/	Electronic References, Websites

1. Course Name:	
Computer Science	
2. Course Code:	
URCOM	
3. Semester / Year:	
2025-2026	
4. Description Preparation Date:	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 / 3	
7. Course administrator's name (mention all, if more than one name)	
Name: sura Hamid Email: sura . hami @uoturath.edu.iq	
8. Course Objectives	
Course Objectives	The objectives of this course are: 1- To develop the student's skills adapt to the rapid changes in information technology that characterize our era. 2- To develop the student's ability to think scientifically through problem-solving using computers and to adapt to the rapid changes in information technology that characterize our era. 3- To equip the student with self-learning, research, and inquiry skills through the use of various computer software applications.
9. Teaching and Learning Strategies	
Strategy	Unit 1: Cognitive Objectives - To foster intellectual exchange among students and leverage contemporary advancements and the rapid dissemination of information. - To equip students with comprehensive scientific knowledge in the field of computer science. - To enable students to master the preparation of scientific research using a rigorous scientific methodology. - To familiarize students with effective methods of information delivery for teaching purposes and to integrate these methods with practical applications within educational institutions. - To enable students to apply their acquired basic and advanced programming skills to enrich their understanding of computer science and its applications. - To enable students to effectively manage and analyze information systems and databases. - To teach students the fundamentals of managing communications, computer networks, and operating systems. - Teaching students methods

	for securing data and computers, and finding solutions that allow for d freezing on all devices. Areas Unit Two: Course Skills Objectives Identifying and explaining a variety of computer components • 1. Cognitive Skills - Memory • 2. Memory and Analytical Skills • 3. Usage and Development Skills Unit 3: Teaching and Learning Methods Lecture method and use of the interactive whiteboard • Providing students with the fundamentals and additional topics relat to the outputs of thinking • Posing questions to students and forming discussion groups during lectures to discuss problem-solving • Requires thinking and analysis • Assigning students problems-solving assignments
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1			Introduction to Computer Science		
Week2			Microsoft Office Programs		
Week3			Introduction to Microsoft Word		
Week4			Features of Microsoft Word		
Week5			Lists and Tabs in Word Part 1		
Week6					
Week7			Part 2	In-Person & Online	Monthly and daily exams, research reports, and extracurricular activities
Week8			Introduction to Microsoft Excel		
Week9			Midterm Exam		
Week10			Graphing in Excel		
Week11			Excel Functions		
Week12			Using Formulas in Sheets Formatting and Exporting Data from Excel		

Week13			PowerPoint		
Week14			Features of PowerPoint		
Week15			Final Exam		
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)			Calculus Geometry Analysis ,Thomas		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

1- Course name
Arabic Language 1
2- Course code
MEDPHY1205
3- Semester\ Year
Second Semester / First Year
4- Date this description was prepared
26/4/2026
5- Available forms of attendance
In-Person & Online
6- Number of study hours (total) / Number of units (total)
30 / 30
7- Name of the course coordinator (if there is more than one, please mention it)
Assistant Prof. Ali Jabbar

8- Module Aims, Learning Outcomes and Indicative Contents

1- Module Aims	The main objective of this semester is to strengthen the linguistic abilities of first-year students and focus on: Acquiring a cognitive understanding of linguistic concepts. Protecting students from pronunciation errors. Developing students' expressive abilities. Teaching students to analyze speech structures. Teaching students to distinguish between root letters and augmentations and their role in enriching meaning. Teaching students the methods and rules for vocabulary control and formulation. Enabling students to use vocabulary correctly. Providing exercises to strengthen students' linguistic skills and develop their ability in effective language practice and rhetoric, drawing on experiences and practice. Enabling students to read, analyze, understand, and memorize literary texts. Teaching students the correct recitation of verses from the Holy Quran, understanding their meanings, and developing their memorization and pronunciation skills.
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9-Teaching and learning strategies

strategy	1. PowerPoint presentation 2. Report writing 3. Term exams 4. Discussion and Q&A
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10 – Course structure

Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	النحو - قسم الكلام (اسم وفعل وحرف)، المبتدأ وانواعه ، الخبر وانواعه	Introducing students to the systems of speech and their contribution to teaching and refining writing, including the appropriate times for composition, and enabling them to	In-Person & Online	Monthly and daily exams, research reports, and extracurricular activities
Week 2	2	كان واخواتها ، إن واخواتها			
Week 3	2	المتنّى والملحق به ، جمع المذكر السالم والملحق به ، جمع المؤنث السالم والملحق به ، الاسماء الخمسة			
Week 4	2	بناء الفعل الماضي ، بناء الفعل الامر			

Week 5	2	الفعل المضارع بناؤه و اعرابه	understand the classifications of verbs. This develops students' ability to comprehend the material and identify linguistic errors. Furthermore, it teaches correct reading, understanding grammatical systems, and developing skills in addressing and guiding students effectively in learning Arabic.		
Week 6	2	الاسماء المنصوبة (المفعول به – المفعول المطلق – المفعول لاجله – المفعول فيه – المفعول معه)			
Week 7	2	الشعر – نازك الملائكة			
Week 8	2	الشعر – محمد مهدي الجواهري			
Week 9	2	الاملاء - كتابة الهمزة (الوصل والقطع)			
Week 10	2	الهمزة المتوسطة والمتطرفة			
Week 11	2	كتابة الضاد والطاء			
Week 12	2	كتابة التاء القصيرة والطويلة			
Week 13	2	علامات الترقيم - قاعدة الالف الفارقة			
Week 14	2	كتابة العدد			
Week 15	3	Final Exam			

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	التعبير والإنشاء والرسم الكتابي والإملاء الخطي / أ.د. عبد الرحمن مطلق الجبوري
Main references (sources)	أوضح النحو الوافي / عباس حسن. قواعد الاملاء في عشرة دروس سهلة / د. فهمي النجار في الادب الحديث / أ.د. فائق مصطفى في الادب المعاصر / د. بشير عيسوي الادب العربي في العصر الحديث / د. مصطفى السحرتيح المسالك لألفية ابن مالك / ابن هشام.
Recommended books and supporting references (scientific journals, reports, etc.)	
Electronic references, websites	

1. Course Name:	
General biology	
2. Course Code:	
FORE 1102	
3. Semester / Year:	
2025/2026	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
In-person / Online	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125/5	
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant teacher Maarib Mudhar Farouq	
Email: maarib.mudhar@uoturath.edu.iq	
8. Course Objectives	
Course Objectives	1. Students will understand the structures and functions of the basic components of prokaryotic and eukaryotic cells, particularly macromolecules, membranes and organelles. 2. Students will understand how these cellular components are used to generate and utilize energy in cells. 3. Students will understand the cellular components underlying mitotic cell division. 4. Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function. These may include responses to environmental or physiological changes, or changes in cell function caused by mutation.
9. Teaching and Learning Strategies	
Strategy	The teaching strategies used in general biology and their expected outcomes in terms of knowledge acquisition and student learning outcomes were as follows: 1. Competitive Learning • Students work individually. • Students share common learning goals and tasks. 2. Individual Learning • Students work individually and independently to achieve different individual learning goals and tasks unrelated to other students. 3. Collaborative Learning • Students work in small groups. • Students share learning goals and tasks within the group, which may be similar to or different from other groups. • The instructor assesses students on their group work as well as their individual work.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction and Basic Principles of Human Biology	Theoretical lectures	
2			The Cell: Structure, Properties, and Classification (Part 1)	Theoretical lectures	
3			The Cell: Structure, Properties, and Classification (Part 2)	Theoretical lectures	
4			Tissues: Structure, Properties, Classification, and Function (Part 1)	Theoretical lectures	
5			Tissues: Structure, Properties, Classification, and Function (Part 2)	Theoretical lectures	
6			Types of Cells	Theoretical lectures	
7			Blood Cells and Their Classifications	Theoretical lectures	
8			Midterm Exam	Exam Grade	
9			Structure and Function of DNA (Part 1)	Theoretical lectures	
10			Structure and Function of DNA (Part 2)	Theoretical lectures	
11			The Genetic Basis of DNA Writing	Theoretical lectures	
12			Human Chromosomes	Theoretical lectures	
13			Chromosome Variations	Theoretical lectures	
14			Human Genetics	Theoretical lectures	
15			Final Year Exam	Exam Grade	
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Reference book: Johnks and Inglis(eds.) Text book of Human Biology, 3rd Ed.		
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

Second Year / First Semester

1- Course Name: Mathematical Physics					
2- Course Code: MPHY2101					
3- Semester / Year: 2 nd / 2025-2026					
4- Description Preparation Date: 30/6/2026					
5- Available Attendance Forms: Presence & Online					
6- Number of Credit Hours (Total) / Number of Units (Total) 30 / 125					
7- Course administrator's name (mention all, if more than one name)					
Name: Dr. Kamal Hameed Gati					
Email: kamal.hameid@uoturath.edu.iq					
8- Course Objectives					
Course Objectives		1. Teaching the students the principles of Mathematical Physics. 2. Give the Students the ability and experience to solve and discuss the problems related with Mathematical Physics. 3. Make a connection between the theoretical principles and the experimental applications.			
9- Teaching and Learning Strategies					
Strategy		1. Discussing the topics of the methodological book and auxiliary references. 2. Theoretical lectures including problem solving and discussion of homework 3. Asking students for a set of thinking questions during lectures on specific topics. 4. Giving students homework that requires finding solutions on their own.			
10- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1- Enabling students to know the basics of mathematical physics.	Introduction Special functions: The Factorial Function	Presence And Online	Exams Quizzes
2	2		Gamma Function		
3	2		The Gamma function of negative number		
4	2	2- Enabling students to understand the	Some important formulas involving Gamma Function		

5	2	applied aspects of mathematical physics.	Solutions of some Examples		
6	2		Beta Function		
7	2		Other forms of Beta Function		
8	2		The Relation between Gamma and Beta functions		
9	2		Test #1		
10	2		The Error function		
11	2		Series: Solutions of Differential Equations		
12	2		Legendre's Equation		
13	2		Test #2		
14	2		Summary		
15	2		Preparatory Week		

11- Course Evaluation

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	All
	Assignments & H.W.	1	10% (10)	2, 12	All
	Projects	0	0%		
	Discussing During Lectures	1	10% (10)	13	All
Summative assessment	Midterm Exam	2 hr	20% (20)	9,13	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Mathematical Methods in the Physical Sciences” By: Mary L. Boas, 3 rd Edition, 2006.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Advanced Calculus , 3 rd Edition, Angus E. Taylor, and W. Robert Mann, 1983.
Electronic References, Websites	Any website related with mathematical physics

1- Course name
Crimes of the Ba'ath regime in Iraq
2- Course code
MEDPHY2106
3- Semester\ Year
First Semester / Second Year
4- Date this description was prepared
26/4/2026
5- Available forms of attendance
In-person & Online
6- Number of study hours (total) / Number of units (total)
30 / 30
7- Name of the course coordinator (if there is more than one, please mention it)
Assistant Lecturer Karrar

8- Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. To familiarize students with concepts and definitions related to the crimes committed by the Ba'athist regime during its rule in Iraq. 2. To enable university students to understand the reality of life in Iraq during the decades of Ba'athist rule. 3. To enhance students' knowledge of the facts without being influenced by any media blackout surrounding the crimes of the Ba'athist regime in Iraq. Course Description: The course on the crimes of the Ba'athist regime in Iraq is an important and essential course for students as it acquaints them with the events, circumstances, and violations that Iraq witnessed during the Ba'athist regime's rule from 1968 to 2003. The course also clarifies for students the impact of the Ba'athist regime's actions on Iraqi society.

9-Teaching and learning strategies	
strategy	1) Primarily: Discussion and dialogue between the professor and students. 2) Regular presentation of documentaries to enhance understanding. 3) Preparation of concise worksheets from selected groups on a weekly basis.

10 – Course structure					
Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	General and foundational introduction to the topic: Ba'athist regime crimes according to the Iraqi High Criminal Court Law of 2005	Documentary videos presented Theoretical explanation	In-Person & Online	Monthly and daily exams, research reports, and extracurricular activities
Week 2	2	Psychological and social crimes, their effects, and the most prominent violations of the Ba'athist regime in Iraq			
Week 3	2	Daily quiz			
Week 4	2	The Ba'athist regime's stance on religion			
Week 5	2	Prisons and detention centers of the Ba'athist regime			
Week 6	2	Midterm Exam			
Week 7	2	Environmental crimes of the Ba'athist regime in Iraq			
Week 8	2	Draining the marshes			
Week 9	2	Mass grave crimes			
Week 10	2	A student discussion session to assess their engagement during the lecture.			
Week 11	2	The events surrounding the mass graves of genocide perpetrated by the Ba'athist regime in Iraq.			
Week 12	2	Discussion of student reports assigned as part of the course material.			
Week 13	2	A chronological classification of mass graves of genocide in Iraq from 1963 to 2003.			

Week 14	2	An extensive discussion of the course material and an examination of the main obstacles facing students			
Week 15	2	A review week before the final exam.			

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	Crimes of the Ba'ath regime in Iraq
Main references (sources)	
Recommended books and supporting references (scientific journals, reports, etc.)	- Ayman Abdel Aziz Salama, International Responsibility for the Crime of Genocide, 1st ed., Dar Al-Ulum for Publishing and Distribution, Cairo, 2006. - Hassan Al-Khayyat, Geography of the Marshes and Swamps of Southern Iraq, Al-Alamiyah Press, Cairo, 1975. - Raed Abis and Dr. Abbas Attia Al-Quraishi, United Nations Reports Condemning the Ba'ath Regime for Human Rights Violations from 1991 to 2003, Publisher: Iraqi Center for Documenting Crimes of Extremism, 1st ed., Dar Al-Kafeel Press, Karbala, 2023. - Abbas Attia Al-Quraishi, Raed Abis, and Hussein Ali Atwan, The Documentary Encyclopedia of Open Mass Graves in Iraq from 1963 to 2003, Publisher: Iraqi Center for Documenting Crimes of Extremism, 1st ed., Dar Al-Kafeel Press, Karbala, 2003.
Electronic references, websites	

1- Course Title					
Inorganic Chemistry					
2- Course Code					
CRINOCHE					
3- Semester / Year					
2025-2026					
4- Date this Description was Prepared					
1/9/2025					
5- Available Attendance Modes					
In-person / Online					
6- Total Credit Hours / Total Units					
Credit Hours (125) / Units (5)					
7- Course Instructor(s) (If more than one name, list all)					
Asst. Prof. Dr. Ahmed Abdul Latif Ismail					
8- Course Objectives					
1. Overview of the Periodic Table and atomic structure. 2. Energy levels and orbitals. 3. Groups 1 and 2: Alkali metals and alkaline earth metals. 4. Atoms, molecules, ions, and ionic compounds. 5. Ionization energy, atomic radii, electron affinity, electronegativity. 6. Shielding effect, dipole moment, polarity, hydrogen bonding, melting point, boiling point, solubility, orbital hybridization.					Course Objectives
9 – Teaching and Learning Strategies					
The learning strategy is based on the following: 1. Interactive classroom lectures including educational videos. 2. Practical lab sessions. 3. Adapting interaction to student engagement by asking questions and requesting groups to find appropriate answers as a primary teaching method. 4. PowerPoint presentations, along with examples from textbooks and the internet.					Strategy
10 - Course Structure					
Assessment Method	Learning Method	Required Learning Outcomes	Unit or Topic Name	Hours	Week
Student Discussion	In-person	Teaching students the fundamentals of chemistry Explaining atomic structure and its compounds Explaining some chemical phenomena Studying the	Atomic Structure.	4	1st
Student Discussion	In-person		Atomic Structure.	4	2nd
Student Discussion	In-person		Energy levels, orbitals, Groups 1 & 2, alkali metals, and alkaline earth metals.	4	3rd
Student Discussion	In-person		Energy levels, orbitals, Groups 1 & 2, alkali metals, and alkaline earth metals.	4	4th
Student Discussion	In-person		Energy levels, orbitals, Groups 1 &	4	5th

		properties of some chemical elements	2, alkali metals, and alkaline earth metals.		
Home Assignment	In-person	Practical and laboratory skills	Atoms, molecules, ions, and ionic compounds.	4	6th
Student Discussion	In-person	Developing thinking skills to enhance students' mental abilities and encourage them to think more deeply about chemistry	Atoms, molecules, ions, and ionic compounds.	4	7th
Exam	In-person	Developing production skills	Midterm Exam	3	8th
Student Discussion	In-person		Ionization energy, atomic radius, electron affinity, electronegativity.	4	9th
Student Discussion	In-person		Ionization energy, atomic radius, electron affinity, electronegativity.	4	10th
Student Discussion	In-person		Shielding effect, dipole moment, polarity, hydrogen bonding, melting point, boiling point, solubility, orbital hybridization.	4	11th
Student Discussion	In-person		Shielding effect, dipole moment, polarity, hydrogen bonding, melting point, boiling point, solubility, orbital hybridization.	4	12th
Student Discussion	In-person		Shielding effect, dipole moment, polarity, hydrogen bonding, melting point, boiling point, solubility, orbital hybridization.	4	13th
Student Discussion	In-person		Shielding effect, dipole moment, polarity, hydrogen bonding, melting point, boiling point, solubility, hybridization.	4	14th
Student Discussion	In-person		Revision	4	15th
Exam	In-person		Final Exam	3	16th

11- Course Assessment (Distribution of 100 marks based on student tasks such as daily preparation,

quizzes, oral, monthly, and written exams, reports, etc.)					
Final Exam	Activities	Homework	Attendance	Monthly Exam	Daily Quiz
50	10	10	10	10	10
12- Learning and Teaching Resources					
Twinning Course Syllabus with Al-Nahrain University – College of Science – Department of Medical Physics				Required Textbooks (Prescribed Curriculum if any)	
Inorganic chemistry, Sharpe, A. G. (Alan George), Harlow: Longman Scientific and Technical, 3rd Edition 1992				Main References (Sources)	
Basic Inorganic Chemistry F. Albert Cotton, Geoffrey Wilkinson, Paul L. Gaus, , 3rd Edition, 1995				Recommended Supporting Books and References (Scientific Journals, Reports, etc.)	
https://courses.lumenlearning.com/boundless-chemistry/chapter/the-structure-of-the-atom/ https://www.acs.org/content/acs/en/careers/chemical-sciences/areas/inorganic-chemistry.html https://courses.lumenlearning.com/boundless-chemistry/chapter/periodic-trends/				Electronic References, Websites	

1- Course Name: Mathematical Physics					
2- Course Code: MPHY2102					
3- Semester / Year: 2 nd / 2025-2026					
4- Description Preparation Date: 30/6/2026					
5- Available Attendance Forms: Presence & Online					
6- Number of Credit Hours (Total) / Number of Units (Total) 30 / 100					
7- Course administrator's name (mention all, if more than one name)					
Name: Dr. Kamal Hameed Gati					
Email: kamal.hameid@uoturath.edu.iq					
8- Course Objectives					
Course Objectives		The aim of this course is for the students to be primarily concerned with learning the basic concepts of mathematics, application in reality, solution of ordinary differential equations with first-, and higher-order and their applications. In addition, different classes of ODEs are considered.			
9- Teaching and Learning Strategies					
Strategy		The learning and teaching strategy is presented by: Providing the students with a sufficient amount of mathematical terms and definitions by attending lectures and presenting on the whiteboard to connect the students with the lecturer to solve as many real-life applications as possible. The pdf lectures, homework, quizzes, reports, seminar, and exercises are shared on Google Classroom. The subject will be given to the students through a series of lectures with problem-solving practice carried out in interactive tutorials. These tutorials will be supported by practice and directed study outside the classroom. Formative assessment takes place during tutorials and feedback is given during these tutorials.			
10- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Learning the basic concepts of differential equations, such as: 1.To be able to deal with ordinary differential equations (ODE) and their applications. 2. To be familiar with first order	Introduction to DE's: Definition and classification Differential Equations (DE'	Presence And Online	Exams Quizzes
2	2		First-order DE's: Separable DE.		
3	2		Homogeneous first-order D		
4	2		Exact differential equations		
5	2		Non-exact differential equations.		
6	2		Linear differential equation Bernoulli equation.		
7	2		Higher-order DE's: The general form of higher-order		

		ODE and learning how to solve such equations.	DE's		
8	2		Homogeneous DE's		
9	2		Definition and methods on solving homogeneous DE's		
10	2	3.To deal with higher order ODE and their solutions.	Nonhomogeneous DE's		
11	2		Definition, properties, and methods of solving non-homogeneous DE's		
12	2	4.To learn the difference between homogeneous and non-homogeneous differential equations.	Mid-Term Exam		
13	2		Reducing second-order DE to first-order DE		
14	2		Laplace Transform		
15	2	5.To have experience in applications of Laplace transform.	Definition / properties of Laplace transform and then using Laplace transformation in solving DE's		

11- Course Evaluation

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	All
	Assignments & H.W.	1	10% (10)	2, 12	All
	Projects	0	0%		
	Discussing During Lectures	1	10% (10)	13	All
Summative assessment	Midterm Exam	2 hr	20% (20)	9,13	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	[1] C. Henry Edwards and David E. Penney, Differential Equations and Linear Algebra, ser. Pearson International Edition, third edition. Pearson Education, United States of America, 2010. [2] William E. Boyce, and Richard C. DiPrima, Elementary Differential Equations and Boundary Value Problems, John Wiley and Sons, 11th edition, United State of America. 2001.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Earl D. Rainville and Phillip E. Bedient, Elementary Differential Equations, Collier Macmillan Publishers, fifth Edition, New York, 1974.
Electronic References, Websites	https://www.khanacademy.org/math/differential-equations

1. Course Name:					
Modern Physics					
2. Course Code:					
MPHY2102					
3. Semester / Year:					
2025-2026					
4. Description Preparation Date:					
1/9/2025					
5. Available Attendance Forms:					
Presence / on line					
6. Number of Credit Hours (Total) / Number of Units (Total)					
150 /6					
7. Course administrator's name (mention all, if more than one name)					
Name: Abdul Jabbar Abbas Oudah Email: abduljabbar.abbas@uotrath.edu.iq					
8. Course Objectives					
Course Objectives		1.Understanding the fundamental principles of modern physics: Focusing on principles developed during the 20th century, such as relativity, quantum mechanics, and nuclear physics. 2.Introducing students to new concepts: Such as quantum energy, wave-particle duality, special and general relativity, and atomic structure. 3.Stimulating scientific inquiry: Encouraging students to keep up with the latest developments and discoveries in physics. 4.Developing the ability to understand and apply fundamental principles: Grasping the foundations of special relativity, quantum mechanics, and nuclear physics. 5.Developing the ability to solve complex physics problems: Using laws and theories related to modern physics.			
9. Teaching and Learning Strategies					
Strategy		1. Inquiry-based learning: Encourages students to ask questions and discover concepts independently through experiments and research projects, thereby fostering critical thinking and problem-solving skills. 2. Collaborative learning: Promotes teamwork, where students exchange ideas and collaborate to solve problems and conduct scientific experiments. 3. Brainstorming and group discussion: This strategy helps foster collective thinking and the exchange of scientific ideas among students. 4. Problem-based learning: Students learn physics by encountering real-world problems and solving them using physics tools and concepts. 5. Formative assessment: Uses continuous assessment to gauge student progress and conceptual understanding, rather than relying solely on final exams.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1			Introduction to Special Relativity; Postulates of Special Relativity. Time dilation	Presence	

Week 2			Doppler effect, length contraction		
Week 3			Relative momentum.		
Week 4			Relative mass, the second law of		
Week 5			relativity		
Week 6			Mass and energy, energy and		
Week 7			momentum.		
Week 8			Lorentz transformation.		
Week 9			velocity addition		
Week 10			Electromagnetic waves, blackbody		
Week 11			radiation		
Week 12			The photoelectric effect.		
Week 13			X-rays, Compton effect, pair production		
Week 14			photon absorption.		
Week 15			De Broglie waves (matter), wave		
			description		
			Phase and group, diffraction velocity of		
			particles.		
			Midterm exam		
			Final exam		
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, any)		Concepts of modern physics by Arthur Beiser			
Main references (sources)		Modern Physics by Paul A. Tipler Modern Physics for Scientists and Engineers, by Stephen Thornton.			
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites		http://library.lol/main/802283D1032C91B4201CACCA52578A98 http://library.lol/main/A014282B63FE52E8510AC53A7ED0D0C8 http://library.lol/main/7275D2ADDF609FA6CCAC053E5CC8C9FA			

1- Course Name:					
Thermodynamic					
2- Course Code:					
MPHY1101					
3- Semester / Year:					
2025-2026					
4- Description Preparation Date:					
1/9/2025					
5- Available Attendance Forms:					
In presence / online					
6- Number of Credit Hours (Total) / Number of Units (Total)					
200 / 8					
7- Course administrator's name (mention all, if more than one name)					
Name: Naif Hammad Mishhin					
Email: naifalhardan@uoturath.edu.iq					
8- Course Objectives					
Course Objectives	1- Understand the fundamental principles of thermodynamics. 2- Explain the fundamental laws of thermodynamics and the relationship between heat and work. 3- Apply thermodynamic principles to analyze and solve real-world engineering and scientific problems.				
9- Teaching and Learning Strategies					
Strategy	1- Deliver theoretical lectures based on the course textbook and supporting references, incorporating problem-solving sessions and discussions of assigned homework. 2- Engage students through guided discussions and thought-provoking questions during lectures to enhance critical thinking and conceptual understanding. 3- Assign homework that encourages students to develop independent solutions and apply thermodynamic principles to solve problems.				
10- Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	6	The student will be able to distinguish between the states of matter, as well as the difference between a real gas and an ideal gas.	Important terms.	presence	Student discussion
2nd	6		Reversible and Irreversible processes.	presence	Student discussion
3rd	6		Ideal Gas.	presence	Student discussion
4th	6		Exercises.	presence	Student discussion
5th	6		Heat Transformation.	presence	Student discussion
6th	6	The student will be able to	1st Law of thermodynamics.	presence	Student discussion

7th	6	understand the laws of thermodynamics and how to apply them. The student will be able to explain the relationship between motion and heat and their effects. The student will be able to demonstrate the physical difference between heat and cooling. The student will be able to apply what has been calculated theoretically in a practical way in the future	The State Equation.	presence	Student discussion
8th	6		Midterm exam	presence	Paper Exam
9th	6		Adiabatic Processes.	presence	Student discussion
10th	6		Specific Heat Capacity.	presence	Student discussion
11th	6		Specific Heat Capacity in Adiabatic Processes.	presence	Student discussion
12th	6		Work and Heat Relationship.	presence	Student discussion
13th	6		2nd Thermodynamics Law.	presence	Student discussion
14th	6		Carnot Cycle Thermal Machines and Refrigerators.	presence	Student discussion
15th	6		Rehearsal	presence	Student discussion
16th	6		Final year exam	presence	Paper Exam
11- Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12- Learning and Teaching Resources					
Required textbooks (curricular books, if any)			The twinning program with Al-Nahrain University – College of Science – Department of Medical Physics		
Main references (sources)			Heat and Thermodynamics: An Intermediate Textbook, Mark Waldo Zemansky, Richard Dittman, McGraw-Hill, 1997		
Recommended books and references (scientific journals, reports...)			Not available		
Electronic References, Websites			https://openstax.org/details/books/college-physics-2e		

Second Year / Second Semester

1- Course Name: Computer Programming with MATLAB	
2- Course Code: URCOM2	
3- Semester / Year: 2 nd / 2025-2026	
4- Description Preparation Date: 30/6/2026	
5- Available Attendance Forms: Presence & Online	
6- Number of Credit Hours (Total) / Number of Units (Total) 30 / 75	
7- Course administrator's name (mention all, if more than one name)	
Name: Dr. Kamal Hameed Gati	
Email: kamal.hameid@uoturath.edu.iq	
8- Course Objectives	
Course Objectives	By the end of this course, students will be able to: 1. Understand the fundamentals of the MATLAB environment and its programming features. 2. Develop MATLAB scripts and functions to solve mathematical, scientific, and engineering problems. 3. Apply programming concepts such as variables, operators, control structures, loops, and functions. 4. Perform matrix and vector operations for numerical computation and data analysis. 5. Create and interpret 2D and 3D plots for effective data visualization. 6. Implement numerical methods and mathematical algorithms using MATLAB's built-in functions. 7. Read, process, and write data files for computational applications. 8. Debug, test, and optimize MATLAB programs to improve accuracy and efficiency. 9. Use MATLAB toolboxes to solve real-world engineering and scientific problems. 10. Build problem-solving and analytical skills through practical MATLAB programming exercises.
9- Teaching and Learning Strategies	
Strategy	☐ Interactive Lectures • Introduce programming concepts with real-world examples. • Explain MATLAB syntax, functions, and applications. ☐ Hands-on Laboratory Sessions • Conduct practical exercises using MATLAB. • Allow students to implement scripts and functions during class. ☐ Demonstration-Based Learning • Demonstrate coding techniques, debugging methods, and data visualization.

	• Show step-by-step problem-solving approaches. ☐ Problem-Based Learning • Assign computational and engineering problems for students to solve using MATLAB. • Encourage analytical and logical thinking. ☐ Project-Based Learning • Require students to complete individual or group projects involving MATLAB applications. • Focus on real-world scenarios such as data analysis, simulation, or mathematical modeling. ☐ Collaborative Learning • Organize pair programming and group discussions to promote teamwork and knowledge sharing. ☐ Continuous Assessment • Evaluate learning through quizzes, programming assignments, lab exercises, and project presentations. • Provide regular feedback to improve programming skills. ☐ Self-Learning Resources • Encourage the use of MATLAB documentation, tutorials, and online learning materials for independent study. ☐ Case Studies • Present engineering and scientific case studies to illustrate practical applications of MATLAB. ☐ Review and Practice • Conduct revision sessions and coding challenges to reinforce concepts and improve programming proficiency.
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10- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	☐ Explain the basics of MATLAB programming and its development environment. ☐ Develop MATLAB scripts and user-defined functions to solve computational problems. ☐ Apply control structures, arrays, and matrices in program development. ☐ Create data visualizations and interpret results using MATLAB plotting	Introduction	Presence And Online	Exams Quizzes
2	2		Programming		
3	2		What's MATLAB		
4	2		Data Types		
5	2		Matrices		
6	2		Inverse and Transpose		
7	2		Derivative		
8	2		Equations Solving		
9	2		Loops		
10	2		Conditional Statement		
11	2		While Command		
12	2		Midterm Exam		
13	2		Examples		
14	2		Many Commands		
15	2		Final Exam		

		tools. ☐ Solve engineering and scientific problems using MATLAB's built-in libraries and numerical computing capabilities.			
11- Course Evaluation					
		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Seminar	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	15	LO # 1-14
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		
12- Learning and Teaching Resources					
Required textbooks (curricular books, if any)		☐ MATLAB for Engineers – Holly Moore, latest edition. ☐ MATLAB: An Introduction with Applications – Amos Gilat, latest edition. ☐ Essential MATLAB for Engineers and Scientists – Brian H. Hahn and Daniel T. Valentine, latest edition.			
Main references (sources)					
Recommended books and references (scientific journals, reports...)		☐ MATLAB Programming for Engineers – Stephen J. Chapman, latest edition. ☐ MATLAB Documentation – Official reference for MATLAB commands, functions, and programming examples.			
Electronic References, Website					

1- Course name
Arabic Language 2
2- Course code
MEDPHY2207
3- Semester\ Year
Second Semester / Second Year
4- Date this description was prepared
26/4/2026
5- Available forms of attendance
In-Person & Online
6- Number of study hours (total) / Number of units (total)
30 / 30
7- Name of the course coordinator (if there is more than one, please mention it)
Assistant Professor Ali Jabbar

8- Module Aims, Learning Outcomes and Indicative Contents

Module Aims	1. Covering the fundamentals of the Arabic language 2. Understanding the branches of the Arabic language 3. Developing reading, writing, and listening skills 4. Cultivating linguistic awareness by understanding Arabic as a language with a rich history and culture 5. Learning speaking and communication skills to interact effectively with others
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9-Teaching and learning strategies

strategy	1- Lectures and practical examples 2- Homework and seminar system
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10 – Course structure

Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	Writing Tips (How to Write)	Knowledge and Understanding: Students should be able to know and understand the following: The ability to speak and write Arabic fluently and at an advanced level. An understanding of Arab culture, traditions, and values. The ability to participate in communities and seminars, whether in academic, professional, or social settings. The ability to read and analyze literary and academic texts in Arabic to facilitate research and the writing of appropriate research papers. Preparedness for professional life through the ability to use Arabic in translation, education, public relations, or any other field that requires communication in Arabic.	In-Person & Online	Monthly & Daily Exams
Week 2	2	Topics for Writing (Our Strength Lies in Our Unity)			
Week 3	2	Topics for Writing (Honoring Parents)			
Week 4	2	Topics for Writing (The Approach of Moderation)			
Week 5	2	Topics for Writing (The Art of Dealing with Others)			
Week 6	2	Midterm Exam			
Week 7	2	Arabic Language and its Sciences			
Week 8	2	Interpersonal Communication Skills			
Week 9	2	Imam Ali (may God be pleased with him) (Friends)			
Week 10	2	Imam Ali (may God be pleased with him) (The Soul Weeps)			
Week 11	2	The Verb			
Week 12	2	Monthly Exam			
Week 13	2	The Subject and the Passive Subject			
Week 14	2	Common Spelling Mistakes			
Week 15	2	Final Exam			

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources	
Required textbooks (methodology, if applicable)	Expression, Composition, Drawing, and Spelling / Prof. Dr. Abdul Rahman Mutlaq Al-Jubouri
Main references (sources)	Comprehensive Grammar / Abbas Hassan Spelling Rules in Ten Easy Lessons / Dr. Fahmi Al-Najjar Modern Literature / Prof. Dr. Faiq Mustafa Contemporary Literature / Dr. Bashir Issawi Arabic Literature in the Modern Era / Dr. Mustafa Al-Sahritah Paths to Ibn Malik's Alfiyya / Ibn Hisham
Recommended books and supporting references (scientific journals, reports, etc.)	
Electronic references, websites	

1. Course Name:					
English Language					
2. Course Code:					
URENG2					
3. Semester / Year:					
2025 - 2026					
4. Description Preparation Date:					
2026 / 6 / 30					
5. Available Attendance Forms:					
Blended Learning					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2					
7. Course administrator's name (mention all, if more than one name)					
Name: Yasir Ahmed Hussein					
Email: yasser.ahmed@uoturath.edu.iq					
8. Course Objectives					
Course Objectives		1. Developing Basic Communication Skills: - Enabling students to express themselves effectively in everyday situations. - Focusing on building a foundation in speaking and listening. 2. Enhancing Reading Comprehension Skills: - Improving students' ability to understand and interpret written texts. - Providing strategies for effective reading comprehension. 3. Enhancing Writing Skills: - Developing students' writing skills across various genres (e.g., essays, emails, reports). - Focusing on grammar, sentence structure, and vocabulary use. 4. Developing Listening Skills: - Enhancing students' ability to understand spoken English in different contexts. - Providing exposure to different accents and speaking speeds. 5. Effective Presentation Skills: - Equipping students with the skills to deliver clear and engaging presentations. - Focusing on aspects such as organization, delivery, and visual aids.			
9. Teaching and Learning Strategies					
Strategy		• Emphasize interactive and communicative activities to encourage students to actively participate in the learning process. • Design tasks that require students to use English to achieve specific objectives, thus promoting language use in practical contexts. • Consider the diversity of learning styles and paces among students in the classroom. • Integrate authentic learning materials such as newspaper articles, blog posts, or videos to introduce students to real-life language use. • Implement ongoing formative assessments, such as quizzes, peer-to-peer assessments, and class discussions, to measure student progress. • Provide constructive feedback on spoken and written language, and encourage students to reflect on their learning experiences. • Adapt lesson plans based on students' evolving needs and interests, allowing for flexibility in teaching methods.			
10. Course Structure					
Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	2	1. Students will demonstrate the ability to initiate and conduct simple conversations in English. 2. Students will demonstrate improved reading comprehension by accurately summarizing and analyzing information from a variety of texts. 3. Students will produce well-organized written essays. 4. Students will apply grammar and sentence structure correctly in oral and written communication. 5. Students will demonstrate improved listening comprehension across a variety of accents and contexts. 6. Students will deliver clear and organized presentations using appropriate language and visual aids.	Introduction: Course overview, syllabus, and expectations.	Blended Learning	Quizzes And Exams
2	2		Unit 1: Tenses, Writing Skills, Email Writing Basics.		
3	2		Unit 2: Describing things and people using adjectives - Common grammatical structures		
4	2		Grammar: Recognizing and using irregular verbs - Social expressions..		
5	2		Writing Skills: Academic writing basics		
6	2		Midterm Exam		
7	2		Unit 3: Quantity - Articles - Medical Vocabulary (Part 1)		
8	2		Writing Basics: Summarizing texts and extracting information from various texts		
9	2		Grammar: Active and passive voice - Reported speech.		
10	2		Listening Skills: Listening to podcasts and participating in discussions.		
11	2		Speaking Skills: Sharing and discussing information about DNA		
12	2		Unit 4: Medical Vocabulary (Part 2) - Comparative and superlative adjectives.		
13	2		Writing: Talking about personal interests.		
14	2		Group Activity: Planning a class event based on shared interests.		
15	2		Final Exam Preparation Week		
11. Course Evaluation					

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Seminar	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			New Headway Plus for Pre-intermediate		
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			www.youtube.com		

1- Course Title					
Biochemistry					
2- Course Code					
BIOCHE					
3- Semester / Year					
2025-2026					
4- Date this Description was Prepared					
1/9/2025					
5- Available Attendance Modes					
In-person / Online					
6- Total Credit Hours / Total Units					
Credit Hours (125) / Units (5)					
7- Course Instructor(s) (If more than one name, list all)					
Asst. Prof. Dr. Ahmed Abdul Latif Ismail					
8- Course Objectives					
1- Define student learning objectives. 2- Emphasize essential topics and core skills. 3- Introduce students to the fundamental principles of biochemistry. 4- Provide benchmarks for measuring success. 5- Promote critical thinking and develop practical skills.					Course Objectives
9 – Teaching and Learning Strategies					
1. Active Learning: Engage students in group work, case studies, and discussions. 2. Visual Learning: Use diagrams, animations, and concept maps to visualize processes. 3. Technology Integration: Incorporate modeling software, simulations, and online quizzes. 4. Problem-Based Learning: Present real-world problems to encourage critical thinking. 5. Inquiry-Based Learning: Encourage students to explore and ask questions. 6. Interdisciplinary Approach: Connect biochemistry with fields like molecular biology and pharmacology. 7. Fluency-Based Approach: Require students to explain concepts in their own words. 8. Formative Assessment: Use frequent quizzes and assignments for feedback.					Strategy
10 - Course Structure					
Assessment Method	Learning Method	Required Learning Outcomes	Unit or Topic Name	Hours	Week
Student Discussion	In-person		Cell Structure	4	1st
Student Discussion	In-person		Cell Structure	4	2nd
Student Discussion	In-person		Carbohydrates	4	3rd
Student Discussion	In-person		Carbohydrates	4	4th

Student Discussion	In-person		Amino Acids and Peptides	4	5th
Home Assignment	In-person		Amino Acids and Peptides	4	6th
Student Discussion	In-person		Proteins	4	7th
Exam	In-person		Midterm Exam	3	8th
Student Discussion	In-person		Enzymes	4	9th
Student Discussion	In-person		Enzymes	4	10th
Student Discussion	In-person		Lipids	4	11th
Student Discussion	In-person		Lipids	4	12th
Student Discussion	In-person		Nucleic Acids	4	13th
Student Discussion	In-person		Nucleic Acids	4	14th
Student Discussion	In-person		Nucleic Acids	4	15th
Exam	In-person		Final Exam	3	16th

11- Course Assessment (Distribution of 100 marks based on student tasks such as daily preparation, quizzes, oral, monthly, and written exams, reports, etc.)

Final Exam	Activities	Homework	Attendance	Monthly Exam	Daily Quiz
50	10	10	10	10	10

12- Learning and Teaching Resources

Twinning Course Syllabus with Al-Nahrain University – College of Science – Department of Medical Physics	Required Textbooks (Prescribed Curriculum if any)
Lehninger Principles of Biochemistry, Albert L. Lehninger	Main References (Sources)
Harper's Illustrated Biochemistry	Recommended Supporting Books and References (Scientific Journals, Reports, etc.)
	Electronic References, Websites

1- Course name
Quantum mechanics
2- Course code
MPHY2201
3- Semester\ Year
2026-2025
4- Date this description was prepared
2025/9/1
5- Available forms of attendance
In-person/ Online
6- Number of study hours (total) / Number of units (total)
Number of hours (150) / Number of units (6)
7- Name of the course coordinator (if there is more than one, please mention it)
Prof. Dr. Alaa Baqir Kadhim

8- Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	To introduce the principles and formalism of quantum mechanics. To develop problem-solving skills using quantum theory. To explore the application of quantum mechanics in technology and modern physics. To understand and discuss the philosophical implications of quantum mechanics.

9-Teaching and learning strategies

strategy	1- Understanding the principles of quantum mechanics. 2- Solving quantum problems using the Schrödinger equation. 3- Analysis of quantum systems such as particles in potential wells, oscillators, and atoms. 4- Discussion of quantum entanglement, imprecision, and measurement. 5- Application of quantum mechanics to real-world phenomena and technologies (e.g., semiconductors, lasers, and computing).
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10 – Course structure

Week	hours	Unite name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	4	Introduction To Quantum Mechanics	Understanding the principles and fundamentals of quantum mechanics	In person	Paragraph 11
Week 2	4	Mathematical Tools For Quantum Mechanics	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 3	4	The Schrödinger Equation – Part 1	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 4	4	The Schrödinger Equation – Part 2	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 5	4	Quantum Superposition And Interference	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 6	4	The Uncertainty Principle	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 7	4	Quantum Mechanics In One Dimension	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 8	4	Quantum Systems In Three Dimensions	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 9	4	Quantum Mechanics Of Angular Momentum	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 10	4	Quantum Tunneling	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11

Week 11	4	Quantum Entanglement And Nonlocality	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 12	4	Quantum Mechanics And The Hydrogen Atom	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 13	4	Midterm Exam	Understanding the principles and fundamentals of quantum mechanics	In Person	Mid exam
Week 14	4	Quantum Statistical Mechanics	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 15	4	Review And Final Exam Preparation	Understanding the principles and fundamentals of quantum mechanics	In Person	Paragraph 11
Week 16	3	Final Exam			Final exam

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	The twinning program with Al-Nahrain University - Department of Medical Physics
Main references (sources)	Introduction to quantum mechanics, By: David J. Griffith, 3rd ed., 2018. Introduction to quantum mechanics, By: David J. Griffith, 3rd ed., 2018.
Recommended books and supporting references (scientific journals, reports, etc.)	Quantum Mechanics, by L.I. Schiff, 1949.
Electronic references, websites	Any website on the internet that includes topics on quantum mechanics.

1-Course Name:					
Sound and wave motion					
2-Course Code:					
MPHY2202					
3-Semester / Year:					
2025-2026					
4-Description Preparation Date:					
1/9/2025					
5-Available Attendance Forms:					
In presence / online					
6-Number of Credit Hours (Total) / Number of Units (Total)					
200 / 8					
7-Course administrator's name (mention all, if more than one name)					
Name: Naif Hammad Mishhin					
Email: naifalhardan@uoturath.edu.iq					
8-Course Objectives					
Course Objectives		Students will gain knowledge of wave motion and acoustics. The properties of waves will be discussed, as well as the effect of the medium on wave properties.			
• Teaching and Learning Strategies					
Strategy		The core approach to delivering this unit is to foster student engagement through active participation in homework exercises, with the aim of enhancing and expanding their critical thinking skills. This will be facilitated through interactive classroom sessions and lessons, as well as exploring simple experiments designed to include sampling activities tailored to students' interests.			
• Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	6	Demonstrate knowledge and understanding of physical laws and principles and their application to diverse areas of physics (including laws of motion, electromagnetism, wave phenomena, and properties of matter), with modules covering the necessary mathematics. Understand the	Introduction	presence	Student discussion
2nd	6		Mechanical Waves: Wave Properties	presence	Student discussion
3rd	6		Wavelength and Frequency	presence	Student discussion
4th	6		Speed and Energy of a Traveling Wave	presence	Student discussion
5th	6		Standing waves	presence	Student discussion
6th	6		Sound waves: Properties of sound waves	presence	Student discussion
7th	6		Speed of sound / Examples and tests	presence	Student discussion
8th	6		Midterm exam	presence	Paper Exam
9th	6		Sound wave intensity	presence	Student

		concepts of oscillatory motion, wave superposition, sound, and electromagnetic waves. Have experience with common mathematical and experimental tools, including problem-solving specific to this course. Have skills in collecting and analyzing experimental data. Demonstrate the ability to use appropriate texts or other learning resources as part of their own learning management.			discussion
10th	6		Superposition of sound waves (interference and pulses)	presence	Student discussion
11th	6		Doppler effect	presence	Student discussion
12th	6		Harmonic and circular motion	presence	Student discussion
13th	6		Power and energy laws in simple harmonic oscillators	presence	Student discussion
14th	6		Harmonic and circular motion	presence	Student discussion
15th	6		Rehearsal	presence	Student discussion
16th	6		Final year exam	presence	Paper Exam

• Course Evaluation

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

• Learning and Teaching Resources

Required textbooks (curricular books, if any)	The twinning program with Al-Nahrain University – College of Science – Department of Medical Physics
Main references (sources)	THE PHYSICS OF VIBRATIONS AND WAVES by H. J. Pain, Copyright 2005 John Wiley & Sons Ltd.
Recommended books and references (scientific journals, reports...)	Not available
Electronic References, Websites	https://openstax.org/details/books/college-physics-2e

1- Course name
Physiology
2- Course code
MEDPHY2201
3- Semester\ Year
Second Semester / Second Year
4- Date this description was prepared
26/4/2026
5- Available forms of attendance
In-Person & Online
6- Number of study hours (total) / Number of units (total)
45 / 90
7- Name of the course coordinator (if there is more than one, please mention it)
Assistant Professor Sodad Al Khateeb

8- Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	The curriculum focuses on integrating the principles of physiology with medical physics, emphasizing biophysical mechanisms and their applications in healthcare technology and diagnostics. The course material aims to teach students the following: 1. To provide students with a fundamental understanding of human physiological processes, emphasizing their importance in medical physics. 2. To connect physical principles to the body's physiological systems, enabling students to analyze physiological phenomena from a physical and quantitative perspective. 3. To equip students with the knowledge necessary to apply physiological principles to medical technologies, diagnostics, and treatment.

9-Teaching and learning strategies

strategy	Learning Strategies: - Encourage students to take organized notes during lectures and ask scientific questions. - Actively participate in group discussions and collaborative activities. - Utilize books, online resources, and supplementary materials to enhance learning. - Provide constructive feedback on assignments and assessments. Teaching Strategies: - Encourage students to actively engage with the material through discussions and group activities to foster deeper understanding. - Deliver well-structured lectures that provide a clear overview of the topic. - Integrate videos and animations to illustrate complex physiological processes. - Emphasize homework assignments and utilize class time for discussions.
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10 – Course structure

Week	hours	Unit name or subject	Required learning outcomes	Learning method	Evaluation method
Week1	2	Fundamentals of Physiology - Definition of physiology and its importance in medical physics - Levels of regulation in the body - The concept of homeostasis: and its role in maintaining the stability of the human	Understanding the functions of major physiological systems (such as the cardiovascular, respiratory, nervous, and musculoskeletal systems).	In-person & Online	Monthly & Daily Exams
Week 2	2	body. Structure and Biophysics of Membranes • Electrical Properties of Membranes • Ion Channels and Their Kinetics			
Week 3	2	Mechanisms of Transport: Diffusion, Osmosis, Active Transport - Cellular Signaling Pathways Cardiovascular System	Applying physics to physiology by analyzing physiological processes (such as blood flow and nerve impulse transmission) using physical laws and mathematical models. Using		
Week 4	2	• Anatomy and Function of the Heart • Electrical Activity of the Heart (ECG Analysis)			
Week 5	2	• Dynamics of Blood Flow • Biophysics of Blood Pressure Measurement Respiratory System • Mechanics of Respiration and Gas Exchange			

Week 6	2	• Biophysics of Oxygen and Carbon Dioxide Transport • Lung Function Tests (Spirometry, Pulmonary Capacitance Measurement) • Ultrasound Applications in Lung Imaging	quantitative methods to evaluate and analyze physiological measurements such as blood pressure, respiratory rates, and nerve impulses. Gaining practical skills in using medical devices and techniques for measuring and analyzing physiological parameters. This includes understanding and interpreting clinical data from medical devices such as electrocardiographs (ECGs), spirometry devices, and imaging techniques. Learning to apply physiological knowledge in medical technology and health science contexts and working effectively with healthcare professionals by understanding the physiological principles underlying medical devices and treatments.		
Week 7	2	Midterm Exam			
Week 8	2	• Signal Transmission: Synaptic and Action Potentials • Biophysical Models of Nerve Activity (e.g., Hodgkin-Huxley Model) • Brain Imaging Techniques • Renal and Urinary System • Filtration, Reabsorption, and Secretion			
Week 9	2	• Biophysical Principles of Hemodialysis • Imaging Techniques for Renal Function			
Week 10	2	• Musculoskeletal System • Structure and Types of Muscles: Skeletal, Cardiac, and Smooth Muscles • Muscle Contraction: The Biophysics of Sliding Stroke Theory			
Week 11	2	• Electromyography (EMG) and its Applications • Biomechanics of Bones and Joints • Sensory Systems			
Week 12	2	• Biophysics of Vision: Ocular Optics and Light Signal Conversion • The Mechanism of Hearing: Cochlear Mechanics and Auditory Measurements • The Sensation of Touch and Pain: Neural Pathways and Diagnosis			
		• Endocrine System • Hormonal Regulation of Body Functions • Mechanisms of Hormone-Receptor Interaction • Diagnostic Imaging Techniques			

		in Endocrinology (e.g., thyroid imaging)			
Week 13	2	Reproductive Physiology • Hormonal Regulation of Reproduction • Biophysics of Assisted Reproductive Technologies (ART)			
Week 14	2	• Imaging Techniques in Reproductive Health Medical Applications of Physiology • The Role of Physics in Diagnosis and Treatment Medical Applications of Physiology			
Week 15	2	• Applications of MRI, CT, and X-ray in Physiological Studies • Laser Interactions with Tissue and Photodynamic Therapy			

11- Course evaluation (grade distribution out of 100) is based on student assignments such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Mid exam	Attendance	Home work	Activities	Final exam
10	10	10	10	10	50

12- Learning And Teaching Resources

Required textbooks (methodology, if applicable)	Guyton and Hall Textbook of Medical Physiology (14th Edition) John E. Hall
Main references (sources)	Human Physiology (9th. Ed.) Stuart Ira Fox
Recommended books and supporting references (scientific journals, reports, etc.)	
Electronic references, websites	https://clinref.com/data/uploads/books/Guyton_and_Hall_Textbook_of_Medical_Physiology_14th_Ed.pdf