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

2025-2024

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 an academic programs and course description 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: 11/3/2025

Signature:
Head of Department Name:
Prof. Dr. Ra'ed M. Hassan
Date: 15/3/2025

Signature:
Scientific Associate Name:
Asst. Prof. Haider Q. Fadel
Date: 15/3/2025

The file is checked by:
Director of the Quality Assurance and University Performance Department:
Prof. Dr. Hussein A. Badran
Date: 15/3/2025
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.

4. Program Accreditation

No

5. Other external influences

No

6. Program Structure

Program Structure	Number of Courses		Credit hours	Percentage	Reviews*
Institutional Requirements (University)	First Stage	3	6	3.43%	-
	Second Stage	**2**	**4**	**2.29%**	-
	Third Stage	-	-	**0.00%**	-
	Fourth Stage	**1**	**4**	**2.29%**	-
College Requirements	**First Stage**	**4**	**10**	**5.71%**	-
	Second Stage	**4**	**14**	**8.00%**	-
	Third Stage	**2**	**8**	**4.57%**	-

	Fourth Stage	3	10	5.71%	-
Department Requirements	First Stage	4	24	13.71%	-
	Second Stage	5	28	16.00%	-
	Third Stage	6	36	20.57%	-
	Fourth Stage	5	31	17.71%	-
Summer Training	-	Not Available	-	-	-
Other					

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical - Number of Units |	Practical
First Year		Electricity and Magnetism 1	3h-7U	2h
		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	
Second Year		Electricity and Magnetism 2	3h-7U	2h
		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**	
Third Year		**Complex Functions**	**3h-7U**	
		Elective (Meteorology) – Elective	**2h-4U**	
		Atomic and Molecular Physics	**3h-7U**	**2h**
		Advanced Mechanics	**3h-6U**	
		Curriculum and Teaching Methods	**2h-4U**	
		Thermodynamics	**3h-6U**	
		Electronics	**3h-7U**	**2h**
		Guidance and Mental Health	**2h-4U**	
Forth Year		**Solid-State Physics**	**3h-6U**	
		Laser	**3h-6U**	
		Measurement and Evaluation	**2h-4U**	
		Quantum Physics	**3h-6U**	
		Nuclear Physics	**3h-7U**	**2h**
		Educational Laboratory and Teaching Aids		**2h-4U**
		Observation, Application, and Practical Training		**2h-4U**
		Research Project	**2h-4U**	

8. Expected learning outcomes of the program

Knowledge	
	1- Enabling students to gain a deep understanding of physics. 2- Preparing qualified teachers to teach physics in educational institutions. 3- Training teaching staff with a high level of competence in physics. 4- Preparing physics teachers capable of keeping up with scientific advancements in the field of physics.
Skills	
	1- Enabling students to grasp the fundamental concepts of physics. 2- Developing students' ability to analyze physical phenomena scientifically and practically. 3- Enhancing students' ability to clearly express their physics-related ideas and connect them to everyday life.
Ethics	
	1- Enhancing critical thinking skills and systematic analysis in applying physical principles. 2- Encouraging students to explore physics-related topics and benefit from them. 3- Developing students' abilities and instilling scientific values and principles through the study of physics.

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	Lecturer
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 / Nanotechnology			
Mohammed F. Al-Mudhaffer	Professor	Physics	Nanotechnology and Renewable Energy			
Furat Ahmed Mahdi Al-Saymari	Professor	Physics	Nanotechnology Applications / Optoelectronics			
Haider Kassim Fadel Al-Edany	Assistant Professor	Physics	Material Physics			
Sana Kadhim Khalff	Assistant Professor	Physics	Health Physics			
Fatima H. Al-Saeed	Assistant Professor	Physics	Theoretical Solid State Physics			
Hassan Kadhim Ibrahim Al-Kharsan	Assistant Professor	Physics	Polymer Physics			
Israa Qaddori Taha Alyaseen	Assistant Professor	Physics	Theoretical Solid State Physics			
Jabbar Hafez Jeber AL Wuhaili	Assistant Professor	Physics	Applied Nuclear Physics			
Rusul Dawood Salim	Assistant Professor	Physics	Solar Energy Physics			

Musa Kadhim Shamer Abd Al-Maliki	Assistant Professor	Physics	Theoretical Nanoelectronics			
Amir Hussein Ali	Assistant Professor	Physics	Fluid Mechanics			
Fadhil Abbas Tuma Alhashim	Assistant Professor	Physics	Condensed Matter Physics			
Sawsan Sharief Fliefil	Assistant Professor	Physics	Radiation Physics			
Maged A. Nattiq	Assistant Professor	Physics	Nanoelectronics / Perovskite Electronics			
Ahmed Jasem Hmood ALMALIKY	Assistant Professor	Physics	Materials Physics			
Abdulameer Imran	Assistant Professor	Physics	Nonlinear Optics			
May Jassim	Lecturer	Physics	Solid State Physics			
Amjad Fawzi Abdulkader	Lecturer	Physics	Theoretical Nuclear Physics			
Sundes Juma Fakher	Lecturer	Physics	Materials Physics / Nanotechnology Techniques			
Alaa M.I Al-Roumy	Lecturer	Physics	Laser Physics			
Hisham Yousef Abdulredha	Lecturer	Physics	Nanoelectronics			
Abdullah Al-Hussein	Lecturer	Physics	Thin Film Electronics and Solid State Electronics			
Abadhar Rahman Ahmed ALMaliki	Lecturer	Physics	Material Science			

Ashwaq Faisal Jaafer	Lecturer	Physics	Nuclear Physics			
Amjad Fawzi Abdulkader	Lecturer	Physics	Polymer Physics			
Numan Sleem Hashim	Lecturer	Physics	Polymer Physics			
Hayfaa Abdulhadi Noori	Lecturer	Physics	Teaching Methods			
Israa Mohammed Ali	Lecturer	Physics	Solid State Physics			
Sttar Jabbar Badr Ahmed	Assistant Lecturer	Physics	Radiation and Applied Nuclear Physics			
Shatha Sami Ebady	Assistant Lecturer	Physics	Polymer Physics			
SHAYMAA HASHIM JASIM	Assistant Lecturer	Physics	Polymer 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		√		√	√	√	√		√	√			
		Physical Education		√	√	√		√	√	√	√		√	√	
		English Language			√	√	√	√	√		√			√	
Second Year		**Electricity and Magnetism**		√	√	√	√		√	√	√	√		√	√
		Optics		√	√	√	√	√	√	√		√			√
		Mathematics (2)		√		√		√	√	√	√		√	√	
		Sound and Wave Motion		√	√	√	√	√	√		√			√	
		Programming (Computers			√		√		√	√	√	√		√	√
		Astronomy		√	√	√	√		√	√	√	√		√	√
		Scientific Research Methodology		√	√		√	√	√	√		√			√
		Secondary Education and			√	√	√	√		√			√		

		Educational Administration													
		Developmental Psychology		√		√	√		√	√	√	√		√	√
		English Language		√	√	√	√	√	√	√		√			√
		Baath Regime Crimes			√		√	√	√	√		√	√		
Third Year		**Complex Functions**		√	√	√	√		√	√	√	√		√	√
		Elective (Meteorology) – Elective		√	√	√	√	√	√	√		√			√
		Atomic and Molecular Physics			√		√		√	√	√	√		√	√
		Advanced Mechanics		√	√	√	√	√	√	√		√			√
		Curriculum and Teaching Methods		√	√	√	√		√	√	√	√		√	√
		Thermodynamics			√		√	√	√	√		√	√		√

		Electronics			√	√	√	√		√			√		
		Guidance and Mental Health		√		√	√		√	√	√	√		√	√
				√	√	√	√	√	√	√		√			√
Fourth Year		**Solid-State Physics**				√		√	√	√	√		√	√	
		Laser		√		√	√	√	√		√	√		√	
		Measurement and Evaluation		√	√	√	√		√			√			
		Quantum Physics		√		√	√		√	√	√	√		√	√
		Nuclear Physics		√	√	√	√	√	√	√		√			√
		Educational Laboratory and Teaching Aids		√	√		√	√	√	√		√	√	√	√
		Observation,		√	√	√	√	√		√			√		√

		Application, and Practical Training													
		Research Project		√	√	√	√		√			√			

- **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: 2024-2025
Annual
4. Description Preparation Date:
25/2/2025
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

Course Objectives	1-studying the Coulombs law 2-studying the Electric field 3-studying the Gausses' law 4-studying the Electric potential 5-studying the Capacitors and insulators .
9. Teaching and Learning Strategies	
Strategy	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, dail 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		Presentation and discussion	
6	3	The electric field Electric field intensity Electric field line Lines of electric force	The electric field	Presentation and discussion	
7	3	Gausses law Electric dipole		Presentation and discussion	
8	3	Application The electric field due to charged rod		Presentation and discussion	

9	3	he electric field due to charged ring The electric field due to char plain plate example		Presentation and discussion	
10	3	Gausses' law gausses law application	Gausses' law	Presentation and discussion	
11	3	determine the electric field due to line charge		Presentation and discussion	
12	3	determine the electric field due to plain plate charge		Presentation and discussion	
13	3	determine the electric field due to the conducting materi near its surface		Presentation and discussion	
14	3	problems		Presentation and discussion	
15	3	problems		Presentation and discussion	
16	3	electric potential electric potential energy	electric potential	Presentation and discussion	
17	3	potential potential deference potential and charge distribution		Presentation and discussion	
18	3	potential due to more charge single		Presentation and discussion	
19	3				
20	3	potential of conducting ball charge potential gradient examples		Presentation and discussion	

21	3	potential of electric dipole potential due to charge ring		Presentation and discussion	
22	3	potential due to charge disc equipotential surfaces dielectric strength		Presentation and discussion	
23	3	Pointed heads and charges discharge		Presentation and discussion	
24	3	Capacitors and insulators Capacitors Capacitors storage Parallel plate capacitor	Capacitors and insulators	Presentation and discussion	
25	3	Ball capacity Capacitors conducting metho Insulator between charge capacity		Presentation and discussion	
26	3	Electric susceptibility Electric permittivity		Presentation and discussion	
27	3			Presentation and discussion	
28	3	Examples		Presentation and discussion	
29	3	Capacitors energy The relation between storage energy and electric field		Presentation and discussion	
30	3	Problems		Presentation 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 Netw (Internet)
Electronic References, Websites	https://www.researchgate.net/

1. Course Name: **Heat and properties of matter**	
Heat and properties of matter	
2. Course Code:	
3. Semester / Year: Annual	
4. Description Preparation Date:28/2/2025	
5. Available Attendance Forms: presence only	
6. Number of Credit Hours (Total) / Number of Units (Total) 60 hours per year, 6 hours per a week	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Sawsan Sharief Fliefil Email: sawsan.fliefil@uobasrha.edu.iq Name:rusul dawood salim Email: rusul.salim@uobasrah,edu.iq	
8. Course Objectives	
Course Objectives	**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.** **2 - Providing students with the skill of solving mathematical and**

	intellectual problems related to the subject..... **.....**

9. Teaching and Learning Strategies

Strategy	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 3 4 5 6 7 8 9 10 11 12 13 14 15 Half year holiday 16 17 18 19 20	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1-Getting to know the concept of the system and the external environment that surrounds the system and getting to know the viewpoints on interpreting the system 2- Getting to know the concept of thermal equilibrime, thermal contact and the difference between the thermal energy and internal energy. , then getting to know thermal expansion and the types of expansion for solid bodies, liquid and gaseous 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 law, methods for measuring energy,	**Heat and properties of matter**	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 homworkes, especially for each subject.	Daily and monthly exams are set, in addition to the end-of-first semester exam and the final exam

21 22 23 24 25 26 27 28 29 30		heat and temperature, and the mechanical equivalent of the joule. Learn about pressure and how to measure it using a manometer and barometer. Study the change in pressure with depth. 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.			

11.Course Evaluation

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)	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:
2024-2025
4. Description Preparation Date:
25/02/2025
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: haidarryad4@gmail.com
Name: Sundes Jummah Fakhir
Email: uobasrah.edu.iq@sundes.fakher

8. Course Objectives

Course Objectives	Learn the importance of English grammar, learn the four skills, translate scientific terms, and l to learn English pronunciation as well to understand the basic structure of the word in English

9. Teaching and Learning Strategies

Strategy	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 in oth scientific subjects.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	
1	1		1. Introduction to the English language and its importance at the present time 2. Study of genera rules: parts of speech 3. Types of sentences in the English language such as simple, compound and complex sentence 4. Study of pronouns and the importance in writing and speaking. 5. Study of indefinite and definite articles fo their importance writing and teaching the student how to us		1 2 3 4 5 6 7 8	1 1 1 1 1 1 1 1

			them in sentences phrases and compositional pieces. 6. Explaining verb and their importance in tenses 7. Explaining tens and simplifying them for the student by representing ther in sentences and applying them practically by giving the studen exercises to solve 8. Translating scientific terms from English to Arabic and vice versa. 9. Scientific compositional passages related t Physics, Biology and other departments and how to answer th questions of the passage in an academic manner		9	1

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). *Cutting Edge 3rd Edition Pre-Intermediate Workbook with Key*. Pearson Longman Murphy, Murphy, R. (2000). *English grammar in use: Grammar Reference*.
Electronic References, Websites	

1. Course Name:
Mathematics 1
2. Course Code:
MA101
3. Semester / Year:
Annual
4. Description Preparation Date:
25.2.2025
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: fadhil.tuma@uobasrah.edu.iq Name: Dr. Abadhar Rahman Ahmed, Email: abadhar.ahmed@uobasrah.edu.iq
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 classroom (5) Directing students to some sources that contain examples and exercises 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 their propert	Theoretical lect	questions discussion
2	3	Inequalities, absolute value, constants variables	Groups, numbers their propert	Theoretical lect	questions discussion
3	3	Definition of function, starting point and ran algebra of functions	Functions	Theoretical lect	questions discussion
4	3	Composition of functions, graphing functions, inverse of functions	Functions	Theoretical lect	questions discussion
5	3	Basic trigonometric functions and th properties, periodic functions	Functions	Theoretical lect	questions discussion
6	3	Even and odd functions, inverse of trigonometric function	Functions	Theoretical lect	questions discussion
7	3	Exponential functions and their propert logarithmic functions and their properties	Functions	Theoretical lect	questions discussion
8	3	Hyperbolic functions, properties of hyperbo functions	Functions	Theoretical lect	questions discussion
9	3	Inverse hyperbolic functions, the relations between functions	Functions	Theoretical lectu	questions discussion
10	3	Theories of goals, their mathematical definit and theorems	Limits continuity	Theoretical lect	questions discussion
11	3	The limit in undefined cases is the limit of right and left limits	Limits continuity	Theoretical lect	questions discussion
12	3	Limit of trigonometric functions, continu continuous functions	Limits continuity	Theoretical lect	questions discussion
13	3	Definition of the derivative, finding derivative using the definition, general laws	Differentiati (derivatives)	Theoretical lect	questions discussion
14	3	The derivative of the reciprocal of the functi derivative Composite functions (series rule)	Differentiati (derivatives)	Theoretical lect	questions discussion
15	3	The second derivative and higher or derivatives, the equation of the tangent and perpendicular to the tangent to the cur implicit differentiation	Differentiati (derivatives)	Theoretical lect	questions discussion
16	3	Derivative of trigonometric functio derivative of the inverse of trigonome functions	Differentiati (derivatives)	Theoretical lect	questions discussion

17	3	Derivative of exponential and logarithr functions	Differentiati (derivatives)	Theoretical lect	questions discussion
18	3	Derivative of hyperbolic functions, derivative the inverse of hyperbolic functions	Differentiati (derivatives)	Theoretical lect	questions discussion
19	3	LHopital's Rule and its uses	Differentiati (derivatives)	Theoretical lect	questions discussion
20	3	Definition of integration, indefinite integrat and its laws	Integration	Theoretical lect	questions discussion
21	3	Integration of trigonometric functic exponential functions, general exponen functions	Integration	Theoretical lect	questions discussion
22	3	Integration of hyperbolic functions, defir integration, properties of definite integration	Integration	Theoretical lect	questions discussion
23	3	1. Integrals of certain trigonometric functions Integrals by trigonometric substitutions	Integration methods	Theoretical lect	questions discussion
24	3	3. Integrals containing a quadratic function Integration by division	Integration methods	Theoretical lect	questions discussion
25	3	5. Integration with partial fractions	Integration methods	Theoretical lect	questions discussion
26	3	6. Integration with other compensation	Integration methods	Theoretical lect	questions discussion
27	3	Applications of definite integration, 1. Find the area between two curves	Applications	Theoretical lect	questions discussion
28	3	2. Find the displacement of a body moving i straight line with instant speed and acceleratı	Applications	Theoretical lect	questions discussion
29	3	3. Rotational body size (hard disk method)	Applications	Theoretical lect	questions discussion
30	3	(cylindrical shell method)	Applications	Theoretical lect	questions 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 Sk Practice Workbook with Full Solutions, Zisl Publishing (August 16, 2018) 2. Mark Ryan, Calculus For Dummies,, Dummies; 2 edition (June 7, 2016)
Main references (sources)	Durfee. W.H , Calculus and Analytic Calculus Analytic Geometric , Durfee . W.H , 2017 New Y ان التفاضل والتكامل والهندسة التحليلية, برسل أ. ج. ترجمة علي ئين الاول والثاني 1983,جامعة الموصل , عزيز علي وآخرون العراق –
Recommended books and references (scientific journals, reports...)	James Stewart, Calculus, calculusCengage Learning; 8 edition (May 19, 2015).

	اهم الكتب والمصادر الخاصة لحسبان التفاضل والتكامل الموجودة في المكتبة المركزية ومكتبة الكلية والقسم.
Electronic References, Websites	المواقع الالكترونية الرصينة (www. Freescience.info/math) 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
4. Description Preparation Date:
25/2/2025
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: israa.taha@uobasrah.edu.iq
Name: Dr. Amjad fawzi Abdulkader
Email: Amjad.abdulkader@uobasrah.edu.iq

8. Course Objectives

Course Objectives	**1- Study of the laws of one-dimensional and two-dimensional motion in classical mechan** **2- Study of Newton's laws** **3- Study of the mechanics of circular motion** **4- Study of theories of energy and work** **5- Study of momentum and collisions of mov objects**

9. Teaching and Learning Strategies

Strategy	Lectures Theory + discussion lessons in solving theoretical proble + daily and monthly exams

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3hrs		Introduction to Mechanics	Lectures Theory discussion lessons solving theoretical problems daily a monthly exams	
2	3hrs	Standards of Leng			
3	3hrs	ass, and Time			
4	3hrs	2) The Blocks Matter			
5	3hrs	3)Dimensional Analysis			
6	3hrs		Motion in One Dimension		
7	3hrs	4) Conversion Units			
8	3hrs	5) Problem-Solvi			
9	3hrs	1)Displacement			
10	3hrs	2) Velocity			
11	3hrs	3)Acceleration			
12	3hrs	4) Motion Diagra	Vectors and Two-Dimensional Motion		
13	3hrs	5) Dimensional Motion w			
14	3hrs				

15	3hrs	Constant			
عطلة	3hrs	Acceleration			
16	3hrs	6) Freely Falli	The Laws of Motion		
	3hrs	Objects			
17	3hrs	1) Vectors a			
18	3hrs	Their Properties			
19	3hrs	2) Components o			
19	3hrs	Vector			
20	3hrs	3) Displaceme	Circular Motion		
	3hrs	Velocity, a	Dynamics		
21	3hrs	Acceleration in Tv			
22	3hrs	Dimensions	Energy		
23	3hrs	Motion in Tv			
	3hrs	Dimensions			
24	3hrs				
25	3hrs	rces			
26	3hrs	ewton's First Law			
	3hrs	wton's Second Lav			
27	3hrs	ewton's Third Law	Momentum a		
28	3hrs	Applications	Collisions		
29	3hrs	Newton's Laws			
30	3hrs	Forces of Friction			
330		gular Momentum			
		gid Body Kinematic			
		ork			
		netic Energy and t			
		Work–Energy			
		Theorem			
		ravitational Potent			
		Energy			
		ring Potential Ener			
		ystems and Ener			
		Conservation			
		Power			
		Momentum a			
		Impulse			
		Conservation			
		Momentum			
		llisions			

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)	
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

Strategy	1- Educational strategy, collaborative concept planning. 2- Brainstorming strategy 3-Education Strategy Discussion Series

10. Course Structure

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

Off day 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours 2hours	Anarchism 13- Getting to know Democratic administration 14- Getting to know Diplomatic administration 15-Get to know Influencing factors 16- Getting to know directione 17- Getting to know educational administration 18- Getting to know The school administration 19-Getting to know The importance of management school 20- Getting to know Management objectives school 21-Getting to know Management characteristics 22-Getting to know Management styles Educational 23-Getting to know Modern trends 24- Getting to know Classroom management 25- Getting to know Educational communication 26 - Getting to know Means of communication 27- Getting to know Types of communications 28- Getting to know Types of supervision 29- Getting to know The importance of supervision 30-Get to know Teacher-teacher relationship And the supervisor	prevailing trends in educational administration The school administration The importance of school administration School administration goals Characteristics of school administration School management styles Modern trends in Administration Classroom management For educational communication Means of communication Second semester exam Types of communications Educational Supervision Types of educational supervision The importance of educational supervision Teacher-teacher relationship And the supervisor 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	
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:
2025
4. Description Preparation Date:
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	• To Concept of optics

	• Refraction and reflection at plane and Graphical surfac • To Concept the interference ,diffraction and polarizati

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		

11.Course Evaluation

"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."

12.Learning and Teaching Resources

Fundamentals of optics Francis A.Jekins & 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
4. Date this description was prepared
18/9/2024
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	
.Educational strategy, collaborative concept planning -1 .Brainstorming education strategy -2 Education Strategy Notes Series -3	**The strategy**

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Weekly, monthly, daily, written exams, and the end-of-year .exam	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.	Chapter One: The origin of th sound Basic properties of wave transmission Classification of sound waves Solve the questions of the firs chapter Chapter Two: Free Vibration Theory Simple linear harmonic motio Phase and phase difference Energy of simple harmonic oscillator Differential equation of harmonic motion Applications to simple harmo motion Solve the questions of the second chapter Chapter Three: Superposition harmonic movements The principle of superpositio Superposition of two harmon motions in one dimension Superposition of two perpendicular harmonic moti Solve the questions of the thi chapter Chapter Four: Decaying Vibration Forces causing decay Solve the equation of decayin harmonic motion in the case no decay Imperfect state of decay Critical condition Excess state decay Chapter Five: Forced vibratio The equation of motion for a vibrator decaying under the influence of a periodic extern force Solving the equation of force motion (special solution) Complementary solutions. General solutions, resonance Chapter Six: Wave motion Types of wave motion Classification of mechanical waves The speed of a transverse wa in a stretched string Standing waves The theory of free vibration o stretched string of fixed lengt Sonometer	Informing studen about the importance of sound and the typ of wave motion, a it is one of the important types o motion in our live how it is transmitted, and t factors affecting i	hours 2 hours 2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 عطلة 16 17 18 19 19 20 21 22 23 24 25 26 27 28 29 30

		Laws of vibrating strings Solve the problems of the six semester Chapter Seven: Phenomena related to the propagation of sound			

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

Sound and wave motion Written by Amjad Abdel Razzaq Karjiya	Required textbooks (methodology, if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites

1. Course Name: **Arabic Language2**

2. Course Code:

3. Semester / Year: Year

4. Description Preparation Date: 1/3/2025

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: abadhar.ahmed@uobasrah.edu.iq

8. Course Objectives

Course Objectives	**1. Developing Basic Language Skills** **2. Promoting Cultural Identity** **3. Using the Language in Everyday Life**

9. Teaching and Learning Strategies

Strategy	1. Providing detailed explanations of the material. 2. Involving students in sentence formation and parsing. 3. Clarifying the meanings of some Arabic vocabulary

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
30	30		**Arabic Language2**	Giving lectur	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)	1.Explanation of Ibn Aqil. 2.Explanation of Al-Ajrumiyyah.
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	
4. Description Preparation Date:	
2025/2026	
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: 1-riydh ch 2-Hussein F Email: 1- riydh.abalhiel@uobasrah.edu.iq 2- Husseinfalaih@ uobasrah.edu.iq	
8. Course Objectives	
Course Objectives	**1-Teaching the student the basic theoretical concepts electricity and magnetism** **2-Teaching the student the ideas and sciences of electrical and magnetic physics** **3- Providing the student with theoretical and pract skills related to the basics of electricity and magnetis**
9. Teaching and Learning Strategies	
Strategy	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 th real events associated with it Principles of teaching strategies • The strategy must be comprehensive and integrated, and cover all parts of the plan to be implemented without neglecting any part of i • Determine all the goals to be achieved • To be one of the means of support for the administrative planning function • The strategy should be flexible and capable of development a modification, making it easy to implement

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 عطلة 16 17 18 19 19 20 21 22 23 24 25 26		CH-1 Magnetic field . CH-2 Some measuring devices CH-3 Magnetic field of electric current CH-4 Induced electromotive force CH-5 Inductance CH-6 Alternating curre	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, a the end-year exam

27 28 29 30		CH-7 Magnetic properties of matter			

11.Course Evaluation	
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	
12.Learning and Teaching Resources	
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-https://uomustansiriyah.edu.iq › lect...

1. Course Name:
Scientific research
2. Course Code:
3. Semester / Year:
Year
4. Description Preparation Date:
15/11/2024
5. Available Attendance Forms:
Attendance only
6. Number of Credit Hours (Total) / Number of Units (Total)
60 in year and 2 in wek

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 resear

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

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1 2 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours	The meaning of scientific research linguistically and scientifically What do sciences have in common? Distinguishing the most important types of scientif research The importance of scientif research for the student The correct scientific definition Procedures followed in the search Characteristics of scientific research Steps followed in scientific research	Definition scientific research method Character ics of science Patterns o scientific research The importanc of scientif research What is scientific research?	Explaining scienti material through lectures, following up with students, and involving ther in the discussion. 2- Asking the students to prepar the next lecture ar involving the large number of them ir explaining it. 3- Linking the ide included in t lecture with t students' ideas.	Weekly, monthly, daily, writt exams, a final exam.

18 19 20 21 22 23 24 25 26 27 28 29 30	2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours	Research sources Writing research sources What does the quote mean Learn the steps of writing How to tabulate data Qualitative and quantitativ data Know the types of statistic measures vacation How to calculate the avera arithmetic How to calculate the loom How to calculate the media Methods of displaying data Identify types of knowledg Knowing the types of curricula and their feature Learn about the historical method The most important featur of the descriptive approac Learn about the survey method What is experimentation? How to use statistics in research Identify the most importan concepts in research The most important gener concepts What characterizes a good researcher? How does the research define his problem?	Scientific procedure Character ics of scientific research Steps of scientific research Informati sources Document ion of informati Citation types How to write a research project Analysis o scientific research data Data type Measures central tendency SMA Loom Mediato r Display data Scientifi c knowled ge Types of curricul a		

			Historical method Descriptive method Survey method Experimental method Statistical method General concepts of scientific research method General concepts Characteristics of a good researcher Basis for choosing the research problem		

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 resear from the internet
Recommended books and references (scientific journals, reports...)	Scientific journals
Electronic References, Websites	https://eco.nahrainuniv.edu.iq https://www.bts-academy.com

1. Course Name:

astronomy

2. Course Code:

3. Semester / Year:

Year

4. Description Preparation Date:

2025/3/21

5. Available Attendance Forms:

Presence

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

60 hours per year. 2 hours per week

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

Name: MSc Rana Azeez Abed
Email: rana.azeez@uobasrah.edu.iq

8. Course Objectives

Course Objectives	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.

9. Teaching and Learning Strategies

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	Identify the general meaning of astronomy, the universe, and the astronomical instruments used by Arabs	History astronomy	Dialog discuss	Asking and answering questio 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 l and the law universal gravitation		
5	2	Learn about meridians, their characteristics and benefits	Longitude li		
6	2	Learn about supply 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 characteristic 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 tottering	Astrological seasons		
11	2	Learn about the zodiac, the zodiac, and the names a locations of the signs	Zodiac		
12	2	Identify astronomical units of measurement and the relationship between them	Astronomic units measureme		
13	2	**The first exam for the first course**			
14	2	Learn about the solar system, the chemical composition of the sun, its layers, the sun's atmosphere, and the black wicks	Solar syster	==	==

15	2	Identifying the moon, its physical properties, the phenomena of eclipse and solar eclipse, and the difference between them	the moon	==	==
Mid-year exams					
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 comparir 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 characterist	Asteroids	==	
25	2	Identify comets and their types	Comets		
26	2	Identify meteors and meteorites and their characteristics	Meteors and meteors		
27	2	The first exam of the second semester			
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		

11.Course Evaluation

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, if any)	Atmospheric and space physics / Part Two / Dr. Ham Majoul Al Nuaimi, Dr. Fayyad Abdel Latif Al Najm
Main references (sources)	Atmospheric and space physics / Part One / Dr. Har Majoul Al Nuaimi, Dr. Fayyad Abdel Latif Al Najm
Recommended books and references (scientific journals, reports...)	/https://astronomynow.com
Electronic References, Websites	https://nasainarabic.net/main

	/https://www.universetoday.com

Course Description Form-Year Three

1. Course Name:
Counseling and mental health
2. Course Code:
3. Semester / Year:
Year
4. Description Preparation Date:
2024/١١/١٣
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: Maha saddam abd Email: maha.saddam@uobasrah.edu.i
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

Strategy	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

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 vacation 16 17 18 19 19 20 21 22 23 24 25 26 27 28 29 30	2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours 2 hours ours	1- Students acquire the skill of dealing with the psychological problems they face 2- Achieving psychological compatibility among students 3- Preparing students psychologically, professionally and educationally for the teaching profession	1- Educational guidance, foundations of guidance and psychological counselling, educational guidance curricula 2- Definition of the educational advisor, the role of the advisor in the learning process, and the characteristics of educational maturity 3-Guidance methods, individual guidance and group guidance 4- Guidance methods, direct	1- Involving students in classroom activities 2- Using PowerPoint presentations to advance lessons	Weekly, monthly, daily, written exams, and the end-of-year exam.

			guidance and indirect guidance 5-Foundations of guidance and psychological counselling 6- Preparing the educational guide, the role of parents' councils in the school guidance program 7- Educational guidance and its role at the university 8-The role of the teacher in the counseling process, the problems that occur in schools and the role of counseling in solving them 9- Academic delay, its causes, and the role of the teacher in reducing this phenomenon 10- Dropping out of school, the causes of this phenomenon, the role of the teacher and counselor in reducing this phenomenon 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. 12- The phenomenon of bullying among students, its causes, and the role of the teacher and counselor in reducing this phenomenon 13- Exam anxiety, its symptoms, causes, and the role of the teacher and counselor in reducing this phenomenon. 14- The concept of mental health, its goals, and signs that indicate that an individual enjoys mental health 15-The relationship of mental health with other sciences 16-The importance of mental health in life sciences 17- Psychological compatibility, its types, the most important manifestations of psychological compatibility 18- Maladjustment, its types, the most important manifestations of psychological maladjustment		

			19-Mental health and adaptation, definitions of adaptation, its dimensions 20- Adaptation magazines, the most important factors affecting it 21-School and mental health, the school's responsibilities regarding the psychological development and mental health of the student 22-Teacher psychological burnout, its most important manifestations and causes 23-What is neuroticism, the difference between neurosis and nervous disease 24- Causes of neuroticism, symptoms, and methods of treating it 25-The most important definitions of anxiety, its types, causes, and methods of treating it 26- Pathological fear neurosis, the difference between normal and pathological fear and what are its most important causes		

			27-The most important symptoms of fear, how to diagnose it, methods of treating it, and 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		

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

2024-2025

4. Description Preparation Date:25/11/2024

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

Course Objectives	**• The student gets to know the complex number system** **• The student gets to know the regular functions of the complex number system** **• Study methods of differentiating complex functions** **• Study the integration of complex functions**

9. Teaching and Learning Strategies

Strategy	• Cooperative Concept Mapping Teaching Strategy • Brainstorming Teaching Strategy:

	• 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 Moover'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) 1- Complex functions and their applications by Kha Ahmed Al-Samarrai 2- Complex functions by Murray Spiegel	New headway –level third.
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

4. Description Preparation Date:

2024-2025

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
Email: alaa.shari@uobasrah.edu.iq
Name: Issra Mohamed Ali
Email: asraa.ali@uobasrah.edu.iq

8. Course Objectives

Course Objectives	• Introducing students to the basic concepts of meteorology, such as the atmosphere and atmospheric pressure. • Explain the physical and chemical processes that occur

9. Teaching and Learning Strategies

Strategy	1-Brainstorming education strategy. 2- Education Strategy Notes Series.

10. Course Structure

Week	Hours		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		
16	2		Nuclear minions		
17	2		The orbit of the affiliate and its benefits		
18	2		Electricity of the atmosphere		
19	2		Atmospheric electric field		
20	2		Thunderstorm theories		
21	2		Microscopic physics of clouds and visible cloud physics		
22	2		Refraction of light in the Earth's atmosphere and the phenomena of diffraction and scattering		
23	2		Integrated review of all chapters		
24	2		Introduction to earth science		
25	2		A simplified explanation of rock geology		

26	2		Geological processes such as earthquakes, volcanoes and erosion		
27	2		Study of minerals and fossils		
28	2				
29	2				
30	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	

1. Course Name:

Thermodynamics

2. Course Code:

3. Semester / Year:

Annual

4. Description Preparation Date:

2024/11/16

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: jassim.muhammed@ uobasrah.edu.iq
Name: Dr. Amir Hussein Ali
Email: amir.ali@uobasrah.edu.iq

8. Course Objectives

Course Objectives	**1-studying the basic concepts in thermodynamics.** **2-studying the first and second law of thermodynamics.** **3-studying pure materials and changing their phases.** **4-studying the equations of State.** **5-study the basic statistics.**

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-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 poi the Clapeyron equatio and its applications	The behavior of pure matter	Presentation and discussion	
5	3	The equation of an ide 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 durin 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	Thermodynamic processes		

13	3	Isothermal process and various examples	Other thermodynamic processes	Presentation and discussion	
14	3	The thermal machine and its efficiency	The second law of thermodynamics	Presentation and discussion	
15	3	Freezers and thermal compressors	The second law of thermodynamics	Presentation and discussion	
16	3	Reversable operations and irreversable operations, Steam Machine.	Carnot thermal machine	Presentation and discussion	
17	3	Entropy of the universe and steam	Entropy	Presentation and discussion	
18	3	Entropy and irregularity	Irregularity	Presentation and discussion	
19	3	Maxwell's equation of entropy, the Clausius-Clapeyron equation	Equations of irregularity	Presentation and discussion	
20	3	Kinetic theory of an ideal gas	Kinetic theory	Presentation and discussion	
21	3	Collisions with moving walls, the equation of state of Clausius	Collisions with moving walls	Presentation and discussion	
22	3	Finding the values α and β, The Power Distribution Function	Particle velocity distribution	Presentation and discussion	
23	3	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		Presentation and discussion	

25	3	Thermal conductivity, diffusion	Distribution of tracks Thermal conductivity	Presentation and discussion	
26	3	Maxwell - Boltzmann statistics	Statistics	Presentation and discussion	
27	3	Bose - Einstein statisti		Presentation and discussion	
28	3	Fermi-Dirac statistics	Statistics	Presentation and discussion	
29	3	Discharge and method of its measurement	Statistics 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 9th ED, 2012**
Recommended books and references (scientific journals, reports...)	1-lectures from the Internatio Information Network (Internet)
Electronic References, Websites	https://zlibrary-asia.se/ https://www.researchgate.net/

Course Description Form

1. Course Name:
Atomic and molecular physics
2. Course Code:

3. Semester / Year:

4. Description Preparation Date:

:2024/2/25

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

Course Objectives

- **3) Realizing the differences betw Newtonian and Einsteinian phys relativity and quantum physics.**

4) Correct handling of physical phenomena according mod

- **) Students acquire skills dealing with modern atomic molecular physics.**
- **2) Understanding mod concepts in this field of physics**
- **ern physics.....**
- **.....**

9. Teaching and Learning Strategies

Strategy	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 sk in dealing with laws of mod physics at high spe compared to the sp of light and the mas	1- The theory of special relativity (1) The concept of atomic physics (2) Introduction to relativi (3) The failure of the classi concepts of space and time (4) Inertial axes (5) Newton's laws of motic		

		of small particles su as the mass electrons and other	(6) Galileo transformations (7) Michelson-Morley experiment (8) Einstein's hypotheses i 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 betw energy and momentum (18) Electron volt 2- Electromagnetic radiatic (1) Thermal radiation (2) Emission and absorptio radiation (3) Black body radiation (4) Black body radia spectrum (5) Really jeans formula (6) Planck's law for black b radiation (7) Photoelectric phenome (8) Einstein's explanation the photoelectric phenome (9) Applications of photoelectric phenomenon 3- X ray 1- Discovery of dental rays 2- Production of X-rays 3- Measure the intensit X-rays 4- The tine room 5- Diffraction of de rays 6- Refraction of X-rays 7- X-ray absorption 9- X-ray absorption metho 10- X-ray spectra 4-Wave properties of particl 1- Debroli's hypothesis 2- Electron diffraction 3- Electron diffrac experiments by Davison Kirmer 4- Thomson's elec diffraction experiments 5- Waves that accomp atoms and molecules 6- Speed of Debroly wav 7- Heisenberg's rule of dc 5- Hydrogen atom 1- Spectrum of the hydro atom		

			2- Bohr's theory of hydrogen atom 3- Bohr's hypotheses 4- Movement of hydrogen nucleus 5- Schrodenker equatio 6- Schrodenker equa for the hydrogen atom 7- Interpretation of solution to the Schroder equation 8- Selection rules for hydrogen atom 9- Elliptical orbitals of t 6-hydrogen atom Multi-electron a (electronic structure of atom) 1- Optical spectr sequences 2- Orbital ang momentum 3- Spin the electron 4- The vector of t angular momentum 5- The magnetic momer the orbital electron 6- Magnetic quan numbers 7- Pauli's exclus principle 8- Zeeman phenomenor 9- Distribution of electr in the atom		

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, Prent Hall, 2003.
Main references (sources)	2- Physics 3rd Edition, by Kenneth S. Krane , John Wiley & Sons, Incorporated, 2012. 3-Modern Physics and Technology for Undergraduates, by Lorcan M Folan et al., World Scientific Book, 2003. 1- University Physics with Modern Physics, by Hugh D. Young, Pearson Education, 2021.

	4- Concepts in Modern Physics, Arthur Beiser, translation of the second edition 5- Atomic Physics, Dr. Talib Nahi Al-Khafaji, Dr. Abbas Hammadi, and Dr. Hormuz Moshi, part_1 and part_2
Recommended books and references (scientific journals, reports...)	Acta Physica Polonica, a Polish open access journal, and the link to the journal is below. http://www.actaphys.uj.edu.pl/
Electronic References, Websites	1- https://www.youtube.com/watch?v=Agu68RGaoWM https://ocw.mit.edu/search/?d=ysics

1. Course Name:
Electronics
2. Course Code:
3. Semester / Year:
Year
4. Description Preparation Date:
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

Name: Dr. Sundes J. Faker
Email: 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 fo 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 materi based on band theory Pure and dop semiconductors		
3 4		**In-person Lectures: Theory and Practical**	**Unit2:Semiconductor Diode** Energy band diagram Diode characteristic curve Diode equivalent circuit Load line and operating point		

5 6		**In-person Lectures: Theory and Practical**	**Unit 3: Applications Semiconductor Diodes** Wave rectification Wave-shaping circuits		
7 8 9 10		**In-person Lectures: Theory and Practical**	**Unit 4: Zener Dio Circuits** Equivalent circuit of t Zener diode Applications of the Zener diode		
11 12 13 14		**In-person Lectures: Theory and Practical**	**Unit 5: Bipolar JunctionTransistor (BJT)** Types of transistor biasi Transistor limitations		
15 16		**In-person Lectures: Theory and Practical**	**Unit 6: Bipolar JunctionTransistor Amplifiers** Equivalent circuit of the amplifier using hybrid parameters Frequency response of the amplifier Multi-stage amplifiers		
17 18		**In-person Lectures: Theory and Practical**	**Unit 7: Thyristors**		
19 20		**In-person Lectures: Theory and Practical**	**Unit 8: Types of Power Amplifiers**		
21 22		**In-person Lectures: Theory and Practical**	**Unit 9: Field-Effect Transistor (FET)** **Working principle junction field-effect transistor (JFET)**		

			Transistor transiti characteristics Biasing circuits Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET)		
23 24		**In-person Lectures: Theory and Practical**	**Unit 10: Negati Feedback and Types Connections The effect of negative feedback gain, impedance, and bandwidth**		
25 26		**In-person Lectures: Theory and Practical**	**Unit 11: Positive Feedback** • **Oscillators** • **RC oscillators** • **LC oscillators**		
27 28		**In-person Lectures: Theory and Practical**	**Unit 12: Logic Circuits**		
29 30		**In-person Lectures: Theory and Practical**	**Unit 13: Introduction Nanotechnology** **Applications Nanotechnology**		

11.Course Evaluation

Distribution as follows:

- 25 marks for monthly and daily exams in the first semester.
- 25 marks for monthly and daily exams in the second semester.
- 50 marks for the final exams.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	**"Electronic Devices and Circ Theory"** – Robert L. Boylestad Louis Nashelsky
Recommended books and references (scientific journals, reports...)	**"Microelectronic Circuits"** Adel S. Sedra & Kenneth C. Sm

Electronic References, Websites	**"The Art of Electronics"** – Paul Horowitz & Winfield Hill

Course Description Form

1. Course Name:
Curricula and teaching methods
2. Course Code:
3. Semester / Year:
year
4. Description Preparation Date:
25/2/2024
5. Available Attendance Forms:
My presence 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: M. M. Reman Jamal Jassim Email: Iec.reman.jasim@uobasrah.edu.iq
8. Course Objectives

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.	

9. Teaching and Learning Strategies

Strategy	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

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

			Scholarship. Separate subjects curriculum. 12- Fields approach Broad, activity approach. 13- The core curriculum, Units curriculum, Elements of the curriculum as a system Quadrant. 14- Content and experiences Educational, teaching methods And educational technologies Calendar. 15- The importance of goals Educational, sources of derivation Educational objectives. 16- Goal levels Educational specifications Behavioral goals. 17- how We formulate behavioral goals, Classification of behavioral goals. 18- Content and experiences Educational, selection rules Curriculum content, Rules for organizing curriculum content. 19- Teaching method, teaching style, Teaching strategy. 20- Foundations of good teaching Advantages of the teaching method The good one. 21- Guided exploration Planning for science teaching With guided exploration, advantages directed exploration, Exploration problems Router. 22- Problem Solving, Steps to solve the problem, Advantages of problem solving, Difficulties in solving the problem. 23- Lecture method, Advantages of the lecture method, Weaknesses in the method lecture. 24- Programmed education,		

			Types of educational programs, Computer, advantages of using Computer, difficulties that Having trouble using a computer. 25- cooperative learning, Steps for cooperative learning, Advantages of cooperative learning, Disadvantages of cooperative learning. 26- Discussion and dialogue, open discussion, planned discussion, Group discussion, games Educational. 27- Practical offers or display experiences, Stages of submitting an offer Practical, positives offer Practicality, cons of presentation Practical. 28- Field visits, Steps for visits Field, positives of the visit Field, cons Field visit 29- Laboratory in teaching Science, teaching philosophy Laboratory, the importance of the laboratory In teaching science, Safety rules in 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:
2025
4. Description Preparation Date:
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. Mohammed Fadhil Email: mohammed.al-mudhaffer@uobasrah.edu.iq Name:Assoc.-Prof.-Dr.Fatima-Hussein-Saeed Email: fatima.saeed@uobasrah.edu.iq
8. Course Objectives

Course Objectives	
9. Teaching and Learning Strategies	
Strategy	• Cooperative Concept Mapping Teaching Strategy • Brainstorming Teaching Strategy: • Observations Chain Teaching Strategy:
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Lecture Number	Credit Hours	Topic	Content	Assessment	
1	3	Introduction to Crystalline and Amorphous States	Unit Cell - Crystalline Structure	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 Cubic, Face-Centered Cubic	Sodium Chloride, Hexagonal Close-Packed Structure - Crystalline Structure	Group Work, Laboratory Experiment - Lab Report, Theoretical Assessment	
4	3	Symmetry and Miller Indices	Incident Beams and Bragg's Law - Crystalline Structure	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- **Solid State Physics**, authored by Dr. Yahya Al-Ja 2- **Solid State Physics**, authored by Dr. Moayad Gab Yousif 3- **Introduction to Solid State Physics**, Charles Ki 1996
Main references (sources)	**Solid State Physics**, authored by Dr. Yahya
Recommended books and references (scientific journals, reports...)	

Electronic References, Websites	

1. Course Name:

Measurement and evaluation

2. Course Code:

3. Semester / Year:

Year

4. Description Preparation Date:

13 / 2/ 2025

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

Strategy	1- Educational strategy, collaborative concept planning. 2- Brainstorming strategy 3-Education Strategy Discussion Series

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2 3 4	2hours 2hours 2hours 2hours	1-Learn about the concept measurement and evaluation 2- Identify the types of	The concept of measurement a evaluation	1-Explainir The Scientific Material	Weekly monthly daily,

5	2hours	standards	Types of metrics	in detail	written exams, and the end -of-year exam
6	2hours	3- Identify the general		in	
7	2hours	principles of evaluation	Generalprinciples in evaluatio	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	Theimportance of measurem		
		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 buildin	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 stability		

		29-Learn about the ladders appreciation 30-Learn about the statement ladder Descriptive	exam REPETITON 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 (curricu 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 References, Websites	WWW.Site.iugaza.edu.ps/omozini/2010/2/measur

.

1. Course Name:
Quantum Mechanics

2. Course Code:

3. Semester / Year:

2024-2025

4. Description Preparation Date:

27/2/2025

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: [1]Assist.Prof.Dr. Haider Kassim Fadel
[2]Lect.Dr. Hisham Youssif Almahde
Email: [1] 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

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	3	Informing students about the importance of quantum physics theories and their importance in relation to classical physics.	Chapter1: Physical Foundation Quantum Mechanics = = Chapter2: Elementary Properti and Laws of Quantum = = = = = = = = = = Chapter3: Quantum Harmonic Oscillator = = = = = = Half-year holiday Chapter4: Physical Application of Schrodinger's Equation to One and Three Dimensional Problems = = = = = = = = Chapter5: The Central Potentia and One Electron Atom = = = = = = = = = =		Weekly, monthly, daily, written exams, and the end-of-year exam.

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 a Extensions, Second	

Edition, 2018	
Electronic References, Websites	Not required

Course Description Form

1. Course Name:

Laser Physics

2. Course Code:

3. Semester / Year:

Yearly

4. Description Preparation Date:

28/2/2025

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: raed.hussan @ uobasrah.edu.iq

8. Course Objectives

Course Objectives	**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.** **2. Gain a broad scientific background on the theoretical basis of laser applications in all areas of life.**

9. Teaching and Learning Strategies

Strategy	**1. Education 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	3 hours	Physical once	Electromagnetic radiation Spectrum and wave roperties	Providing students in advance with summaries of the paper and electronic chapters of the subject, and explaining the scientific material in	Daily, weekly, monthly written exams and the end-of-year exam.
2	3 hours				
3	3 hours		Energy states (levels) Laser beam characteristics		
4	3 hours	Introduction lasers	The basic components of the laser device		
5	3 hours				

6	3 hours		Emission and absorption of radiation Count at thermal equilibrium	detail in person, with reference to archaeological sources and	
7	3 hours	Einstein	Absorption and	addresses of	
8	3 hours	relationships	emission	electronic links	
9	3 hours		Expansion of life span	related to each chapter or paragraph	
10	3 hours	Spectral line	The amplitude of the	of the scientific	
11	3 hours	width	collision	material.	
12	3 hours	Absorption	Heterogeneous amplitude		
13	3 hours	and small signal gain	Doppler phenomenon Absorption of		
14	3 hours	coefficient	electromagnetic		
15	3 hours		radiation		
vacation			Profit and profit factor Visual feedback		
16	3 hours	Resonator and optical			
17	3 hours	feedback'	Resonator patterns		
18	3 hours		Frequency range of laser action		
19	3 hours	Laser modes	Longitudinal (axial)		
20	3 hours		modes		
21	3 hours	population	Transverse modes population inversion		
22	3 hours	inversion,	Gain and loop losses.		
23	3 hours	gain and loop losses	Population inversion and threshold		
24	3 hours		condition		
25	3 hours	Steady state	Gain saturation in		
	3 hours	oscillation	homogeneous laser		
26		and adjust the laser	Pulsed laser. Types of lasers		
27	3 hours	output.	Helium-neon (He-Ne)		
28	3 hours	Types of lasers and	laser Laser applications		
29	3 hours	their	Special applications		
30	3 hours	applications			

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, 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. https://t.me/laserphysics2023 2. https://www.hazemsakeek.net/category/%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D9%81%D9%8A%D8%B2%D9%8A%D8%A7%D8%A1/c31/

1. Course Name: Nuclear Physics
2. Course Code:
3. Semester / Year:
2024-2025
4. Description Preparation Date:
25/2/2025
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: falih.khudair@uobasrah.edu.iq Lecture Dr. Ashwaq F. Jaafer Email: ashwaq.jaafer@uobasrah.edu.iq

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

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation 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(α) Decay, decay series, Energy and range of α-decay,beta decay, Neutrino Hypothesis, Classifications of β-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
11-12	6	Types of Nuclear Reaction, Threshold Energy, Nuclear reactions cross sectio	Nuclear Reaction	Lecture and Discussion,	Test, class participation
13-14	6	Theories of nuclear reactions, Nuclear Fission, Theory of nuclear fission, Types of nuclear fission,	Nuclear Reaction	Lecture and Discussion,	Test, class participation

		Number of emitted neutrons ,Nuclear Fusion, Basic Fusion processes			
15-16	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
17-18	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
19-24	6	Training in Schools	Teaching training	Direct evaluation of teaching	Scientific and educational evaluation
25-26	6	Radiation interaction with matter, Biological effects of ionizing radiation	Nuclear Radiation	Lecture and Discussion	Homework and discussion
27-28	6	Ionization energy rate, Interaction of neutrons with matter, reaction Heavy charged particles reaction with matter	Nuclear Radiation	Lecture and Discussion	Test, class participation
29-30	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