

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



# **Academic Program and Course Description Guide**

**2025-2026**

## **Introduction:**

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on

3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing academic programs and course descriptions to ensure the proper functioning of the educational process.

### **Concepts and terminology:**

**Academic Program Description:** The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

**Course Description:** Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

**Program Vision:** An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

**Program Mission:** Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

**Program Objectives:** They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.


**Curriculum Structure:** All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.


**Learning Outcomes:** A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

**Teaching and learning strategies:** They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

### Academic Program Description Form

**University Name:** .....University of Basrah.....  
**Faculty/Institute:** ..... College of Education for Pure Science.....  
**Scientific Department:** .....Department of Physics.....  
**Academic or Professional Program Name:** .....BSc. in Physics....  
**Final Certificate Name:** .... BSc. in Physics.....  
**Academic System:** .....Yearly.....  
**Description Preparation Date:** 11/3/2025  
**File Completion Date:** 11/3/2024

**Signature:**   
**Head of Department Name:**  
**Prof. Dr. Ra'ed M. Hassan**  
**Date:** 15/9/2025

**Signature:**   
**Scientific Associate Name:**  
**Asst. Prof. Haider Q. Fadel**  
**Date:** 18/9/2025

The file is checked by:

Director of the Quality Assurance and University Performance Department:

Dr. Hader Bakeer Abdallah

Date: 20/9/2025

Signature:



Approval of the Dean

Prof. Dr. Majed

M. Jassem

### **1. Program Vision**

The College of Education for Pure Sciences strives to be one of the leading higher education institutions at the University of Basrah in the field of modern education and scientific research through its academic, research, and administrative activities. It also works to provide a comprehensive path for its students and faculty members, enabling them to be active and creative in serving society in the fields of physics education and its dynamic branches.

### **2. Program Mission**

Working on preparing and graduating outstanding scientific and leadership competencies in physics and its sciences and disciplines, as well as advancing knowledge in scientific research to serve the local, regional, and international communities. Additionally, the college focuses on training and refining students' minds scientifically and intellectually, emphasizing social and cultural values, and responding to the demands of the local job market.

### **3. Program Objectives**

1. Embodying the vision, mission, and objectives of the University of Basrah by implementing best educational practices with a strong focus on quality assurance, performance enhancement, and continuous improvement.

2. Preparing specialized cadres capable of serving the community and paving the way for future specializations.
3. Promoting a culture of human diversity in society, transferring knowledge and linguistic skills, fostering academic research writing, and encouraging creative scientific achievements through student- and faculty-centered activities.
4. The college seeks to establish scientific and cultural cooperation agreements with peer colleges and departments in various institutions to achieve best practices in teaching and learning.
5. Emphasizing the educational and ethical aspects of all its members, fostering a spirit of dedication, tolerance, commitment, and service to the nation.
6. Focusing on intellectual and cultural development by engaging with the experiences of other countries in the field of physics and its diverse applications.
7. Prioritizing the educational and ethical development of students, instilling a sense of dedication, tolerance, and responsibility.

<b>4. Program Accreditation</b>
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No
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<b>5. Other external influences</b>
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No
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<b>6. Program Structure</b>					
<b>Program Structure</b>	<b>Number of Courses</b>	<b>Credit hours</b>	<b>Percent age</b>	<b>Reviews*</b>	
-	3.43%	6	3	First Stage	<b>Institutional Requirements (University)</b>
-	2.29%	4	2	Second Stage	
-	0.00%	-	-	Third Stage	
-	2.29%	4	1	Fourth Stage	
-	5.71%	10	4	First Stage	<b>College Requirements</b>
-	8.00%	14	4	Second Stage	
-	4.57%	8	2	Third Stage	
-	5.71%	10	3	Fourth Stage	
-	13.71%	24	4	First Stage	<b>Department Requirements</b>
-	16.00%	28	5	Second Stage	
-	20.57%	36	6	Third Stage	
-	17.71%	31	5	Fourth Stage	
-	-	-	Not Available	-	<b>Summer Training</b>
<b>Other</b>					

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

<b>7. Program Description</b>				
<b>Year/Level</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Credit Hours</b>	
			Theoretical - Number of Units	Practical
<b>First Year</b>		<b>Electricity and Magnetism 1</b>	<b>3h-7U</b>	<b>2h</b>
		Arabic Language	1h-2	
		Mathematics (1)	3h-6U	
		Mechanics	3h-7U	2h
		Educational Psychology	2h-4U	
		Computers		2h-2U
		Heat and Properties of Matter	3h-6U	
		Foundations of Education	2h-4U	
		Human Rights and Democracy	1h-2U	
		Physical Education	1h	
		English	1h-2U	
<b>Second Year</b>		<b>Electricity and Magnetism 2</b>	<b>3h-7U</b>	<b>2h</b>
		Optics	3h-7U	2h
		Mathematics (2)	3h-6U	
		Sound and Wave Motion	2h-4U	
		Programming (Computers)		2h-2U
		Astronomy	2h-4U	
		Scientific Research Methodology	2h-4U	
		Secondary Education and Educational Administration	2h-4U	
		Developmental Psychology	2h-4U	
		English Language	1h-2U	
		Baath Regime Crimes	1h-2U	
<b>Third Year</b>		<b>Complex Functions</b>	<b>3h-7U</b>	
		Elective (Meteorology) – Elective	2h-4U	
		Atomic and Molecular Physics	3h-7U	2h
		Advanced Mechanics	3h-6U	

		<b>Curriculum and Teaching Methods</b>	<b>2h-4U</b>	
		<b>Thermodynamics</b>	<b>3h-6U</b>	
		<b>Electronics</b>	<b>3h-7U</b>	<b>2h</b>
		<b>Guidance and Mental Health</b>	<b>2h-4U</b>	
<b>Forth Year</b>		<b>Solid-State Physics</b>	<b>3h-6U</b>	
		<b>Laser</b>	<b>3h-6U</b>	
		<b>Measurement and Evaluation</b>	<b>2h-4U</b>	
		<b>Quantum Physics</b>	<b>3h-6U</b>	
		<b>Nuclear Physics</b>	<b>3h-7U</b>	<b>2h</b>
		<b>Educational Laboratory and Teaching Aids</b>		<b>2h-4U</b>
		<b>Observation, Application, and Practical Training</b>		<b>2h-4U</b>
		<b>Research Project</b>	<b>2h-4U</b>	

## 8. Expected learning outcomes of the program

<b>Knowledge</b>	
	<ul style="list-style-type: none"> <li>1- Enabling students to gain a deep understanding of physics.</li> <li>2- Preparing qualified teachers to teach physics in educational institutions.</li> <li>3- Training teaching staff with a high level of competence in physics.</li> <li>4- Preparing physics teachers capable of keeping up with scientific advancements in the field of physics.</li> </ul>
<b>Skills</b>	
	<ul style="list-style-type: none"> <li>1- Enabling students to grasp the fundamental concepts of physics.</li> <li>2- Developing students' ability to analyze physical phenomena scientifically and practically.</li> <li>3- Enhancing students' ability to clearly express their physics-related ideas and connect them to everyday life.</li> </ul>
<b>Ethics</b>	
	<ul style="list-style-type: none"> <li>1- Enhancing critical thinking skills and systematic analysis in applying physical principles.</li> <li>2- Encouraging students to explore physics-related topics and benefit from them.</li> <li>3- Developing students' abilities and instilling scientific values and principles through the study of physics.</li> </ul>

## 9. Teaching and Learning Strategies

- Explaining the material during the lecture.
- Clarifying concepts on the board.
- Encouraging cooperative learning through questions and discussions.
- Presenting images and explanatory videos on the screen..

## 10. Evaluation methods

- Weekly, monthly, and daily exams, as well as the final year exam.
- Homework assignments and oral questions.

## 11. Faculty

Faculty Members	Specialization		Special Requirements/Skills (if applicable)	Number of the teaching staff	
	Academic Title	General		Special	Staff
Majid Mohammed Jasim	Professor	Physics	Theoretical Physics		
Raed Mohammed Hassan	Professor	Physics	Laser Physics		
Jenan Majeed AL- Mukh	Professor	Physics	Solid State Physics (Surface Physics)		

Thaer Munshad Salman	Professor	Physics	Theoretical Physics		
Hussain Ali Badran Ali	Professor	Physics	Electronics Physics		
Jasim Mahdi Mohammed	Professor	Physics	Solar Energy Physics		
Hussein Falaih Hussein	Professor	Physics	Solid State Physics		
Jabbar Mansoor Khalaf Al-zyadi	Professor	Physics	Condensed Matter Physics		
Riyadh. CH. Abul –Hail	Professor	Physics	Radiation Physics		
Hamza Bakr Salman	Professor	Physics	Solid State Physics (Surface Physics)		
Falih Hussain Khudair	Professor	Physics	Nuclear Physics		
Hasan Abdullah Sultan	Professor	Physics	Laser Physics		
Qusay Mohammed Ali Hassan Wasfi	Professor	Physics	Nonlinear Optics		
Ahmed S. Al-Asadi	Professor	Physics	Applied Physics / Nanotechnolog y		
Mohammed F. Al-Mudhaffer	Professor	Physics	Nanotechnolog y and Renewable Energy		
Furat Ahmed Mahdi Al-Saymari	Professor	Physics	Nanotechnolog y Applications / Optoelectronics		
Haider Kassim Fadel Al-Edany	Assistant Professor	Physics	Material Physics		





Huda Hazem Noori	Assistant Lecturer	Physics	Laser Physics		
Zainab Njam Ahmed	Assistant Lecturer	Physics	Nuclear Physics		
Rana Azeez Abed	Assistant Lecturer	Physics	Applied Nuclear Physics		
Maha Saddam Abd	Assistant Lecturer	Physics	Educational Psychology		
Sahira Nabeel Hussien	Assistant Lecturer	Physics	History		
Haider Riyadh Sabeeh	Assistant Lecturer	Physics	English Language and Literature		
Reman Jamal Jasim	Assistant Lecturer	Physics			
Hanien Faleh	Assistant Lecturer	Physics			

## Professional Development

### Mentoring new faculty members

- 1- Engaging with experienced university professors, utilizing modern teaching technologies, and structuring scientific lectures.
- 2- Continuously improving teaching methods and encouraging reading in public libraries.
- 3- Attending specialized developmental courses in this field.

### Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

## 12. Acceptance Criterion

**(Setting regulations related to enrollment in the college or institute, whether central admission or others)**

### **13. The most important sources of information about the program**

- 1- Sources approved by the university and counterpart colleges (Sectorial Committee).
- 2- External sources and various books from the internet or private and public libraries.

### **14. Program Development Plan**

This academic program aims to enhance the level of faculty members, strengthen their competencies, and prepare graduates with the skills and qualifications that enable them to compete in the job market, whether in education and pedagogy or other sectors within society. Accordingly, the program seeks to achieve the following objectives:

1. Providing society with highly qualified teachers.
2. Keeping up with the latest scientific and specialized developments to ensure quality education.
3. Strengthening collaboration with the community to meet educational and professional needs.
4. Directing the educational process toward achieving community development.
5. Instilling ethical and professional principles in the field of teaching.



## 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		Electricity and Magnetism		√		√		√	√	√	√		√	√	
		Arabic Language		√	√	√	√	√	√		√			√	
		Mathematics (1)			√		√	√	√	√		√	√	√	√
		Mechanics		√	√	√	√		√	√	√	√		√	√
		Educational Psychology		√	√	√	√	√	√	√		√			√
		Computers		√		√	√	√	√		√	√			
		Heat and Properties of Matter		√		√		√	√	√	√		√	√	
		Foundations of Education		√	√	√	√	√	√		√			√	
		Human Rights and Democracy		√		√	√	√	√	√		√	√		

		<b>Physical Education</b>		√	√	√		√	√	√	√		√	√		
		<b>English Language</b>			√	√	√	√	√		√			√		
<b>Second Year</b>		<b>Electricity and Magnetism</b>		√	√	√	√		√	√	√	√		√	√	
		<b>Optics</b>		√	√	√	√	√	√	√		√			√	
		<b>Mathematics (2)</b>		√		√		√	√	√	√		√	√		
		<b>Sound and Wave Motion</b>		√	√	√	√	√	√		√			√		
		<b>Programming (Computers)</b>			√		√		√	√	√	√		√	√	
		<b>Astronomy</b>		√	√	√	√		√	√	√	√	√		√	√
		<b>Scientific Research Methodology</b>		√	√		√	√	√	√		√				√
		<b>Secondary Education and Educational Administration</b>			√	√	√	√		√				√		

			<b>Developmental Psychology</b>		√		√	√		√	√	√	√		√	√
			<b>English Language</b>		√	√	√	√	√	√	√		√			√
			<b>Baath Regime Crimes</b>			√		√	√	√	√		√	√		
	<b>Third Year</b>		<b>Complex Functions</b>		√	√	√	√		√	√	√	√		√	√
			<b>Elective (Meteorology) – Elective</b>		√	√	√	√	√	√	√		√			√
			<b>Atomic and Molecular Physics</b>			√		√		√	√	√	√		√	√
			<b>Advanced Mechanics</b>		√	√	√	√	√	√	√		√			√
			<b>Curriculum and Teaching Methods</b>		√	√	√	√		√	√	√	√		√	√
			<b>Thermodynamics</b>			√		√	√	√	√		√	√		√
			<b>Electronics</b>			√	√	√	√		√			√		
			<b>Guidance and Mental Health</b>		√		√	√		√	√	√	√		√	√

					√	√	√	√	√	√	√		√			√
	<b>Fourth Year</b>		<b>Solid-State Physics</b>				√		√	√	√	√		√	√	
			<b>Laser</b>		√		√	√	√	√		√	√		√	
			<b>Measurement and Evaluation</b>		√	√	√	√		√			√			
			<b>Quantum Physics</b>		√		√	√		√	√	√	√		√	√
			<b>Nuclear Physics</b>		√	√	√	√	√	√	√		√			√
			<b>Educational Laboratory and Teaching Aids</b>		√	√		√	√	√	√		√	√	√	√
			<b>Observation, Application, and Practical Training</b>		√	√	√	√	√		√			√		√
			<b>Research Project</b>		√	√	√	√		√			√			

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

## Course Description Form-Year One

1. Course Name:	
Electricity	
2. Course Code:	
3. Semester / Year: 2023-2024	
Annual	
4. Description Preparation Date:	
25/2/2024	
5. Available Attendance Forms:	
Presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours per year. 3 hours per week	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist prof. Dr. Jabbar hafez Email: jabbar.jebur@uobasrah.edu.iq Name: lecturer Dr. Amjad Alshawi Email: amjad.mohammed@uobasrah.edu.iq	
8. Course Objectives	
<b>Course Objectives</b>	1-studying the Coulombs law 2-studying the Electric field 3-studying the Gaussses' law 4-studying the Electric potential 5-studying the Capacitors and insulators .
9. Teaching and Learning Strategies	
<b>Strategy</b>	1. Lesson Planning – Define clear learning objectives and connect new topics with previous knowledge. 2. Visual & Technological Aids – Use presentations, graphs, and simulations to explain concepts.

- 3. Interactive Teaching – Engage students with discussions, real-life examples, and thought-provoking questions.
- 4. Practical Applications – Conduct experiments, show videos, and encourage critical thinking.
- 5. Problem-Solving Skills – Provide diverse exercises, encourage logical analysis, and promote teamwork.
- 6. Student Assessment – Use quizzes, quick questions, and instant feedback to track progress.
- 7. Real-World Connections – Link physics to technology, engineering, and daily life applications.

### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Coulombs law The structure of the atom Electric charges Charge conservation law	Coulombs law	Presentation and discussion	Weekly, monthly, daily written and end-of-year exams.
2	3	Charging by conducting Charging by induction Conductors, insulators and		Presentation and discussion	
3	3	semiconductors Coulombs law		Presentation and discussion	
4	3	Examples		Presentation and discussion	
5	3	problems			

				Presentatio n and discussion	
6	3	The electric field Electric field intensity Electric field line Lines of electric force	The electric field	Presentatio n and discussion	
7	3	Gausses law Electric dipole		Presentatio n and discussion	
8	3	Application The electric field due to charged rod		Presentatio n and discussion	
9	3	he electric field due to charged ring The electric field due to char plain plate example		Presentatio n and discussion	
10	3	Gausses' law gausses law application	Gausses' law	Presentatio n and discussion	
11	3	determine the electric field due to line charge		Presentatio n and discussion	
12	3			Presentatio n and discussion	
13	3	determine the electric field due to plain plate charge determine the electric field due to the conducting mater near its surface		Presentatio n and discussion	
14	3	problems		Presentatio n and discussion	

15	3	problems		Presentatio n and discussion Presentatio n and discussion	
16	3	electric potential electric potential energy	electric potential	Presentatio n and discussion	
17	3	potential potential deference potential and charge distribution		Presentatio n and discussion	
18	3	potential due to more charge single		Presentatio n and discussion Presentatio n and discussion	
19	3			Presentatio n and discussion	
20	3	potential of conducting ball charge potential gradient		Presentatio n and discussion	
21	3	examples		Presentatio n and discussion	
22	3	potential of electric dipole potential due to charge ring		Presentatio n and discussion	
23	3	potential due to charge disc equipotential surfaces dielectric strength Pointed heads and charges discharge		Presentatio n and discussion	
24	3	Capacitors and insulators Capacitors Capacitors storage Parallel plate capacitor	Capacitors and insulators	Presentatio n and discussion	
	3	Ball capacity		Presentatio n and discussion	

25		Capacitors conducting methods		Presentatio n and discussion	
26	3	Insulator between charge capacity			
27	3	Electric susceptibility Electric permittivity		Presentatio n and discussion	
28	3			Presentatio n and discussion	
29	3	Examples			
30	3	Capacitors energy The relation between storag energy and electric field		Presentatio n and discussion	
		Problems		Presentatio n and discussion	
				Presentatio n and discussion	

### 11. Course Evaluation

The distribution is as follows: 17.5 grades of monthly and daily exams for the first semester. 17.5 monthly and daily exam grades for the second semester. 35 grades for final exams

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Basic of Electricity and magnetism (Dr.yahya Abdul-hameed)
Main references (sources)	B. Sc. I YEAR Electricity and magnetism (prof S.C.Garg )
Recommended books and references (scientific journals, reports...)	lectures from the International Information Network (Internet)
Electronic References, Websites	<a href="https://www.researchgate.net">/https://www.researchgate.net</a>

<b>1. Course Name: Heat and properties of matter</b>	
Heat and properties of matter	
<b>2. Course Code:</b>	
<b>3. Semester / Year: Annual</b>	
2023-2024	
<b>4. Description Preparation Date:</b>	
28/2/2024	
<b>5. Available Attendance Forms: presence only</b>	
<b>6. Number of Credit Hours (Total) / Number of Units (Total) 60 hours per year, 6 hours per a week</b>	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Dr. Sawsan Sharief Fliefil Email: sawsan.fliefil@uobasrha.edu.iq Name: rusul dawood salim Email: rusul.salim@uobasrah,edu.iq	
<b>8. Course Objectives</b>	
<b>Course Objectives</b>	<p><b>1 - Providing students with the skill of using the laws of heat and work, the first law of thermodynamics, methods of measuring pressure and pressure changes with depth, and the properties of matter and classifying them according to their response to types of stress.</b></p> <p><b>2 - Providing students with the skill of solving mathematical and intellectual problems related to the subject.....</b></p> <p>.....</p>

9. Teaching and Learning Strategies					
<b>Strategy</b>		1 - Educational strategy, collaborative concept planning. 2- Brainstorming education strategy. 3- Education Strategy Notes Series			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1-Getting to know the concept of the system and the external environment that surrounds the system	<b>Heat and properties of matter</b>	Explaining the scientific material through the use of the blackboard, writing laws and mathematical relationships related to the subject of the lesson, solving questions related to the material, and giving homeworks, especially for each subject.	Daily and monthly exams are set, in addition to the end-of-first semester exam and the final exam
2	2	and getting to know the viewpoints on interpreting the system			
3	2	2- Getting to know the concept of thermal equilibrium, thermal contact and the difference between the thermal energy and internal energy.			
4	2	, then getting to know thermal expansion and the types of expansion for solid bodies, liquid and gaseous			
5	2				
6	2				
7	2				
8	2				
9	2				
10	2				
11	2				
12	2				
13	2				
14	2				
15	2				
Half year holiday					
16		3-An explanation for students about the types of transitional energies, the difference between temperature and thermal energy, temperature units, equations for converting heat units, the meaning of thermal balance, the zeroth			
17					
18					
19					

20		law, methods for measuring energy,			
21		heat and temperature, and the mechanical equivalent of the joule.			
22		Learn about pressure and how to measure it using a manometer and barometer.			
23		Study the change in pressure with depth.			
24					
25		Study the properties of fluids and Pascal's rule as an application of pressure transfer to all parts of the fluid. Studying the first law of thermodynamics and applying theoretical questions about all types of curriculum vocabulary while giving assignments on each topic.			
26					
27					
28					
29					
30					
<b>11. Course Evaluation</b>					
25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams					
<b>12. Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)			Heat and properties of matter Authorship: Dr. Kazem Ahmed Mohammed		
Main references (sources)			Physics for Scientists and Engineers with Modern Physics by Raymond A. Serway		

	Thermodynamics / Authorship: Dr. Amjad Abdel Razzaq Karjiya
Recommended books and references (scientific journals, reports...)	Lectures from the International Information Network (Internet, PowerPoint)
Electronic References, Websites	Lectures from the International Information Network (Internet, PowerPoint)

1. Course Name:					
English Language					
2. Course Code:					
3. Semester / Year:					
2023-2024					
4. Description Preparation Date:					
25/2/2024					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours per year. 1 hour per week					
7. Course administrator's name (mention all, if more than one name)					
Name: Haider Riyadh Sabeeh Email: <a href="mailto:haidarryad4@gmail.com">haidarryad4@gmail.com</a> Name: Sundes Jummah Fakhir Email: uobasrah.edu.iq@sundes.fakher					
8. Course Objectives					
<b>Course Objectives</b>	Learn the importance of English grammar, learn the four skills, translate scientific terms, how to learn English pronunciation as well to understand the basic structure of the word English.				
9. Teaching and Learning Strategies					
<b>Strategy</b>	Exploring English grammar to understand how grammar important in the process of writing and speaking. inT translation of scientific terms to understand it and to use it other scientific subjects.				
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learnin g method</b>	<b>Evaluat ion</b>

					metho d	
1	1		<p>1. Introduction to the English language and its importance at the present time</p> <p>2. Study of general rules: parts of speech</p> <p>3. Types of sentences in the English language such as simple, compound and complex sentences</p> <p>4. Study of pronouns and their importance in writing and speaking.</p> <p>5. Study of indefinite and definite articles for their importance in writing and teaching the student how to use them in sentences, phrases and compositional pieces.</p> <p>6. Explaining verbs and their importance in tenses</p> <p>7. Explaining tenses and simplifying</p>		<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

			<p>them for the student by representing them in sentences and applying them practically by giving the student exercises to solve</p> <p>8. Translating scientific terms from English to Arabic and vice versa.</p> <p>9. Scientific compositional passages related to Physics, Biology and other departments and how to answer the questions of the passage in an academic manner</p>			
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### 11. Course Evaluation

First Term Exam: 20 Marks  
 Second Term Exam: 20 Marks  
 Assignments and attendance: 10 Marks  
 Final Exam: 50 Marks.

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Soars, L., & Soars, J. (2002). *New Headway: Beginner: Student's book*. Oxford University Press

Main references (sources)

Recommended books and references (scientific journals, reports...)	Cunningham, S., Moor, P., & Cosgrove, A. (2013). <i>Cutting Edge 3rd Edition Pre-Intermediate Workbook with Key</i> . Pearson Longman Murphy, R. (2000). <i>English grammar in use: Grammar Reference</i>
Electronic References, Websites	

1. Course Name:
Mathematics 1
2. Course Code:
MA101
3. Semester / Year:
Annual
4. Description Preparation Date:
25.2.2024
5. Available Attendance Forms:
presence only
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hours annually. 3 hours per week
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Fadhil Abbas Tuma, Email: <a href="mailto:fadhil.tuma@uobasrah.edu.iq">fadhil.tuma@uobasrah.edu.iq</a>
Name: Dr. Abadhar Rahman Ahmed, Email: <a href="mailto:abadhar.ahmed@uobasrah.edu">abadhar.ahmed@uobasrah.edu</a>

8. Course Objectives					
1. Learn about the basic concepts of calculus 2. Identify the connection of functions and their relationship to limits 3. Identify the ability to differentiate functions, the integration of various functions, and its relationship to continuity 4. Knowledge of applications of calculus in various sciences 5. The ability to use calculus to solve mathematical equations					
9. Teaching and Learning Strategies					
(1) Regular lectures (2) Presentations (3) Electronic screen (4) Exercises and activities in the classroom (5) Directing students to some sources that contain examples and exercises that benefit from					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Sets, operations on real numbers, intervals	Groups, numbers and their properties	Theoretical lecture	questions and discussion
2	3	Inequalities, absolute value, constants and variables	Groups, numbers and their properties	Theoretical lecture	questions and discussion
3	3	Definition of function, starting point and range, algebra of functions	Functions	Theoretical lecture	questions and discussion
4	3	Composition of functions, graphing functions, inverse of functions	Functions	Theoretical lecture	questions and discussion
5	3	Basic trigonometric functions and their properties, periodic functions	Functions	Theoretical lecture	questions and discussion

6	3	Even and odd functions, inverse of trigonometric function	Functions	Theoretical lecture	questions and discussion
7	3	Exponential functions and their properties logarithmic functions and their properties	Functions	Theoretical lecture	questions and discussion
8	3	Hyperbolic functions, properties hyperbolic functions	Functions	Theoretical lecture	questions and discussion
9	3	Inverse hyperbolic functions, relationship between functions	Functions	Theoretical lecture	questions and discussion
10	3	Theories of limits, their mathematical definition and theorems	Limits and continuity	Theoretical lecture	questions and discussion
11	3	The limit in undefined cases is the limit the right and left limits	Limits and continuity	Theoretical lecture	questions and discussion
12	3	Limit of trigonometric functions, continuous functions	Limits and continuity	Theoretical lecture	questions and discussion
13	3	Definition of the derivative, finding derivative using the definition, general laws	Differentiation (derivatives)	Theoretical lecture	questions and discussion
14	3	The derivative of the reciprocal of the function, derivative Composite functions (chain rule)	Differentiation (derivatives)	Theoretical lecture	questions and discussion
15	3	The second derivative and higher order derivatives, the equation of the tangent and the perpendicular to the tangent to a curve, implicit differentiation	Differentiation (derivatives)	Theoretical lecture	questions and discussion

16	3	Derivative of trigonometric functions derivative of the inverse of trigonometric functions	Differentiation (derivatives)	Theoretical lecture	questions and discussion
17	3	Derivative of exponential and logarithmic functions	Differentiation (derivatives)	Theoretical lecture	questions and discussion
18	3	Derivative of hyperbolic functions derivative of the inverse of hyperbolic functions	Differentiation (derivatives)	Theoretical lecture	questions and discussion
19	3	L'Hopital's Rule and its uses	Differentiation (derivatives)	Theoretical lecture	questions and discussion
20	3	Definition of integration, indefinite integration and its laws	Integration	Theoretical lecture	questions and discussion
21	3	Integration of trigonometric functions, exponential functions, general exponential functions	Integration	Theoretical lecture	questions and discussion
22	3	Integration of hyperbolic functions, definite integration, properties of definite integration	Integration	Theoretical lecture	questions and discussion
23	3	1. Integrals of certain trigonometric functions, 2. Integrals by trigonometric substitutions	Integration methods	Theoretical lecture	questions and discussion
24	3	3. Integrals containing a quadratic function, 4. Integration by division	Integration methods	Theoretical lecture	questions and discussion
25	3	5. Integration with partial fractions	Integration methods	Theoretical lecture	questions and discussion

26	3	6. Integration with other compensation	Integration methods	Theoretical lecture	questions and discussion
27	3	Applications of definite integration, Finding the area between two curves	Application	Theoretical lecture	questions and discussion
28	3	2. Find the displacement of a body moving in a straight line with instant speed and acceleration	Application	Theoretical lecture	questions and discussion
29	3	3. Rotational body size (hard disk method)	Application	Theoretical lecture	questions and discussion
30	3	(cylindrical shell method)	Application	Theoretical lecture	questions and discussion

### 11. Course Evaluation

Distribution is as follows: 25 marks for monthly and quarterly exams for the first semester. 25 marks for monthly and quarterly exams for the second semester. 50 marks for final exams

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Chris McMullen, Essential Calculus Student Practice Workbook with Full Solutions, Zisc Publishing (August 16, 2018) 2. Mark Ryan, Calculus For Dummies,, For Dummies; 2 edition (June 7, 2016)
Main references (sources)	Durfee. W.H , Calculus and Analytic Calculus and Analytic Geometric , Durfee . W.H , 2017 New York بان التفاضل والتكامل والهندسة التحليلية, برسل أ. ج. ترجمة علي ز علي وآخرون , الجزئين الاول والثاني 1983, جامعة الموصل – العراق
Recommended books and references (scientific journals, reports...)	James Stewart, Calculus, calculus Cengage Learning; 8 edition (May 19, 2015).

	اهم الكتب والمصادر الخاصة لحسان التفاضل والتكامل الموجودة في المكتبة المركزية ومكتبة الكلية والقسم.
Electronic References, Websites	المواقع الالكترونية الرصينة ( <a href="http://www.Freescience.info/math">www. Freescience.info/math</a> ) المكتبة الافتراضية مواقع المكتبات في بعض الجامعات العالمية

1. Course Name: Mechanics
Classical mechanics, its theories and applications
2. Course Code:

3. Semester / Year:					
Annual 2023-2024					
4. Description Preparation Date:					
25/2/2024					
5. Available Attendance Forms:					
presence only					
6. Number of Credit Hours (Total) / Number of Units (Total)					
90 hours annually. 3 hours per week					
7. Course administrator's name (mention all, if more than one name)					
Name: Ass. Proff. Dr. Israa kaddori Email: <a href="mailto:israa.taha@uobasrah.edu.iq">israa.taha@uobasrah.edu.iq</a> <u>Name: Dr. Amjad fawzi Abdulkader</u> Email: <a href="mailto:Amjad.abdulkader@uobasrah.edu.iq">Amjad.abdulkader@uobasrah.edu.iq</a>					
8. Course Objectives					
<b>Course Objectives</b>			<b>1- Study of the laws of one-dimensional and two-dimensional motion in classical mechanics</b> <b>2- Study of Newton's laws</b> <b>3- Study of the mechanics of circular motion</b> <b>4- Study of theories of energy and work</b> <b>5- Study of momentum and collisions of moving objects</b>		
9. Teaching and Learning Strategies					
<b>Strategy</b>		Lectures Theory + discussion lessons in solving theoretical problems daily and monthly exams			
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>

1	3hrs		Introduction to Mechanics	Lectures	
2	3hrs	Standards of Length, Mass, and Time		Theory	
3	3hrs			discussion	
4	3hrs	2) The Blocks		lessons	
4	3hrs	Matter		solving	
5	3hrs	3) Dimensional Analysis		theoretical	
6	3hrs		Motion in One Dimension	problems	
7	3hrs	4) Conversion Units		daily	a
8	3hrs	5) Problem-Solving		monthly	
9	3hrs	1) Displacement		exams	
10	3hrs	2) Velocity			
11	3hrs	3) Acceleration			
12	3hrs	4) Motion Diagrams	Vectors and Two-Dimensional Motion		
13	3hrs	5) One-Dimensional Motion with Constant Acceleration			
14	3hrs				
15	3hrs	6) Freely Falling Objects			
16	3hrs		The Laws of Motion		
17	3hrs	1) Vectors and Their Properties			
18	3hrs	2) Components of a Vector			
19	3hrs	3) Displacement, Velocity, and Acceleration in Two Dimensions			
20	3hrs		Circular Motion Dynamics		
21	3hrs	Motion in Two Dimensions			
22	3hrs		Energy		
23	3hrs				
24	3hrs	Forces			
25	3hrs	Newton's First Law			
26	3hrs	Newton's Second Law			
27	3hrs	Newton's Third Law			
28	3hrs		Momentum and Collisions		

29	3hrs	Applications			
30	3hrs	Newton's Laws Forces of Friction Angular Momentum Rigid Body Kinematics Work Kinetic Energy and the Work-Energy Theorem Gravitational Potential Energy Spring Potential Energy Systems and Energy Conservation Power Momentum and Impulse Conservation Momentum Collisions			

<b>11. Course Evaluation</b>					
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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					
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<b>12. Learning and Teaching Resources</b>					
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Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

## Course Description Form-Year Two

1. Course Name:
Educational administration and supervision
2. Course Code:
3. Semester / Year:
Year
4. Description Preparation Date:
27 / 2 / 2024
5. Available Attendance Forms:
Only Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hours Year . 2 hours weekly
7. Course administrator's name (mention all, if more than one name)
Name: Zahraa Salman Ab-dul Hussein Email: lec.zahraa.salman@uobasrah.edu.iq
8. Course Objectives
1-The student should know classroom management  2- The student should distinguish between scientific theory and bureaucratic theory

3- That the student applies what he has learned when dealing with students

4- That the student be able to predict and explain some of the behaviors issued by students

### 9. Teaching and Learning Strategies

<b>Strategy</b>	<p>1- Educational strategy, collaborative concept planning.                  2- Brainstorming strategy                  3-Education Strategy Discussion Series</p>
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### 10. Course Structure

<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2hours		Management development	1-Explaining	Weekly, monthly, daily, written exams, and the end-of-year exam
2	2hours		Management theories	The Scientific	
3	2hours		Scientific theory	Material in detail	
4	2hours	1-Learn about development Administration	The theory of administrative divisions	in a lecture.	
5	2hours	2- Identify theories Administration	Administrative systems theories	2- Writing reports on main topics	
6	2hours	3- Get to know the theory Scientific	Management theory as functions		
7	2hours	4- Identify theories Administrative divisions	Educational administration		
8	2hours	5-Learning about the theory Administrative systems	Characteristics of educational administration		
9	2hours	6- Get to know the theory Management as functions	Management levels		
10	2hours	7 Getting to know the administration Educational	Management styles		
11	2hours	8- Getting to know Management characteristics	Authoritarian management		
12	2hours	9- Getting to know Management levels	Chaotic management		
13	2hours	10- Recognizing patterns Administration	Democratic administration		
14	2hours	11- Getting to know the administration Authoritarianism	First semester exam		
15	2hours		Diplomatic administration		

		12- Getting to know the administration Anarchism		
		13- Getting to know Democratic administration	prevailing trends in educational administration	
		14- Getting to know Diplomatic administration	The school administration	
Off day	2hours	15-Get to know Influencing factors	The importance of school administration	
16	2hours	16- Getting to know directione	School administration goals	
17	2hours	17- Getting to know educational administration	Characteristics of school administration	
18	2hours	18- Getting to know The school administration	School management styles	
19	2hours	19-Getting to know The importance of management school	Modern trends in Administration	
20	2hours	20- Getting to know Management objectives school	Classroom management For educational communication	
21	2hours	21-Getting to know Management characteristics	Means of communication	
22	2hours	22-Getting to know Management styles Educational	Second semester exam	
23	2hours	23-Getting to know Modern trends	Types of communications	
24	2hours	24- Getting to know Classroom management	Educational Supervision	
25	2hours	25- Getting to know Educational communication	Types of educational supervision	
26	2hours	26 - Getting to know Means of communication	The importance of education supervision	
27	2hours	27- Getting to know Types of communications	Teacher-teacher relationship	
28	2hours	28- Getting to know Types of supervision	And the supervisor	
29	2hours	29- Getting to know The importance of supervision	End of year exams	
30		30-Get to know Teacher-teacher relationship And the supervisor		

11. Course Evaluation					
Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams					
12. Learning and Teaching Resources					
Methodological textbooks, if any			Ahmed Abdul Baqi Al-Bustan and others: management and supervision Educational: Theory, Research and Practice, Kuwait, Library Al Falah Publishing, 2003		
Main references (sources)					
Recommended supporting books and references scientific journals, reports...			Ahmed Ismail Hajji: Management of the learning and teaching environment, theory and practice within the classroom and school. Cairo, Dar Al-Fikr Al-Arabi, 2001.		
Electronic references, Internet sites					

1. Course Name:
Optics
2. Course Code:
3. Semester / Year:
2023-2024
4. Description Preparation Date:
16/3/2024
5. Available Attendance Forms:
Attendance only
6. Number of Credit Hours (Total) / Number of Units (Total)

90 hours /3 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Qusay Mohammed Ali Hassan Email: : qusay.hassan@uobasrah.edu.iq					
Name: A.Prof. Dr. Abdulameer Imran Musa Email: abdulameer.musa@uobasrah.edu.iq					
8. Course Objectives					
Course Objectives					
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> <li>● To Concept of optics</li> <li>● Refraction and reflection at plane and Graphical surfaces</li> <li>● To Concept the interference ,diffraction and polarization</li> </ul>			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	The Nature of Light, The Ray Approximation in Geometric Optics	The Nature of Light		-
2	3	Wave front and rays ,The Ray Approximation in Geometric Optics	The Nature of Light		-
3	3	Index of Refraction, Velocity of light, Reflection and refraction at plane surfaces,	The Nature of Light		-
4	3	Reflection and refraction at plane surfaces ,The Laws of Reflection and Refraction,	Reflection and refraction at plane surfaces		-
5	3	Ray treatment of reflection and refraction, Fermat's Principle, Optical Path	Reflection and refraction at plane		-
6	3	; The Principle Of Reversibility, FOCAL POINTS AND FOCAL LENGTHS, Convension of Signs, -	Reflection and refraction at Graphical surface		-
7	3	Graphical constructions, The parallel-ray method, Oblique-Ray Methods	Reflection and refraction at Graphical surface		-

8	3	Magnification ,REDUCED VERGENCE: ,Focal Points And Focal Lengths,	Reflection and refraction at Graphical surface	-
9	3	Image Formation, CONJUGATE POINTS AND PLANES , ,	Reflection and refraction at Graphical surface	-
10	3	, The Parallel-Ray Method ,The Oblique-Ray Method	Reflection and refraction at Graphical surface	-
11	3	Use of the lens Formula , Lateral Magnification ,Virtual Images.	Reflection and refraction at Graphical surface	
12	3	Lens Makers' Formula ,Thin-Lens Combinations , The Power of a Thin Lens,	Thin-Lens	
13	3	Thin Lenses In Contac , Derivation Of The Lens Formula , Derivation Of The Lens Makers' Formula ,	Thin-Lens	
14	3	Thick Lenses , Two Spherical Surfaces , FOCAL POINTS AND PRINCIPAL POINTS	Thick Lenses	
15	3	Focal Point And Focal Length, Graphical Constructions, Mirror Formulas.	Thick Lenses	
16	3	Mirror Formulas., Thick Mirrors, Thick-Mirror Formulas,	Mirrors	
17	3	Aberrations, Spherical Aberrations, Chromatic Aberrations, ASTIGMATISM	Aberrations	
18	3	The Eye ,Conditions of the Eye, The Simple Magnifier,	The Eye	
19	3	Interference of Light Waves, Huygens principle, Interference of Coherent Light, Young's Double-Slit Experiment, (Young, s experiment),	Interference of Light Waves	
20	3	,Intensity distribution in the fringe system, Intensity Distribution of the Double-Slit Interference Pattern:.,Fresnel, s biprism	Interference of Light Waves	
21	3	, Other apparatus depending on division of the wave front Fresnel double-mirror, Lloyd' s mirror: Change of Phase Due to Reflection, Billet' s split lens, The Michelson Interferometer	Interference of Light Waves	
22	3	Circular fringes, Localized fringes, White-light fringes, Visibility of the fringes, Interferometric measurements of length, Twyman and Green interferometer,	Interference of Light Waves	
23	3	Index of refraction by interference methods, Interference Involving Multiple Reflections, Interference in Thin Films, Newton's Rings	Interference of Light Waves	
24	3	Introduction to Diffraction Patterns ,Fresnel and Fraunhofer Diffraction, Diffraction Patterns from Narrow Slits, Intensity of Single-Slit Diffraction Patterns	Diffraction Patterns	
25	3	, Intensity of Two-Slit Diffraction Patterns, Resolution of Single-Slit and Circular Apertures, Rectangular Aperture, Resolving Power With A Rectangular Aperture,	Diffraction Patterns	
26	3	Chromatic Resolving Power Of A Prism, Circular Aperture, Resolving Power of a Telescope, Relation between magnification and resolving power of a telescope, Resolving Power of a Microscope,	Diffraction Patterns	
27	3	The Diffraction Grating, Intensity Distribution From an Ideal Grating, PRINCIPAL MAXIMA, Minima and Secondary Maxima,	Diffraction Patterns	
28	3	Resolving Power of the Diffraction Grating, Diffraction of X-Rays by Crystals, Diffraction Patterns from Narrow Slits, Diffraction Patterns from Narrow Slits	Diffraction Patterns	
29	3	, Polarization of Light Waves, Polarization by Selective Absorption, Polarization by Reflection , Plane-polarizing	Polarization of Light Waves	
30	3	Circular polarizing, Elliptical polarizing, Polarization by Double Refraction , Polarization by Scattering .	Polarization of Light Waves	

<b>11. Course Evaluation</b>			
"The distribution is as follows: 17.5% for monthly and daily exams for the first semester. 17.5% for monthly and daily exams for the second semester. 35% for final exams."			
<b>12. Learning and Teaching Resources</b>			
Fundamentals of optics			
Francis A. Jenkins & Harvey E. White			

1. Course name: Sound and wave motion

Sound and wave motion theories and applications	
2. Course code:	
3. Semester/Year: Annual	
Annual 2023-2024	
4. Date this description was prepared	
18/3/2024	
5. Available attendance forms:	
My presence only	
6. Number of study hours (total)/number of units (total):	
60 hours annually. 2 hours a week	
7. Name of the course administrator (if more than one name is mentioned)	
Name: P.D. Hamza Bakr Salman      Email: hamza.salman@uobasrah.edu.iq Name Ahmed Jassim Hmode	
8. Course objectives	
1-Providing students with the skill of using force laws and applying them to different types of wave motion	..... • ..... • ..... •
2-Giving students the skill of solving differential equations by assuming appropriate solutions	
9. Teaching and learning strategies	
The strategy	.Educational strategy, collaborative concept planning -1 .Brainstorming education strategy -2 Education Strategy Notes Series -3
10. Course structure	

the week	hours	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method
1	hours 2	Informing students about the importance of sound and the types of wave motion, it is one of the important types of motion in our lives how it is transmitted, and the factors affecting	Chapter One: The origin of sound	Explaining the scientific material through the use of blackboard and screen illustrations, writing laws and mathematical relationships related to the subject of the lesson, and arriving at the final solutions for the different types of movement by making the required derivations.	Weekly, monthly, daily, written exams, and the end-of-year exam
2	hours 2		Basic properties of wave transmission		
3	hours 2		Classification of sound waves		
4	hours 2		Solve the questions of the first chapter		
5	hours 2		Chapter Two: Free Vibration		
6	hours 2		Theory		
7	hours 2		Simple linear harmonic motion		
8	hours 2		Phase and phase difference		
9	hours 2		Energy of simple harmonic oscillator		
10	hours 2		Differential equation of harmonic motion		
11	hours 2		Applications to simple harmonic motion		
12	hours 2		Solve the questions of the second chapter		
13	hours 2		Chapter Three: Superposition of harmonic movements		
14	hours 2		The principle of superposition		
15	hours 2		Superposition of two harmonic motions in one dimension		
16	hours 2		Superposition of two perpendicular harmonic motions		
17	hours 2		Solve the questions of the third chapter		
18	hours 2		Chapter Four: Decaying Vibration		
19	hours 2		Forces causing decay		
20	hours 2		Solve the equation of decaying harmonic motion in the case of no decay		
21	hours 2		Imperfect state of decay		
22	hours 2		Critical condition		
23	hours 2		Excess state decay		
24	hours 2		Chapter Five: Forced vibrations		
25	hours 2		The equation of motion for a vibrator decaying under the influence of a periodic external force		
26	hours 2		Solving the equation of forced motion (special solution)		
27	hours 2		Complementary solutions.		
28	hours 2		General solutions, resonance		
29	hours 2		Chapter Six: Wave motion		
30	hours 2		Types of wave motion		
	hours 2	Classification of mechanical waves			

			The speed of a transverse wave in a stretched string Standing waves The theory of free vibration of stretched string of fixed length Sonometer Laws of vibrating strings Solve the problems of the six semester Chapter Seven: Phenomena related to the propagation of sound		
<b>11. Course evaluation</b>					
Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams					
<b>12. Learning and teaching resources</b>					
Required textbooks (methodology, if any)			Sound and wave motion Written by Amjad Abdel Razzaq Karjiya		
(Main references (sources					
Recommended supporting books and references (scientific journals, (...reports					
Electronic references, Internet sites					

1. Course Name: <b>Arabic Language2</b>	
2. Course Code:	
3. Semester / Year: Year	
4. Description Preparation Date: 1/3/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total) :1 hour / 2 Unit	
7. Course administrator's name (mention all, if more than one name) Name: Abadhar Rahman Ahmed Email: <a href="mailto:abadhar.ahmed@uobasrah.edu.iq">abadhar.ahmed@uobasrah.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	<b>1. Developing Basic Language Skills</b> <b>2. Promoting Cultural Identity</b> <b>3. Using the Language in Everyday Life</b>
9. Teaching and Learning Strategies	

<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Providing detailed explanations of the material.</li> <li>2. Involving students in sentence formation and parsing.</li> <li>3. Clarifying the meanings of some Arabic vocabulary</li> </ol>
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### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
30	30		Arabic Language2	Giving lectures	Exams

### 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)	<ol style="list-style-type: none"> <li>1.Explanation of Ibn Aqil.</li> <li>2.Explanation of Al-Ajrumiyyah.</li> </ol>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Course Description Form

1. Course Name:
Electricity and magnetism
2. Course Code:

3. Semester / Year:	
Year	2023/2024
4. Description Preparation Date:	
12/3/2024	
5. Available Attendance Forms:	
Available only	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 h yearly , 3h weekly	
7. Course administrator's name (mention all, if more than one name)	
Name: <a href="#">1-riydh ch</a> <a href="#">2-Hussein F</a> Email: <a href="mailto:1-riydh.abalhiel@uobasrah.edu.iq">1- riydh.abalhiel@uobasrah.edu.iq</a> <a href="mailto:2- Husseinfalaih@ uobasrah.edu.iq">2- Husseinfalaih@ uobasrah.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	<b>1-Teaching the student the basic theoretical concepts in electricity and magnetism</b> <b>2-Teaching the student the ideas and sciences of electrical and magnetic physics</b> <b>3- Providing the student with theoretical and practical skills related to the basics electricity and magnetism</b>
9. Teaching and Learning Strategies	
<b>Strategy</b>	Teaching strategies in physics are a set of procedures, methods and techniques that are used with the aim of achieving pre-planned pedagogical and educational goals. Teaching strategies are characterized by flexibility and the ability to develop and modify because they take into account all the factors that are expected to occur and that could influence their application. And also to fit all the real events associated with it Principles of teaching strategies <ul style="list-style-type: none"> <li>• The strategy must be comprehensive and integrated, and cover all parts of the plan to be implemented without neglecting any part of it.</li> <li>• Determine all the goals to be achieved</li> </ul>

- To be one of the means of support for the administrative planning function
- The strategy should be flexible and capable of development and modification, making it easy to implement

## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		CH-1	Electricity And Magnetism	Explaining the scientific material in a smooth and coherent manner according to the semesters. 2-Write important notes on the board for each chapter. 3-Using scientific discussion. 4-Giving related assignments in each chapter.	Weekly, monthly, daily, written exams and term-end-of-year exam.
2		Magnetic field			
3		.			
4					
5		CH-2			
6		Some measuring devices			
7					
8					
9					
10					
11					
12		CH-3			
13					
14		Magnetic field of electric current			
15					
16					
17		CH-4			
18		Induced electromotive force			
19					
19					
20		CH-5			
21		Inductance			
22					
23		CH-6			
24		Alternating current			
25					

26					
27		CH-7			
28		Magnetic properties of			
29		matter			
<b>11. Course Evaluation</b>					
Distribution: Distribution: 35 theoretical marks and 15 Exp marks for the monthly and daily exams for the first semester. 35 theoretical marks, 15 Exp marks, monthly and daily exams for the second semester. 35 theoretical marks , 15 Exp marks for final exams					
<b>12. Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)			Electricity and magnetism FRANCIS WESTON SEARS		
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			2- <a href="https://uomustansiriyah.edu.iq">https://uomustansiriyah.edu.iq</a> › lect...		

<b>1. Course Name:</b>
Scientific research
<b>2. Course Code:</b>
<b>3. Semester / Year:</b>
Year 2023-2024

4. Description Preparation Date:					
15/3/2024					
5. Available Attendance Forms:					
Attendance only					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 in year and 2 in week					
7. Course administrator's name (mention all, if more than one name)					
Name: Numan Sleem Hashim Email: hshimnuman73@yahoo.com					
8. Course Objectives					
1- Providing students with the skill of applying scientific research ideas in how to write a project.				•	.....
2- Expanding the skill of get sources from the Internet.				•	.....
3- Explaining the most important modern ideas in scientific research.				•	.....
9. Teaching and Learning Strategies					
<b>Strategy</b>					
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>

1	2 hours	The meaning of scientific research linguistically and scientifically	Definition of scientific research	Explaining scientific material through lectures, following up with students, and involving them in the discussion.	Weekly, monthly, daily, written exams, a final exam.
2	2 hours	What do sciences have in common?	Characteristics of science		
3	2 hours	Distinguishing the most important types of scientific research	Patterns of scientific research	2- Asking the students to prepare the next lecture and involving the large number of them in explaining it.	
4	2 hours	The importance of scientific research for the student	The importance of scientific research	3- Linking the ideas included in the lecture with the students' ideas.	
5	2 hours	The correct scientific definition	Procedures followed in the search		
6	2 hours	Procedures followed in the search	Characteristics of scientific research		
7	2 hours	Characteristics of scientific research	What is scientific research?		
8	2 hours	Steps followed in scientific research	Scientific procedure		
9	2 hours	Research sources	Characteristics of scientific research		
10	2 hours	Writing research sources	Steps of scientific research		
11	2 hours	What does the quote mean	Steps of scientific research		
12	2 hours	Learn the steps of writing	Steps of scientific research		
13	2 hours	How to tabulate data	Steps of scientific research		
14	2 hours	Qualitative and quantitative data	Steps of scientific research		
15	2 hours	Know the types of statistical measures	Information sources		
16	2 hours	vacation	Information sources		
17	2 hours	How to calculate the average arithmetic	Documentation of information		
18	2 hours	How to calculate the geometric	Documentation of information		
19	2 hours	How to calculate the harmonic	Documentation of information		
20	2 hours	How to calculate the logarithmic	Documentation of information		
21	2 hours	How to calculate the exponential	Documentation of information		
22	2 hours	Methods of displaying data	Citation types		
23	2 hours	Identify types of knowledge	How to write a research project		
24	2 hours	Knowing the types of curricula and their features	How to write a research project		
25	2 hours	Learn about the historical method	How to write a research project		

		<p>The most important features of the descriptive approach</p> <p>Learn about the survey method</p> <p>What is experimentation?</p> <p>How to use statistics in research</p> <p>Identify the most important concepts in research</p> <p>The most important general concepts</p> <p>What characterizes a good researcher?</p> <p>How does the researcher define his problem?</p>	<p>Analysis of scientific research data</p> <p>Data types</p> <p>Measures of central tendency</p> <p>SMA</p> <p>Flow Diagram</p> <p>Mediator</p> <p>Display of data</p> <p>Scientific knowledge</p> <p>Types of curricula</p> <p>Historical method</p> <p>Descriptive method</p> <p>Survey method</p> <p>Experimental method</p> <p>Statistical method</p> <p>General concepts of</p>	
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			scientific research method General concepts Characteristics of a good researcher Basis for choosing the research problem		
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### 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)	Lectures on scientific research
Main references (sources)	Methodology Sources in scientific research from the internet
Recommended books and references (scientific journals, reports...)	Scientific journals
Electronic References, Websites	<a href="https://eco.nahrainuniv.edu.iq">https://eco.nahrainuniv.edu.iq</a> <a href="https://www.bts-academy.com">https://www.bts-academy.com</a>

1. Course Name:
astronomy
2. Course Code:
3. Semester / Year:
Year 2023-2024

<b>4. Description Preparation Date:</b>					
21/3/2024					
<b>5. Available Attendance Forms:</b>					
Presence					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours per year. 2 hours per week					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: MSc Rana Azeez Abed Email: rana.azeez@uobasrah.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		1- For the student to become familiar with the concept of astronomy and the planetarium. 2- Informing students about the solar system, studying the sun and the moon, and the galaxies and planets that the universe contains, as well as learning about the impact of the cosmic spheres on the nature of life on Earth. 3- For the student to learn about the physical properties of stars and study them.			
<b>9. Teaching and Learning Strategies</b>					
		1- Educational strategy, collaborative concept planning. 2- Brainstorming education strategy 3- Education Strategy Notes Series			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2	Identify the general meaning of astronomy, the universe and the astronomical instruments used by the Arabs	History astronomy	Dialog and discussion	Asking and answering questions from the student
2	2	Learn about Renaissance astronomy and the planetarium	Astronomy the Renaissance	=	

3	2	Knowledge of Kepler's three laws and their mathematical relationships	Kepler's law		
4	2	Learn about Newton's laws and the law of universal gravitation	Newton's law and the law of universal gravitation		
5	2	Learn about meridians, their characteristics and benefits	Longitude line		
6	2	Learn about parallel circles, their characteristics and benefits	latitude line		
7	2	Identify the horizon and its types	the horizon		
8	2	Identify the star constellations and the characteristics of each constellation	Stellar asteroids		
9	2	Learn about the four astronomical seasons and how they occur And its times during the year	Astrological seasons		
10	2	Learn about the concept of equinox, solstice, and earth's wobbling	Astrological seasons		
11	2	Learn about the zodiac, the zodiac, and the names and locations of the signs	Zodiac		
12	2	Identify astronomical units of measurement and the relationship between them	Astronomical units measurements		

13	2	<b>The first exam for the first course</b>			
14	2	Learn about the solar system, the chemical composition of the sun, its layers, the sun's atmosphere, and the black wicks	Solar system	==	==
15	2	Identifying the moon, its physical properties, the phenomena of eclipse and solar eclipse, and the difference between them	the moon	==	==
<b>Mid-year exams</b>					
16	2	Identifying the planets and the origin of the solar system	the planets	==	==
17	2	Learn about the planets Mercury and Venus and the characteristics of each planet		==	==
18	2	Identifying the planets Earth and Mars and comparing the two planets			
19	2	Learn about Jupiter, its internal structure, and its moons		==	==
20	2	Learn about the planet Saturn, its internal structure, and its rings		==	==
21	2	Learn about the planet Uranus, its internal structure, outer atmosphere, rings, and moons			
22	2	Learn about the planet Neptune, its internal composition, atmosphere, moons, and belts		==	==
23	2	Learn about the planet Pluto and its internal structure			
24	2	Identify the minor planets and their characteristics	Asteroids	==	
25	2	Identify comets and their types	Comets		
26	2	Identify meteors and meteorites and their characteristics	Meteors and meteorites		
27	2	<b>The first exam of the second semester</b>			
28	2	Identify stars and their physical properties	The stars		
29	2	Identify the types of stars and their life cycle	The stars		
30	2	Learn about the meaning of black holes in the Holy Quran	The stars		
<b>11. Course Evaluation</b>					
the distribution is as follows: 25 points for monthly and daily exams for the first semester. 25 points for monthly and daily exams for the second semester. 50 points for final exams					

12.Learning and Teaching Resources	
Required textbooks (curricular books, any)	Atmospheric and space physics / Part Two / Dr. Hamid Majoul Al Nuaimi, Dr. Fayyad Abdel Latif Al Najm
Main references (sources)	Atmospheric and space physics / Part One / Dr. Hamid Majoul Al Nuaimi, Dr. Fayyad Abdel Latif Al Najm
Recommended books and references (scientific journals, reports...)	<a href="https://astronomynow.com">/https://astronomynow.com</a>
Electronic References, Websites	<a href="https://nasainarabic.net/main">https://nasainarabic.net/main</a>  <a href="https://www.universetoday.com">/https://www.universetoday.com</a>

### **Course Description Form-Year Three**

1. Course Name:
<b>Counseling and mental health</b>
2. Course Code:
3. Semester / Year:
Year 2023-2024
4. Description Preparation Date:

2024/3/13					
5. Available Attendance Forms:					
My presence only					
6. Number of Credit Hours (Total) / Number of Units (Total)					
90 hours annually. 2 hours per week					
7. Course administrator's name (mention all, if more than one name)					
Name: <u>Maha saddam abd</u>					
Email: <u>maha.saddam@uobasrah.edu.i</u>					
8. Course Objectives					
1- Introducing students to the concept of counseling and mental health, its origins and development		• .....			
2- Introducing students to the educational guide and methods for preparing it		• .....			
3- Helping the student to solve his psychological, social and educational problems		• .....			
4- Helping the student improve his academic level					
9. Teaching and Learning Strategies					
<b>Strategy</b>		1- Educational strategy, collaborative concept planning. 2- Brainstorming education strategy. 3- Education Strategy Notes Series. 4- Teaching strategy feedback at the present time.			
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>

1	2 hours	<p>1- Students acquire the skill of dealing with the psychological problems they face</p> <p>2- Achieving psychological compatibility among students</p> <p>3- Preparing students psychologically, professionally and educationally for the teaching profession</p>	<p>1- Educational guidance, foundations of guidance and psychological counselling, educational guidance curricula</p> <p>2- Definition of the educational advisor, the role of the advisor in the learning process, and the characteristics of educational maturity</p> <p>3-Guidance methods, individual guidance and group guidance</p> <p>4- Guidance methods, direct guidance and indirect guidance</p> <p>5-Foundations of guidance and psychological counselling</p> <p>6- Preparing the educational guide, the role of parents' councils in the school guidance program</p> <p>7- Educational guidance and its role at the university</p> <p>8-The role of the teacher in the counseling process, the</p>	<p>1- Involving students in classroom activities</p> <p>2- Using PowerPoint presentations to advance lessons</p>	<p>Weekly, monthly, daily, written exams, and the end-of-year exam.</p>
2	2 hours				
3	2 hours				
4	2 hours				
5	2 hours				
6	2 hours				
7	2 hours				
8	2 hours				
9	2 hours				
10	2 hours				
11	2 hours				
12	2 hours				
13	2 hours				
14	2 hours				
15	2 hours				
vacation	2 hours				
16	2 hours				
17	2 hours				
18					
19					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

			<p>problems that occur in schools and the role of counseling in solving them</p> <p>9- Academic delay, its causes, and the role of the teacher in reducing this phenomenon</p> <p>10- Dropping out of school, the causes of this phenomenon, the role of the teacher and counselor in reducing this phenomenon</p> <p>11- Cheating in exams, the reasons for the spread of this phenomenon among students, the role of the teacher and counselor in reducing this phenomenon.</p> <p>12- The phenomenon of bullying among students, its causes, and the role of the teacher and counselor in reducing this phenomenon</p> <p>13- Exam anxiety, its symptoms, causes, and the role of the teacher and counselor in</p>		
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			<p>reducing this phenomenon.</p> <p>14- The concept of mental health, its goals, and signs that indicate that an individual enjoys mental health</p> <p>15-The relationship of mental health with other sciences</p> <p>16-The importance of mental health in life sciences</p> <p>17- Psychological compatibility, its types, the most important manifestations of psychological compatibility</p> <p>18- Maladjustment, its types, the most important manifestations of psychological maladjustment</p> <p>19-Mental health and adaptation, definitions of adaptation, its dimensions</p> <p>20- Adaptation magazines, the most important factors affecting it</p> <p>21-School and mental health, the school's responsibilities</p>		
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			<p>regarding the psychological development and mental health of the student</p> <p>22-Teacher psychological burnout, its most important manifestations and causes</p> <p>23-What is neuroticism, the difference between neurosis and nervous disease</p> <p>24- Causes of neuroticism, symptoms, and methods of treating it</p> <p>25-The most important definitions of anxiety, its types, causes, and methods of treating it</p> <p>26- Pathological fear neurosis, the difference between normal and pathological fear and what are its most important causes</p> <p>27-The most important symptoms of fear, how to diagnose it, methods of treating it, and</p>		
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			psychological treatment 28-Conditional behavioral therapy for fear, group therapy for fear 29 Environmental therapy, treatment of diseases that treat the main fear 30-The most important rules that parents must follow to treat fear in their children		
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### 11. Course Evaluation

Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	1- Counseling and mental health \ Dr. Hassan Al-Sayed, Dr. Sahib Marzouk 2- Principles of guidance and psychological counseling / Jawdat Abdel Hadi and Saeed Hussein
Electronic References, Websites	

1. Course Name: complex functions	
2. Course Code:	
3. Semester / Year: year	
-20232024	
4. Description Preparation Date:	
25/2/2024	
5. Available Attendance Forms:	
Attendance only	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours /3 unit	
7. Course administrator's name (mention all, if more than one name)	
Name: A.Prof. Dr. Musa Kadhim Shamer Email: musa.shamer@uobasrah.edu.iq	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• The student gets to know the complex number system</li> <li>• The student gets to know the regular functions of the complex number system</li> <li>• Study methods of differentiating complex functions</li> <li>• Study the integration of complex functions</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• Cooperative Concept Mapping Teaching Strategy</li> <li>• Brainstorming Teaching Strategy:</li> </ul>

- Observations Chain Teaching Strategy:

## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	What is the complex number system?	Complex numbers	-	Theoretical exam, homework participation
2	3	multiplying complex numbers	Complex numbers	lecture, discussion	Theoretical exam, homework participation
3	3	De Moivre's theory	Complex numbers	lecture, discussion	Theoretical exam, homework participation
4	3	Extracting roots of complex numbers according to De Moivre's theorem	Complex numbers	lecture, discussion	Theoretical exam, homework participation
5	3	Complex conjugate of a complex number	Complex numbers	lecture, discussion	Theoretical exam, homework participation
6	3	square root of complex number	Complex numbers	lecture, discussion	Theoretical exam, homework participation
7	3	polynomial equations	Complex numbers	lecture, discussion	Theoretical exam, homework participation
8	3	Variable and complex variable functions	Regular functions	lecture, discussion	Theoretical exam, homework participation
9	3	Curvature coordinates	Regular functions	lecture, discussion	Theoretical exam, homework participation
10	3	Simple functions	Regular functions	lecture, discussion	Theoretical exam, homework participation
11	3	Complex logarithm function	Regular functions	lecture, discussion	Theoretical exam, homework participation
12	3	Complex Trigonometric Functions	Regular functions	lecture, discussion	Theoretical exam, homework participation

13	3	Complex hyperbolic trigonometric functions	Regular functions	lecture, discussion	Theoretical exam, homework participation
14	3	Complex power functions	Regular functions	lecture, discussion	Theoretical exam, homework participation
15	3	Inverse of complex trigonometric functions	Regular functions	lecture, discussion	Theoretical exam, homework participation
16	3	Inverse Complex Hyperbolic Functions	Regular functions	lecture, discussion	Theoretical exam, homework participation
17	3	Analytical functions	Differentiation of Complex Functions and Cauchy	lecture, discussion	Theoretical exam, homework participation
18	3	Cauchy-Riemann equations	Differentiation of Complex Functions and Cauchy	lecture, discussion	Theoretical exam, homework participation
19	3	Harmonic functions	Differentiation of Complex Functions and Cauchy	lecture, discussion	Theoretical exam, homework participation
20	3	Complex integration	Integration of complex functions and Cauchy's theorem	lecture, discussion	Theoretical exam, homework participation
21	3	Integration around a closed curve	Integration of complex functions and Cauchy's theorem	lecture, discussion	Theoretical exam, homework participation
22	3	Cauchy integral formulas	Integration of complex functions and Cauchy's theorem	lecture, discussion	Theoretical exam, homework participation
23	3	Residual theory	Integration of complex functions and Cauchy's theorem	lecture, discussion	Theoretical exam, homework participation
24	3	Calculating definite integrals by the method of residues	Integration of complex functions and Cauchy's theorem	lecture, discussion	Theoretical exam, homework participation

## 11. Course Evaluation

"The distribution is as follows: 25% for monthly and daily exams for the first semester. 25% for monthly and daily exams for the second semester. 50% for final exams."

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New headway –level third.
1- Complex functions and their applications Khaled Ahmed Al-Samarrai	
2- Complex functions by Murray Spiegel	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

### Course Description Form

1. Course Name:	
Meteorology	
2. Course Code:	
3. Semester / Year:	
Year	2023-2024
4. Description Preparation Date:	
	25/2/2024
5. Available Attendance Forms:	
	Attendance only
6. Number of Credit Hours (Total) / Number of Units (Total)	
	60 hours annually. 2 hours per week
7. Course administrator's name (mention all, if more than one name)	
Name: Alaa M.Shari	Name: Issra Mohamed Ali
Email: <a href="mailto:alaa.shari@uobasrah.edu.iq">alaa.shari@uobasrah.edu.iq</a>	Email: <a href="mailto:asraa.ali@uobasrah.edu.iq">asraa.ali@uobasrah.edu.iq</a>

8. Course Objectives					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Introducing students to the basic concepts of meteorology, such as the atmosphere and atmospheric pressure.</li> <li>• Explain the physical and chemical processes that occur</li> </ul>			
9. Teaching and Learning Strategies					
<b>Strategy</b>		1-Brainstorming education strategy. 2- Education Strategy Notes Series.			
10. Course Structure					
Wee k	Hour s	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to the atmosphere, its importance and divisions	-	-
2	2		The composition of the atmosphere and its importance to the Earth	-	-
3	2		The four layers of the atmosphere	-	-
4	2		Planets in the solar system and their features Dwarf planets and their features	-	-
5	2		Components of the air, the ozone layer, and the thermal composition of the atmosphere	-	-
6	2		Explaining diagrams of the components of the air, the chemical composition of the tmosphere, and the thermal physical composition of the atmosphere	-	-
7	2		Explaining the atmospheric elements, their measuring devices, and types of weather monitoring devices	-	-
8	2		Measuring air humidity, measuring wind speed, and measuring the amount of rain (detailed explanation)	-	-
9	2		Explaining the types of clouds, air thermodynamics, and dynamic maps	-	-
10	2		...Radiation in the atmosphere and radiation laws	-	-
11	2		The basics of weather forecasting and studying weather depressions and highs		
12	2		Atmospheric optics, its phenomena, refraction, and optical phenomena of the atmosphere		
13	2		Radar lights and definition of the radar equation		
14	2		Select radar specifications		
15	2		View radar specifications and information		

1 6	2	Nuclear minions		
1 7	2	The orbit of the affiliate and its benefits		
1 8	2	Electricity of the atmosphere		
1 9	2	Atmospheric electric field		
2 0	2	Thunderstorm theories		
2 1	2	Microscopic physics of clouds and visible cloud physics		
2 2	2	Refraction of light in the Earth's atmosphere and the phenomena of diffraction and scattering		
2 3	2	Integrated review of all chapters		
2 4	2	Introduction to earth science		
2 5	2	A simplified explanation of rock geology		
2 6	2	Geological processes such as earthquakes, volcanoes and erosion		
2 7	2	Study of minerals and fossils		
2 8	2			
2 9	2			
3 0	2			

## 11. Course Evaluation

"The distribution is as follows: 25% for monthly and daily exams for the first semester. 25% for monthly and daily exams for the second semester. 50% for final exams."

## 12. Learning and Teaching Resources

1- Weather forecasts, Dr. Fayyad Al-Najm, Dr. Hamid Majoul

New headway –level one.

Main references (sources)

2-Principles of Meteorology, Saleh Al-Jitawi

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1. Course Name:
Thermodynamics
2. Course Code:
3. Semester / Year:
Annual 2024-2023
4. Description Preparation Date:
16/2/2024
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hours per year. 3 hours per week
7. Course administrator's name (mention all, if more than one name)
Name: prof. Dr. Jassim mahdi mohammed Email: <a href="mailto:jassim.muhammed@uobasrah.edu.iq">jassim.muhammed@uobasrah.edu.iq</a> Name: Dr. Amir Hussein Ali Email: <a href="mailto:amir.ali@uobasrah.edu.iq">amir.ali@uobasrah.edu.iq</a>

8. Course Objectives					
Course Objectives		<p>1-studying the basic concepts in thermodynamics.</p> <p>2-studying the first and second law of thermodynamics.</p> <p>3-studying pure materials and changing their phases.</p> <p>4-studying the equations of State.</p> <p>5-study the basic statistics.</p>			
9. Teaching and Learning Strategies					
Strategy					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	The system, its boundaries and surroundings..Etc.	Basic concepts	Presentation and discussion	Weekly, monthly, daily, written and end-of-year exams.
2	3	System Properties, power, work.	Thermodynamic processes.	Presentation and discussion	
3	3	Definition of pure matter, its phases, gas steam..Etc	Pure matter	Presentation and discussion	

4	3	The P-V-T surface of a pure substance, the three-dimensional point, the Clapeyron equation and its applications	The behavior of pure matter	Presentation and discussion	
5	3	The equation of an ideal gas, methods of derivation	The ideal gas	Presentation and discussion	
6	3	Vandervalls equation, volume correction, Dietersee equations.....	Real gases	Presentation and discussion	
7	3	Critical constants, critical coefficients and symmetric States...	Discussion of the vandervalls equation	Presentation and discussion	
8	3	Molecular derivatives, complete differentials and useful identities	Status function	Presentation and discussion	
9	3	Extensibility, compressibility and Pa Function	Imperfect differential	Presentation and discussion	
10	3	Work performed during thermodynamic operations	Thermodynamic processes	Presentation and discussion	
11	3	Thermal processes, isobaric process	The first law of thermodynamics	Presentation and discussion	
12	3	Adiabatic process and isocortical process			

13	3	Isothermal process and various examples	Thermodynamic processes	Presentation and discussion	
14	3	The thermal machine and its efficiency	Other thermodynamic processes	Presentation and discussion	
15	3	Freezers and thermal compressors	The second law of thermodynamics	Presentation and discussion	
16	3	Reversible operations and irreversible operations, Steam Machine.	The second law of thermodynamics	Presentation and discussion	
17	3	Entropy of the universe and steam	Carnot thermal machine	Presentation and discussion	
18	3	Entropy and irregularity	Entropy	Presentation and discussion	
19	3	Maxwell's equation of entropy, the Clausius-Clapeyron equation	Irregularity	Presentation and discussion	
20	3	Kinetic theory of an ideal gas	Equations of irregularity	Presentation and discussion	
21	3	Collisions with moving walls, the equation of state of Clausius	Kinetic theory	Presentation and discussion	
22	3	Finding the values $\alpha$ and $\beta$ , The Power Distribution Function	Collisions with moving walls	Presentation and discussion	
	3		Particle velocity distribution	Presentation and discussion	

23		The principle of equality of energies, the specific heat capacity of solid bodies	Classical theory	Presentation and discussion	
24	3	Mean free path, viscosity coefficient	Distribution of tracks	Presentation and discussion	
25	3	Thermal conductivity, diffusion	Thermal conductivity	Presentation and discussion	
26	3	Maxwell - Boltzmann statistics	Statistics	Presentation and discussion	
27	3	Bose - Einstein statistics	Statistics	Presentation and discussion	
28	3	Fermi-Dirac statistics	Statistics	Presentation and discussion	
29	3	Discharge and method of its measurement	vacuum	Presentation and discussion	
30	3	Concepts at low temperatures	Low temperatures	Presentation and discussion	

### 11. Course Evaluation

The distribution is as follows: 25 grades of monthly and daily exams for the first semester. 25 monthly and daily exam grades for the second semester. 50 grades for final exams

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Thermodynamics, authored by Sami Mazloum Saleh
Main references (sources)	College physics 9 <sup>th</sup> ED, 2012
Recommended books and references (scientific journals, reports...)	1-lectures from the International Information Network (Internet)

Electronic References, Websites	<a href="https://zlibrary-asia.se">/https://zlibrary-asia.se</a> <a href="https://www.researchgate.net">/https://www.researchgate.net</a>
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## Course Description Form

1. Course Name:	
Atomic and molecular physics	
2. Course Code:	
3. Semester / Year:	
2023-2024	
4. Description Preparation Date:	
:25/2/2024	
5. Available Attendance Forms:	
My presence only	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours annually. 3 hours a week theoretically.	
7. Course administrator's name (mention all, if more than one name)	
Name: Proff.Dr.Thaer Munshad Salman Email: thaer.salman@uobasrah.edu.iq Name: Dr.Abdullaha Abdalameer Email: abdullaha.hussain68@uobasrah.edu.iq	
8. Course Objectives	
<b>Course Objectives</b> <ul style="list-style-type: none"> <li>• 3) Realizing the differences between Newtonian and Einsteinian physics relativity and quantum physics.</li> <li>4) Correct handling of physical phenomena according to modern physics</li> </ul>	<ul style="list-style-type: none"> <li>• ) Students acquire skills dealing with modern atomic and molecular physics.</li> <li>• 2) Understanding modern concepts in this field physics.....</li> <li>• ern physics.....</li> </ul>

9. Teaching and Learning Strategies					
<b>Strategy</b>		1) Cooperative conceptual education planning strategy. 2) Brainstorming education strategy. 3) Educational notebook strategy.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
8	24	Students acquire skills in dealing with the laws of modern physics at high speed compared to the speed of light and the masses of small particles such as the mass of electrons and others.	1- The theory of special relativity (1) The concept of atomic physics (2) Introduction to relativity (3) The failure of the classical concepts of space and time (4) Inertial axes (5) Newton's laws of motion (6) Galileo transformations (7) Michelson-Morley experiment (8) Einstein's hypotheses in special relativity (9) Lorentz transformation (10) Results of Lorentz transformations (11) Relativity of length (12) Relativity of time (13) Relativity of speed (14) Relative mass (15) Relative momentum (16) Relative energy (17) The relationship between energy and momentum (18) Electron volt 2- Electromagnetic radiation		

			<p>(1) Thermal radiation  (2) Emission and absorption of radiation  (3) Black body radiation  (4) Black body radiation spectrum  (5) Rayleigh-Jeans formula  (6) Planck's law for black body radiation  (7) Photoelectric phenomenon  (8) Einstein's explanation of the photoelectric phenomenon  (9) Applications of photoelectric phenomenon</p> <p>3- X ray  1- Discovery of X-rays  2- Production of X-rays  3- Measure the intensity of X-rays  4- The Compton effect  5- Diffraction of X-rays  6- Refraction of X-rays  7- X-ray absorption  9- X-ray absorption method  10- X-ray spectra</p> <p>4- Wave properties of particles  1- De Broglie's hypothesis  2- Electron diffraction  3- Electron diffraction experiments by Davisson and Germer  4- Thomson's electron diffraction experiments  5- Waves that accompany atoms and molecules  6- Speed of De Broglie waves  7- Heisenberg's rule of uncertainty</p> <p>5- Hydrogen atom  1- Spectrum of hydrogen atom  2- Bohr's theory of hydrogen atom  3- Bohr's hypotheses  4- Movement of hydrogen nucleus  5- Schrödinger equation  6- Schrödinger equation for the hydrogen atom</p>		
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			<p>7- Interpretation of solution to the Schrodinger equation</p> <p>8- Selection rules for hydrogen atom</p> <p>9- Elliptical orbitals of the hydrogen atom</p> <p>6-hydrogen atom</p> <p>Multi-electron atom (electronic structure of atom)</p> <p>1- Optical spectra sequences</p> <p>2- Orbital angular momentum</p> <p>3- Spin of the electron</p> <p>4- The vector of total angular momentum</p> <p>5- The magnetic moment of the orbital electron</p> <p>6- Magnetic quantum numbers</p> <p>7- Pauli's exclusion principle</p> <p>8- Zeeman phenomenon</p> <p>9- Distribution of electrons in the atom</p>		
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**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)	1-Physics of Atoms and Molecules, B. Bransden, Charles Jean Joachain, Prentice Hall, 2003.
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Main references (sources)	<p>2- Physics 3rd Edition, by Kenneth S. Krane , John Wiley &amp; Sons, Incorporated, 2012.</p> <p>3-Modern Physics and Technology for Undergraduates, by Lorcan M Folan et al., World Scientific Book, 2003.</p> <p>1- University Physics with Modern Physics, by Hugh D. Young, Pearson Education, 2021.</p>
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	<p>4- Concepts in Modern Physics, Arthur Beiser, translation of the second edition</p> <p>Atomic Physics, Dr. Talib Nahi Al-Khafaji, -5 Dr. Abbas Hammadi, and Dr. Hormuz Moshi, part_1 and part_2</p>
Recommended books and references (scientific journals, reports...)	Acta Physica Polonica, a Polish open access journal, and the link to the journal is below. <a href="http://www.actaphys.uj.edu.pl/">http://www.actaphys.uj.edu.pl/</a>
Electronic References, Websites	<p>1- <a href="https://www.youtube.com/watch?v=Agu68RGaoWM">https://www.youtube.com/watch?v=Agu68RGaoWM</a> <a href="https://ocw.mit.edu/search/?d=ysics">https://ocw.mit.edu/search/?d=ysics</a></p>

1. Course Name:	Electronics
2. Course Code:	
3. Semester / Year:	Year 2023-2024
4. Description Preparation Date:	23/2/2024
5. Available Attendance Forms:	Attendance only
6. Number of Credit Hours (Total) / Number of Units (Total)	90 hours /6 unit
7. Course administrator's name (mention all, if more than one name)	Name: Prof. Dr. Ahmed S. Al-Asadi

Email: [ahmed.mahdi@uobasrah.edu.iq](mailto:ahmed.mahdi@uobasrah.edu.iq)

Name: Dr. Sundes J. Faker

Email: [sundes.fakher@uobasrah.edu.iq](mailto:sundes.fakher@uobasrah.edu.iq)

## 8. Course Objectives

### Course Objectives

- 1- Identifying pure and doped semiconductors, energy band theory, and material classification based on this theory.
- 2- Studying semiconductor diodes and their applications.
- 3- Studying bipolar junction transistors (BJT) and their applications, as well as field-effect transistors (FET) and their applications.
- 4- Identifying types of thyristors, classes of power amplifiers, positive and negative feedback, oscillators, and logic circuits.

## 9. Teaching and Learning Strategies

### Strategy

- 1- **Teaching Strategy:** Cooperative concept mapping.
- 2- **Teaching Strategy:** In-person lectures and practical labs for 30 weeks, including monthly and daily exams.
- 3- **Teaching Strategy:** Sequential observation method.

## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2	3	In-person Lectures: Theory and Practical	Unit 1: Introduction Semiconductors Classification of materials based on band theory		

			Pure and dop semiconductors		
3 4		<b>In-person Lectures: Theory and Practical</b>	<b>Unit2:Semiconductor Diode</b> Energy band diagram Diode characteristic curve Diode equivalent circuit Load line and operating point		
5 6		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 3: Applications Semiconductor Diodes</b> Wave rectification Wave-shaping circuits		
7 8 9 10		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 4: Zener Diode Circuits</b> Equivalent circuit of the Zener diode Applications of the Zener diode		
11 12 13 14		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 5: Bipolar Junction Transistor (BJT)</b> Types of transistor biasing Transistor limitations		
15 16		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 6: Bipolar Junction Transistor Amplifiers</b> Equivalent circuit of the amplifier using hybrid parameters		

			Frequency response of the amplifier Multi-stage amplifiers		
17 18		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 7: Thyristors</b>		
19 20		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 8: Types of Power Amplifiers</b>		
21 22		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 9: Field-Effect Transistor (FET) Working principle junction field-effect transistor (JFET) Transistor transition characteristics Biasing circuits Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET)</b>		
23 24		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 10: Negative Feedback and Types Connections The effect of negative feedback on gain, impedance, and bandwidth</b>		
25 26		<b>In-person Lectures:</b>	<b>Unit 11: Positive Feedback • Oscillators</b>		

		<b>Theory and Practical</b>	<ul style="list-style-type: none"> <li>● RC oscillators</li> <li>● LC oscillators</li> </ul>		
27 28		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 12: Logic Circuits</b>		
29 30		<b>In-person Lectures: Theory and Practical</b>	<b>Unit 13: Introduction Nanotechnology Applications Nanotechnology</b>		
<b>11. Course Evaluation</b>					
<b>Distribution as follows:</b> <ul style="list-style-type: none"> <li>● 25 marks for monthly and daily exams in the first semester.</li> <li>● 25 marks for monthly and daily exams in the second semester.</li> <li>● 50 marks for the final exams.</li> </ul>					
<b>12. Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)					
Main references (sources)			<b>"Electronic Devices and Circuit Theory" – Robert Boylestad &amp; Louis Nashelsky</b>		
Recommended books and references (scientific journals, reports...)			<b>"Microelectronic Circuits" Adel S. Sedra &amp; Kenneth Smith</b>		
Electronic References, Websites			<b>"The Art of Electronics" – Paul Horowitz &amp; Winfield Hill</b>		

## Course Description Form

<b>1. Course Name:</b>	
Curricula and teaching methods	
<b>2. Course Code:</b>	
<b>3. Semester / Year:</b>	
Year 2023-2024	
<b>4. Description Preparation Date:</b>	
25/2/2024	
<b>5. Available Attendance Forms:</b>	
My presence only	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 hours annually. 2 hours per week	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: M. M. Reman Jamal Jassim	
Email: <a href="mailto:lec.reman.jasim@uobasrah.edu.iq">lec.reman.jasim@uobasrah.edu.iq</a>	
<b>8. Course Objectives</b>	
<p>1- Providing students with good teaching skills.                  2- Developing students' abilities to understand, comprehend, and assimilate the criteria upon which they choose a topic or choose methods for collecting data and information, and choose methods for analyzing this data and information in order to reach the goal.                  3 - Helping students adapt and face the changes that occur in different areas of life because it is linked to the reality that the student lives and its requirements.</p>	
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<p>1- Educational strategy, collaborative concept planning.                  2- Brainstorming education strategy.                  3- Education Strategy Notes Series.                  4- Teaching strategy feedback at the present time.</p>

10. Course Structure						
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	
1	2 hours	1- Providing the student	1- Introduction, the concept of science	1- Make the learner active and effective in educational situations.	Weekly, monthly, daily, written exams, and the end-of-year exam.	
2	2 hours	A teacher with knowledge and	technology concept,	2- Accustom students to respecting different opinions and appreciating others.		
3	2 hours	knowledge	Components of science.			3- Benefiting from the ideas and information of others
4	2 hours	In everything related	2-philosophy of science			
5	2 hours	in school curricula,	teaching,			
6	2 hours	In terms of its design,	Steps of scientific			
7	2 hours	And its evaluation, and	thinking,			
8	2 hours	mechanisms	Characteristics of			
9	2 hours	Develop it.	science.			
10	2 hours	2- Student gain	3- The concept of the			
11	2 hours	Teacher skills	curriculum,			
12	2 hours	Teaching	Criticisms directed at			
13	2 hours	And his strategies	Curriculum.			
14	2 hours	In paths	4- The modern concept of			
15	2 hours	different specialization,	the curriculum			
vacation	2 hours	And develop his ability to	Facilitating factors			
16	2 hours	Evaluate and develop it.	The emergence of the			
17	2 hours	3- Refine skills	modern approach.			
18	2 hours	Student teacher	5- Components of the			
19	2 hours	Teaching, according to	curriculum in its meaning			
19	2 hours	For the latest guidance.	Hadith, vocabulary			
20	2 hours		organizations			
21	2 hours		Or curriculum courses.			
22	2 hours		6- Foundations of			
23	2 hours		curriculum construction			
24	2 hours		Academic, culture and			
25	2 hours		curriculum			
26	2 hours		Culture in terms			
27	2 hours		Social.			
28	2 hours		7- components of culture,			
29	2 hours		Characteristics of culture.			
30	2 hours		8-curriculum and society,			
			Curriculum and social			
			change.			
			9- psychological basis,			
			The relationship between			
			the aspects			
			Psychology, learning and			
			curriculum			
			Needs, approach, and			
			inclinations			
			And the curriculum.			
			10- psychological basis,			

			<p>Educational philosophy Islamic, educational philosophy Progressive.</p> <p>11- Types of curricula Scholarship. Separate subjects curriculum.</p> <p>12- Fields approach Broad, activity approach.</p> <p>13- The core curriculum, Units curriculum, Elements of the curriculum as a system Quadrant.</p> <p>14- Content and experiences Educational, teaching methods And educational technologies Calendar.</p> <p>15- The importance of goals Educational, sources of derivation Educational objectives.</p> <p>16- Goal levels Educational specifications Behavioral goals.</p> <p>17- how We formulate behavioral goals, Classification of behavioral goals.</p> <p>18- Content and experiences Educational, selection rules Curriculum content, Rules for organizing curriculum content.</p> <p>19- Teaching method, teaching style, Teaching strategy.</p> <p>20- Foundations of good teaching Advantages of the teaching method The good one.</p> <p>21- Guided exploration Planning for science teaching With guided exploration, advantages directed exploration, Exploration problems</p>	
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			<p>Router.</p> <p>22- Problem Solving, Steps to solve the problem, Advantages of problem solving, Difficulties in solving the problem.</p> <p>23- Lecture method, Advantages of the lecture method, Weaknesses in the method lecture.</p> <p>24- Programmed education, Types of educational programs, Computer, advantages of using Computer, difficulties that Having trouble using a computer.</p> <p>25- cooperative learning, Steps for cooperative learning, Advantages of cooperative learning, Disadvantages of cooperative learning.</p> <p>26- Discussion and dialogue, open discussion, planned discussion, Group discussion, games Educational.</p> <p>27- Practical offers or display experiences, Stages of submitting an offer Practical, positives offer Practicality, cons of presentation Practical.</p> <p>28- Field visits, Steps for visits Field, positives of the visit Field, cons Field visit</p> <p>29- Laboratory in teaching Science, teaching philosophy Laboratory, the importance of the laboratory In teaching science, Safety rules in</p>		
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			Physics laboratory. 30- The concept of means Educational standards that Take into account when choosing Teaching aids , Technical characteristics of the medium Good, types of means Educational.		
11. Course Evaluation					
Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams					
12. Learning and Teaching Resources					
Required textbooks (methodology, if any).					
Main references (sources)			Curricula and teaching methods/educational qualification programme		
Recommended books and references (scientific journals, reports...)			General curricula and teaching methods.		
Electronic References, Websites					

### **Course Description Form-Year Four**

1. Course Name:
Solid State Physics
2. Course Code:
3. Semester / Year:
2023-2024

<b>4. Description Preparation Date:</b>					
25/2/2024					
<b>5. Available Attendance Forms:</b>					
Attendance only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
90 hours /6 unit					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Prof. Dr. Mohammed Fadhil Email: mohammed.al-mudhaffer@uobasrah.edu.iq Name: Assoc.-Prof.-Dr. Fatima-Hussein-Saeed Email: fatima.saeed@uobasrah.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>					
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		<ul style="list-style-type: none"> <li>• Cooperative Concept Mapping Teaching Strategy</li> <li>• Brainstorming Teaching Strategy:</li> <li>• Observations Chain Teaching Strategy:</li> </ul>			
<b>10. Course Structure</b>					
<b>Wee k</b>	<b>Hour s</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
Lecture Number 1	Credit Hours 3	Topic Introduction to Crystalline and Amorphous States	Content Unit Cell - Crystalline Structure	Assessment Lecture, Discussion - Test, Class Participation	
2	3	Bravais and Non-Bravais Lattices	Types of Lattices - Crystalline Structure	Lecture, Demonstration - Homework, Presentation	
3	3	Simple Cubic, Body-Centered	Sodium Chloride, Hexagonal	Group Work, Laboratory	

4	3	Cubic, Face-Centered Cubic  Symmetry and Miller Indices	Close-Packed Structure - Crystalline Structure Incident Beams and Bragg's Law - Crystalline Structure	Experiment - Lab Report, Theoretical Assessment Interactive Session, Problem Solving - Test, Practical Exam
5	3	X-rays, Neutrons, Electrons	Experimental Methods for Diffraction - Diffraction in Crystals	Lecture, Simulation - Test, In-Class Presentation
6	3	Laue Method, Rotating Crystal Method, Powder Method	Reciprocal Lattice - Diffraction in Crystals	Group Discussion - Lab Report, Monitoring
7	3	Lattice Structure Factor	Lattice Vibration: One Atom in One Dimension - Lattice Dynamics	Lecture, Demonstration - Test, Practical Evaluation
8	3	Two Atoms in One Dimension	Specific Heat of the Lattice - Lattice Dynamics	Interactive Session, Demonstration - Test, Practical Exam
9	3	Classical Model, Einstein Model, Debye Model	Thermal Expansion - Lattice Dynamics	Lecture, Demonstration - Lab Report, Theoretical Assessment
30	3	Superconducting State	Transitional Magnetic Field - Superconductivity	Lecture, Discussion - Final Exam, Project Presentation

### 11. Course Evaluation

"The distribution is as follows: 25% for monthly and daily exams for the first semester. 25% for monthly and daily exams for the second semester. 50% for final exams."

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- <b>Solid State Physics</b> , authored by Dr. Yahya Al-Jan 2- <b>Solid State Physics</b> , authored by Dr. Moayad Gab Yousif 3- <b>Introduction to Solid State Physics</b> , Charles Ki 1996
Main references (sources)	<b>Solid State Physics</b> , authored by Dr. Yahya
Recommended books and references (scientific journals, reports...)	

Electronic References, Websites	
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1. Course Name:	
Measurement and evaluation	
2. Course Code:	
3. Semester / Year:	
Year 2023-2024	
4. Description Preparation Date:	
13 / 2 / 2024	
5. Available Attendance Forms:	
Only Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours Year . 2 hours weekly	
7. Course administrator's name (mention all, if more than one name)	
Name: Maha saddam abd Email: maha.saddam@uobasrah.edu.iq	
8. Course Objectives	
2- The student should distinguish between scientific theory and bureaucratic theory	
3- That the student applies what he has learned when dealing with students	
4- That the student be able to predict and explain some of the behaviors issued by students	
9. Teaching and Learning Strategies	
<b>Strategy</b>	1- Educational strategy, collaborative concept planning. 2- Brainstorming strategy 3-Education Strategy Discussion Series

10. Course Structure					
Week	Hou rs	Required Learning Outcomes	Unit or subject name	Learnin g method	Evaluatio n method
1	2hours			1-Explaining	Weekly monthly daily, written exams, and the end -of-year exam
2	2hours	1-Learn about the concept	The concept of measurement and	The	
3	2hours	measurement and evaluation	evaluation	Scientific	
4	2hours	2- Identify the types of		Material	
5	2hours	standards	Types of metrics	in detail	
6	2hours	3- Identify the general		in	
7	2hours	principles of evaluation	General principles in evaluation	a lecture.	
8	2hours	4- Get to know the calendar in		2- Writin	
9	2hours	Educational process	Evaluation in the	g reports	
10	2hours	4- Identify the purposes	educational process	on main	
11	2hours	measurement and evaluation		topics	
12	2hours	5-Recognizing the importance	Measurement and		
13	2hours	measurement and evaluation	evaluation purposes		
14	2hours	6- Learn about achievement			
15	2hours	tests	The importance of measurement		
		7-Learn about the oral test and.	and evaluation		
		And the pans			
		8-Learning about tests	Achievement tests		
		Objectivity			
		9- Getting to know the tests	Oral and essay		
		Performativity			
		10- Identify the building	Objective tests		
		Achievement tests			
		11- Identify the steps of building	Performance tests		
		the test			
		12- Identify the selection	Building achievement tests		
		function			
		13- Identify the definition	Steps to build the test		
		Teaching objectives			
		14- Identify the numbers in	First semester exam		
		Table A			
		Specifications	Test function		
		16-Learn about building	Determine teaching objectives		
		specifications table			
		17- Identify the characteristics	Specifications table numbers		
		the test			

Offday		18- Recognizing honesty	Mid-year exam		
16	2hours	19- Identify stability			
17	2hours	20- Learn about			
18	2hours	calculation methods			
19	2hours	Consistency			
20	2hours	21- Recognizing re			
21	2hours	the test			
22	2hours	22- Image recognition			
23	2hours	Equivalent			
24	2hours	23- Identify segmentation			
25	2hours	Midterm			
26	2hours	24- Identify the influencing			
27	2hours	factors	Build a specifications table		
28	2hours	With consistency			
29	2hours	25-Learn about analysis	Characteristics of a good test		
30	2hours	specialist			
		26- Identifying the means	Honesty and its types		
		Testing			
		27- Identify the note	Test stability		
		And its types			
		28-Learn about the rating lists	Methods for calculating		
		29-Learn about the ladders	stability		
		appreciation			
		30-Learn about the	exam REPETITION		
		statement ladder			
		Descriptive	Equivalent images		
			Half split method		
			Constantly influencing		
			factors		
			statistical analysis		
			Test methods		
			Second semester exam		
			Observation and its types		
			Ladders of appreciation		
			Deliver the descriptive		
			statement		
			End of year exams		

11.Course Evaluation	
Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams	
12.Learning and Teaching Resources	
Required textbooks (curriculum books, if any)	Abu Alam, please Mahmoud (1987): Measurement and evaluation of collection, Dar Al Qanq
Main references (sources)	Al-Zaher, Zakaria Mohamed and Others) 1999 : The principles of measurement and evaluation in education, i 1, Culture Library for Publishing and Distribution, Amman
Recommended books and references (scientific journals, reports...)	Brown ,F.G:(1976):Principles of Educational and psychological testing New York :Holt-Rinhart and Winston

Electronic Websites	Reference <a href="http://WWW.Site.iugaza.edu.ps/omozini/2010/2/measur">WWW.Site.iugaza.edu.ps/omozini/2010/2/measur</a>
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1. Course Name:	Quantum Mechanics
2. Course Code:	
3. Semester / Year:	2023-2024
4. Description Preparation Date:	27/2/2024
5. Available Attendance Forms:	In presence
6. Number of Credit Hours (Total) / Number of Units (Total)	

90 hours (total)-3 hours per week / 6 units (total)

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

Name: <sup>1</sup>Assist.Prof.Dr. Haider Kassim Fadel

<sup>2</sup>Lect.Dr. Hisham Youssif Almahde

Email: <sup>1</sup>[haider.qassim@uobasrah.edu.iq](mailto:haider.qassim@uobasrah.edu.iq)

8. Course Objectives

**Course Objectives**

- .....
- .....
- .....

9. Teaching and Learning Strategies

**Strategy**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
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1	3	Informing students about the importance of quantum physics theories and their importance in relation to classical physics.	Chapter1: Physical Foundation		Weekly monthly daily, written exams, at the end-of-y r exam
2			Quantum Mechanics		
3			= =		
4			Chapter2: Elementary Properties		
5			and Laws of Quantum		
6			= =		
7			= =		
8			= =		
9			= =		
10			= =		
11			Chapter3: Quantum Harmonic		
12			Oscillator		
13			= =		
14			= =		
15			= =		
			Half-year holiday		
16			Chapter4: Physical Application		
17			of Schrodinger's Equation to		
18			One and Three Dimensional		
19			Problems		
20			= =		
21			= =		
22			= =		
23			= =		
24			Chapter5: The Central Potentials		
25			and One Electron Atom		
26			= =		
27			= =		
28			= =		
29			= =		
30	= =				
11.					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, as following: 20 marks for the mid-year exam, 30 marks for monthly and daily exams and 50 marks for the final exam.					

12. Learning and Teaching Resources	
الميكانيك الكمي – جاسم الحسيني.	
الفيزياء الكمية – د. هاشم عبود	
Quantum Mechanics for Pedestrians 2, Applications and Extensions, Second Edition, 2018	
Electronic References, Websites	Not required

### Course Description Form

1. Course Name:	
Laser Physics	
2. Course Code:	
3. Semester / Year:	
Yearly 2023-2024	
4. Description Preparation Date:	
28/2/2024	
5. Available Attendance Forms:	
Only attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
90 hours annually. 3 hours per week	
7. Course administrator's name (mention all, if more than one name)	
Name: Ra'ed M. Hassan Hussain Ali Badran Email: <a href="mailto:raed.hussan@uobasrah.edu.iq">raed.hussan@uobasrah.edu.iq</a>	
8. Course Objectives	
Course Objective	1. Reaching an understanding of the basic concepts of laser physics, as it is a modern science emerging as a result of technical development in the past few decades, and what are the stages of development and applications of this science.

		<b>2. Gain a broad scientific background on the theoretical basis of laser applications in all areas of life.</b>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		<b>1. Education strategy collaborative concept planning.</b> <b>2. Brainstorming education strategy.</b> <b>3. Education strategy notes series</b>			
<b>10. Course Structure</b>					
<b>Wee k</b>	<b>Hour s</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	3 hours	Physical concepts	Electromagnetic radiation Spectrum and wave properties	Providing students in advance with summaries of the paper and electronic chapters of the subject, and explaining the scientific material in detail in person, with reference to archaeological sources and addresses of electronic links related to each chapter or paragraph of the scientific material.	Daily, weekly, monthly written exams and the end-of-year exam.
2	3 hours		Energy states (levels)		
3	3 hours		Laser beam characteristics		
4	3 hours	Introduction lasers	The basic components of the laser device		
5	3 hours		Emission and absorption of radiation		
6	3 hours		Count at thermal equilibrium		
7	3 hours	Einstein relationships	Absorption and emission		
8	3 hours		Expansion of life span		
9	3 hours		The amplitude of the collision		
10	3 hours	Spectral line width	Heterogeneous amplitude		
11	3 hours		Doppler phenomenon		
12	3 hours	Absorption and small signal gain coefficient	Absorption of electromagnetic radiation		
13	3 hours				
14	3 hours				
15	3 hours				
vacation					
16	3 hours	Resonator and optical feedback'			
17	3 hours				

18	3 hours		Profit and profit factor		
19	3 hours	Laser modes	Visual feedback		
20	3 hours				
21	3 hours	population	Resonator patterns		
22	3 hours	inversion,	Frequency range of		
23	3 hours	gain and loop losses	laser action Longitudinal (axial) modes		
24	3 hours				
25	3 hours	Steady state	Transverse modes		
26	3 hours	oscillation and adjust the laser	population inversion Gain and loop losses. Population inversion and threshold condition		
27	3 hours	output.			
28	3 hours	Types of lasers and their	Gain saturation in homogeneous laser		
29	3 hours	applications	Pulsed laser. Types of lasers Helium-neon (He-Ne) laser Laser applications Special applications		
30	3 hours				

## 11. Course Evaluation

Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams

## 12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	الليزر , سهام غفيف قندلا, دار الشؤون الثقافية العامة, 1992
Main references (sources)	Laser Physics , Peter W. Milonni and Joseph H. Eberly, 2010
Recommended books and references (scientific journals, reports...)	1. Fundamentals of Laser Physics, Kyungwon An (Seoul National University, South Korea). 2023. 2. Basics of Laser Physics: For Students of Science and Engineering, Karl F. Renk , 2017
Electronic References, Websites	1. <a href="https://t.me/laserphysics2023">https://t.me/laserphysics2023</a> 2. <a href="https://www.hazemsakeek.net/category/%D9%85%D8%A%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D9%81%D9%8A%D8%B2%D9%8A%D8%A7%D8%A1/c31/">https://www.hazemsakeek.net/category/%D9%85%D8%A%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D9%81%D9%8A%D8%B2%D9%8A%D8%A7%D8%A1/c31/</a>

1. Course Name: Nuclear Physics
2. Course Code:
3. Semester / Year: 2023-2024
4. Description Preparation Date: 25/2/2024
5. Available Attendance Forms: Attendance only
6. Number of Credit Hours (Total) / Number of Units (Total) 120 hours / year , 5 hours / weakly , 4 units/
7. Course administrator's name (mention all, if more than one name) Name: Prof. Dr. Falih H. Al-Khudair    Email: <a href="mailto:falih.khudair@uobasrah.edu.iq">falih.khudair@uobasrah.edu.iq</a>

## 8. Course Objectives

The student learns about the nature of the nucleus and its components.  
 The student learned about the nuclear structure.  
 The student learns about the nature of reactions and nuclear binding energy.  
 Study of nuclear models  
 Study of nuclear decays and the nature of nuclear radiation  
 The student learns about the uses of nuclear physics.

## 9. Teaching and Learning Strategies

### Strategy

Cooperative Concept Mapping Teaching Strategy  
 Brainstorming Teaching Strategy:  
 Observations Chain Teaching Strategy:

## 10. Course Structure

Wee k	Hour s	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
1	3	Nuclear properties-Nucleus components Measurement units for nuclear quantities	Nuclear Properties	Lecture, discussion	Test, class participation
2-3	6	Nuclear banding energy, Mass defect (excess ), Separation energy, Valley of stability,	Nuclear structure	Lecture, Power Point Presentation	Homework and discussion
4-5	6	Nuclear model, Liquid drop model, Shell model, Energy levels, Nuclear magnetic dipole moment, Electric quadrpole moment	Nuclear structure	Lecture, Discussion, Experimental	Report Exam
6-7	6	Radioactive decay law, Activity, Mean life, Half-life, Production of Radioactive isotopes, Multiprocesses decay, Widths of decaying states, Dating	Radioactivity	Lecture, Discussion, Experimental	Report Experimental Exam
8-9	6	Alpha( $\alpha$ ) Decay, decay series, Energy and range of $\alpha$ -decay, beta decay, Neutrino Hypothesis, Classifications of $\beta$ -decays	Radioactivity	Lecture, Discussion, Experimental	Report Experimental Exam

10	3	Gamma decay, Energies of gamma decay, modes of gamma decay, Internal conversion	Radioactivity	Lecture, Power Point Presentation	Homework and discussion
11-1 2	6	Types of Nuclear Reaction, Threshold Energy, Nuclear reactions cross section	Nuclear Reaction	Lecture and Discussion,	Test, class participation
13-1 4	6	Theories of nuclear reactions, Nuclear Fission, Theory of nuclear fission, Types of nuclear fission, Number of emitted neutrons ,Nuclear Fusion, Basic Fusion processes	Nuclear Reaction	Lecture and Discussion,	Test, class participation
15-1 6	6	Fission cascade reaction, The main components of the reactor Nuclear, Reactor operation,Uses of reactors, types Reactors, nuclear reagents	Nuclear Reactors	Lecture, Power Point Presentation	Homework and discussion
17-1 8	6	Types of nuclear accelerators -Cyclotron, -Electron Synchrotron, proton synchrotron, Van De Graaff accelerators, Cockcroft-walton accelerator	Nuclear Accelerators	Lecture, Power Point Presentation	Test, class participation
19-2 4	6	Training in Schools	Teaching training	Direct evaluation of teaching	Scientific and educational evaluation
25-2 6	6	Radiation interaction with matter, Biological effects of ionizing radiation	Nuclear Radiation	Lecture and Discussion	Homework and discussion
27-2 8	6	Ionization energy rate, Interaction of neutrons with matter, reaction Heavy charged particles reaction with matter	Nuclear Radiation	Lecture and Discussion	Test, class participation
29-3 0	6	Comprehensive review, Solve the questions	Comprehensive review	Lecture and Discussion	Test and Discussion

## 11. Course Evaluation

"The distribution is as follows: 25% for monthly and daily exams for the first semester. 25% for monthly and daily exams for the second semester. 50% for final exams."

## 12. Learning and Teaching Resources

1. Nuclear Physics : Dr Asiad Jalal
2. Introduction to Nuclear Physics : Dr. Inka

Main references (sources)

Nuclear and Particle Physics/ B. R. Martin

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

<https://www.nndc.bnl.gov/ensdf/>

National Nuclear Data Center