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

2024-2025

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: **Mosul**

Faculty/Institute: **Collage of Education for Pure Science**

Scientific Department: **Physics**

Academic or Professional Program Name: **Bachelor of Science Final**

Certificate Name: **Bachelor in Physics**

Academic System: Year

Description Preparation Date:

File Completion Date:

Signature:

Head of Department Name:

Date:

Signature:

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

أ.د. ياسر شكيب محمد

شعبة ضمان الجودة

Approval of the Dean

1. Program Vision

Providing a distinguished scientific environment to reach the highest standards to contribute to community service, thus enhancing the role of the Physics Department in the academic aspect and scientific research, and balancing between the requirements of the labor market and preparation requirements.

2. Program Mission

The Department of Physics is to be a pioneer in the field of education and scientific research, which contributes to the development of society by providing it with highly qualified graduates.

3. Program Objectives

The educational program aims to develop faculty members, improve their performance, and make graduates qualified and able to obtain employment opportunities, whether in education or in various sectors of society. Therefore, the goals and objectives can be summarized as follows:

1. Providing the community with teaching staff.
2. Keeping pace with global developments in specialized fields.
3. Communicate with the community to provide the required services.
4. Directing education to serve community development.
5. Diversity of teaching methods between electronic teaching, in-person teaching, and blended teaching.
6. Maintaining the ethics of the teaching profession

4. Program Accreditation

NACTE

5. **Other external influences**
School training

6. **Program Structure**				
Program Structure	**Number of Courses**	**Credit hours**	**Percentage**	**Reviews***
Institution Requirements	**1**	**2**	**1.83**	Basic
College Requirements	**8**	**32**	**17.39**	Basic
Department Requirements	**32**	**150**	**81.5**	Basic
Summer Training	**1**	**4**	**2.77**	School training
Other				

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

Program Description					
Year/Level	**Course Code**	**Course Name**	**Credit Hours**		
			theoretical	**practical**	**Units**
First year	**EDPH25F101**	Mechanics	3	3	8
	EDPH25F102	Heat and Properties of the material	2	0	4
	EDPH25F103	Electricity and Magnetism I	3	2	8
	EDPH25F104	Mathematics I	3	0	6
	EDPH25F105	Fundamentals of Education	2	0	4
	EDPH25F106	Developmental and Educational Psychology	2	0	4
	EDPH25F107	Computer I	1	0	2
	EDPH25F108	Arabic Language	1	0	2
	EDPH25F109	English Language	1	0	2
	EDPH25F110	Human Right	1	0	2

Second year	**EDPH25F201**	Optics	3	2	8
	EDPH25F202	Astronomy	2	0	4
	EDPH25F203	Electricity and Magnetism II	2	2	6
	EDPH25F204	Mathematics II	2	0	6
	EDPH25F205	Sound and Wave Motion	2	0	4
	EDPH25F206	Leadership and Educational Administration and Secondary Education	2	0	4
	EDPH25F207	Crriculums and School Books	1	2	4
	EDPH25F208	Teaching Thinking	1	0	
	EDPH25F209	Computer II	1	0	2
	EDPH25F210	Arabic Language	1	0	2
	EDPH25F211	English Language	1	0	2
	EDPH25F212	Baath Regime crimes in Iraq	1	0	2
Third year	**EDPH25F301**	Electronics	3	2	8
	EDPH25F302	Elective	2	0	4
	EDPH25F303	Thermodynamic	3	0	6
	EDPH25F304	Complex Function	2	0	4
	EDPH25F305	Atom and Molecule physics	3	2	8
	EDPH25F306	Analatical Mechanics	3	0	6
		Complex Functions	2	--	
	EDPH25F307	Counseling and Psychological Heath	1	2	4
	EDPH25F308	Teaching Methods	1	2	4
	EDPH25F309	Educational Technology and its Applications	1	2	4

Fourth year	**EDPH25F401**	Nuclear Physics	3	2	8
	EDPH25F402	Laser	2	0	4
	EDPH25F403	Electromagnetic theory	3	0	6
	EDPH25F404	Quantum Mechanics	3	0	6
	EDPH25F405	Solid state Physics	3	0	6
	EDPH25F406	Demonstration Instruments Lab.	0	2	2
	EDPH25F407	Research Project	0	2	2
	EDPH25F408	Measurement and Evaluations	2	0	4
	EDPH25F409	Practical Education	1	2	4
	EDPH25F4010	Action Research	1	2	4

7. **Expected learning outcomes of the program**	
Knowledge	
Preparing a scientific esearcher	by providing them with the basic principles of scientific research and teaching
Strengthening scientific cooperation	by holding courses, workshops or seminars within continuing education
Providing the opportunity to complete postgraduate studies	through mastering the scientific subject and scientific research methods
Skills	
Teaching Profession Skills	Acquire basic skills for the teaching profession in the fields of physics
Scientific research skills:	Developing scientific research skills in the field of physics and teaching methods
Sustainable development skills	by preserving the country's resources and sources from depletion in all fields
Ethics	
Developing beneficial values and trends	in harmony with the principles of divine religions, customs and traditions
Developing the trend towards	profession to meet current challenges and develop the educational

the teaching	system as a whole
Establishing teaching principles	to limit the misuse of their responsibilities in the scientific and educational field
Explaining the importance of science in human life	the great role that physics plays in serving people's lives

8. Teaching and Learning Strategies

Theoretical and practical lecture, dialogue and discussions, problem solving, conducting practical experiments, graduation project and application in schools.

9. Evaluation methods

Quiz and final exam

10. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof.	Physics	Solid State Nuclear – Teaching Methods			3	
Prof. Assist.	Physics	Solid State Nuclear – Teaching Methods– laser– Plasma– Optical			11	

		fiber				
Lecturer	Physics	Solid State Nuclear – Teaching Methods– laser– Plasma– Optical fiber			17	
Lecturer Assist.	Physics	Solid State Nuclear laser–			9	
Lecturer Assist.	Mathematic	Complex functions			1	
Lecturer Assist.	English	Literature			2	

Professional Development
Mentoring new faculty members
Using modern scientific sources, educational methods, courses and workshops
Professional development of faculty members
Providing the library with modern scientific sources and participating in specialized training courses

11. Acceptance Criterion

Direct Admission

12. The most important sources of information about the program

Direct admission guide, the department's website and the Internet

13. Program Development Plan
The content has been updated based on new sources

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	EDPH25F101	Mechanics	Basic	*	*	*									
	EDPH25F102	Electricity and Magnetism	Basic	*	*	*									
	EDPH25F103	Heat and State Properties	Basic	*	*	*									
	EDPH25F104	Mathematics	Basic					*			*				
	EDPH25F105	Computers	Basic					*							
	EDPH25F106	Educational Psychology	Basic		*						*				
	EDPH25F107	Principles Education	Basic		*						*				
	EDPH25F108	Human Right	Basic		*			*			*				

	EDPH25F109	**Arabic Language**	**Basic**												
	EDPH25F110	**English Language**	**Basic**												
Second Year	**EDPH25F201**	**Advance Electricity and Magnetism**	**Basic**	*	*	*	*								
	EDPH25F202	**Optics**	**Basic**	*	*	*									
	EDPH25F203	**Sound and Wave Motion**	**Basic**	*	*	*									
	EDPH25F204	**Astronomy**	**Basic**	*	*	*			*						
	EDPH25F205	**Advance Mathematics**	**Basic**				*								
	EDPH25F206	**Programming**	**Basic**		*			*		*	*				
	EDPH25F207	**Research Approach**	**Basic**		*			*							
	EDPH25F208	**Growth Psychology**	**Basic**		*				*						
	EDPH25F209	**Administration and**	**Basic**												

		Secondary Education													
	EDPH25F210	English Language	Basic												
	EDPH25F211	Baath crimes	Basic	*	*										
Third Year	EDPH25F301	Atom and Molecule physics	Basic	*	*	*									
	EDPH25F302	Analytical Mechanics	Basic	*				*							
	EDPH25F303	Electronics	Basic	*	*										
	EDPH25F304	Thermodynamic	Basic	*		*		*							
	EDPH25F305	Complex Functions	Basic	*	*			*							
	EDPH25F306	Selective	Optional	*			*								
	EDPH25F307	Mythology and Teaching Methods	Basic	*			*								
	EDPH25F308	Psychological Heath and	Basic	*			*		*	*					

		Guidance													
	EDPH25F309	**English language**	**Basic**	*											
Forth Year	**EDPH25F401**	**Nuclear Physics**	**Basic**	*		*									
	EDPH25F402	**Electromagnetic theory**	**Basic**	*		*									
	EDPH25F403	**Quantum mechanic**	**Basic**	*		*									
	EDPH25F404	**Solid state Physics**	**Basic**	*		*									
	EDPH25F405	**Laser**	**Basic**	*											
	EDPH25F406	**Educational Lab.**	**Basic**												
	EDPH25F407	**Graduated Project**	**Basic**												
	EDPH25F408	**School Practice**	**Basic**												
	EDPH25F409	**Measurement and Evaluations**	**Basic**												

	EDPH25F410	**English language**	**Basic**												

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

Course Description Form

1. Course Name:
Quantum Mechanic
2. Course Code:
EDPH25F403
3. Semester / Year:
2023–2024
4. Description Preparation Date:
1/9/2023
5. Available Attendance Forms:
Class
6. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
7. Course administrator's name (mention all, if more than one name)
Name: Marwan Hafeeh Younus Email: Marwan.hafed@uomosul.edu.iq Name: lubna haqi ismael lubna.haqi_ismael178@uomosul.edu.iq

8. Course Objectives	
Course Objectives	**• The student learns the basics of quant mechanical theory** **• The student is able to solve all the vari problems related to the subject** **• Developing the student's knowledge about subject by adding some modern topics**

9. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1.	2	Fundamentals of quantum mechanics	Influences and exchange of influences	Lecture	Quiz
2.	2	Hermitian effect	Properties of the Hermitian effect	Lecture	Quiz
3.	2	Hermitian effect	Properties of the Hermitian effect	Lecture	Quiz
4.	2	Expected value	Examples of expected value	Lecture	Quiz
5.	2	Expected value	Examples of expected value	Lecture	Quiz
6.	2	Schrödenker equation	Solve the time-dependent Schrödoncker equation	Lecture	Quiz
7.	2	Schrödenker equation	Solve the time-dependent Schrödoncker equation	Lecture	Quiz
8.	2	Applications of the Schrdunker equation	The free particle and the particle inside the box in one dimension and in three dimensions	Lecture	Quiz
9.	2	Applications of the Schrdunker equation	The free particle and the particle inside the box in one dimension and in three dimensions	Lecture	Quiz
10.	2	Reflectance and transmittance	Through low voltage with limited height	Lecture	Quiz
11.	2	Reflectance and transmittance	Through low voltage with limited height	Lecture	Quiz
12.	2	Harmonic oscillator	Solve the harmonic oscillator equation	Lecture	Quiz
13.	2	Harmonic oscillator	Solve the harmonic oscillator equation	Lecture	Quiz
14.	2	Harmonic oscillator	Comparison between quantum theory and classical theory	Lecture	Quiz
15.	2	Harmonic oscillator	Comparison between quantum theory and classical theory	Lecture	Quiz
16.	2	An atom has a single electron	Solve the differential equation	Lecture	Quiz
17.	2	An atom has a single electron	Solve the differential equation	Lecture	Quiz

18.	2	Angular momentum	Comparison between quantum theory and classical theory	Lecture	Quiz
19.	2	Angular momentum	Comparison between quantum theory and classical theory	Lecture	Quiz
20.	2	Approximation methods	Perturbation theory: first approximation: the dissolved state and the non-dissolved state	Lecture	Quiz
21.	2	Approximation methods	Perturbation theory: first approximation: the dissolved state and the non-dissolved state	Lecture	Quiz
22.	2	Approximation methods	Applications to perturbation theory	Lecture	Quiz
23.	2	Approximation methods	Applications to perturbation theory	Lecture	Quiz
24.	2	Approximation methods	Covariance method	Lecture	Quiz
25.	2	Approximation methods	Covariance method	Lecture	Quiz
26.	2	Scattering theory	Comparison between classical and quantum scattering	Lecture	Quiz
27.	2	Scattering theory	Comparison between classical and quantum scattering	Lecture	Quiz
28.	2	Scattering theory	Calculating the differential and total cross-sectional area	Lecture	Quiz
29.	2	Scattering theory	Calculating the differential and total cross-sectional area	Lecture	Quiz
30.			Final Exam		

1. 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	
2. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Quantum Mechanic
Main references (sources)	Basic Quantum Mechanic
Recommended books and references (scientific journals, reports…)	Quautum mechanics and spectroscopy:another workbook:M.Kuno
Electronic References, Websites	https://www.google.com/search?q=quantum+mechanics+pdf+notes&oq=Quautum+mechanics+pdf&aqs=chrome.2.69i57j0i13i512l9.5499j0j15&sourceid=chrome&ie=UTF-8

University: Mosul College: Education for pure sciences
Department or Branch: Department of Physics

1. Course Name and Stage:

Classic mechanics / First Stage

2. Course Code:

EDPH25F101

3. Semester / Year:

2024−2025

4. Description Preparation Date:

1/9/2024

5. Available Attendance Forms:

Class

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

3 Credit Hours/ 3 Number of Units

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

Name: Dr. Odai Falah Ameen Email: odai.ameen@uomosul.edu.iq

8. Course Objectives

Subject Objectives	• **This course provides the student with mechanical knowledge and scientific knowledge.** • **Designate this course to enable the student to learn about the physical phenomena that cause bodies to move.** • **This course enables the student to know the characteristics and types of forces.** • **To organize this course, the student must know the laws of accuracy.** • **This course aims to enable the student to know the laws of torque and centers of equilibrium of rigid bodies.**

9. Teaching and Learning Strategies

Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz .

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Physical Quantity	Definition of physical quantity	Lecture	Quiz
2	3	Systems of Units	Unit and system of units	Lecture	Quiz
3	3	Dimensions and Dimensio equations	Check the physical equation through the dimensional equation	Lecture	Quiz
4	3	Vectors	Concept of direction and classification vectors	Lecture	Quiz
5	3	Representative of Vectors	Addition and Subtracted of Vectors	Lecture	Quiz
6	3	Addition of Several Vecto	Component of Vector and find the sum of several vectors	Lecture	Quiz

7	3	Vector Multiplication	Scalar product (or dot product) & Vector product (or cross product)	Lecture	Quiz
8	3	Solving examples	Solving examples	Lecture	Quiz
9	3	Motion in One Dimension	Concept Rest and Motion	Lecture	Quiz
10	3	Equations of motion	Derivation of motion equations	Lecture	Quiz
11	3	Freely Falling Bodies	The concept of free fall and free fall equations	Lecture	Quiz
12	3	Motion in a plane (Two Dimension)	The concept of movement in two dimensions	Lecture	Quiz
13	3	Motion in a plane (Two Dimension)	Projectile Motion	Lecture	Quiz
14	3	Equations of the path of a projectile	Flight time, horizontal range, maximum height of the projectile	Lecture	Quiz
15	3	Circular Motion	Angular displacement, angular velocity, angular acceleration,	Lecture	Quiz
16	3	Forces	The concept of forces and effect of a forc and methods for finding out the resultant force	Lecture	Quiz
17	3	The laws of motion	Newton's laws of motion and Centripetal Force	Lecture	Quiz
18	3	Frictional forces	Applications second law of newton(Atw machine)	Lecture	Quiz
19	3	Torque	The concept of torque and its laws	Lecture	Quiz
20	3	Composition of parallel fo	Find the position of the resultant of the parallel forces	Lecture	Quiz
21	3	Center of mass	Find the Center of mass and Equilibrium a particle and Equilibrium of a solid bod (Bar	Lecture	Quiz
25	3		Examination	Lecture	Quiz

11. Course Evaluation and Marks

- The evaluation by involving students in discussions.
- Simple attempt (test).
- Practical and theoretical Monthly and quarterly exams.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Applied book in Arabic: Mechanics for science and engineering applications
Main references (sources)	Applied book in Arabic: Mechanics for science and engineering applications
Recommended books and references (scientific journals, reports…)	Physics for Scientists and Engineers with Modern Physics
Electronic References, Websites	https://objectstorage.ap-mumbai-1.oraclecloud.com/n/bmzytd5z5pt3/b/Class12/o/1653331658-ncert-6.pdf
Percentage of Curriculum update	

Dr. Odai Falah Ameen

University: Mosul
College: Education for

Dr. Marwan Hafeedh Younus

Department Head of Physics

pure sciences **Department or Branch: Department of Physics**

13. Course Name and Stage:
Mechanics Lab (Practical)
14. Course Code:
15. Semester / Year:
Year 2024/2025
16. Description Preparation Date:
1/9/2024
17. Available Attendance Forms:
Full presence in the laboratory
18. Number of Credit Hours (Total) / Number of Units (Total)
Three hours a week
19. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Assistant Professor Dr. Muayad Abdullah Email: moyadalharbi@uomosul.edu.iq
20. Course Objectives

Subject Objectives	• ***Practical application for students and** • **providing them with all the basic** • **concepts and theoretical calculations in** • **mechanics, represented by** • **(the simple pendulum, the modulus of rigidity,** • **Archimedes' principle, the speed of sound,** • **the centripetal force,** • **the frequency of an unknown tuning fork** • **using a sonar, surface tension, the** • **moment of inertia, the coefficient of** • **static and sliding friction, and Hooke's law)……** • ***Introduce students to the laws physics……** • ***Verifying the validity of theoretical**

	• ideas in a practical way • through experimentation and enabling • the student to support and develop his • skills in the field of mechanics, so that student has a good scientific • foundation and basis upon which he • can rely if he decides to continue to • obtain higher degrees……

21. Teaching and Learning Strategies

Strategy	

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	Three hours of work	Finding the acceleration of the Earth using a simple pendulum	simple pendulum	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
the second	Three hours of work	Finding the modulus of rigidity of a thin metal rod using a torsion(twisting)	modulus rigidity	Measure the experim practically in laboratory	Daily exam assignments and reports
the third	Three hours of work	Determine specific gravity using Archimedes' principle	Archimedes' principle	Measure the experiment practically in the laboratory	Daily exam assignments and reports
Fourth	Three hours of	Measuring the speed of sound in air using a	speed of sound	Measure the experiment	Daily exam assignments and reports

	work	resonance tube		practically in the laboratory	
Fifth	Three hours of work	General review of experiences			
Sixth	Three hours of work	practical exam			
Eighth	Three hours of work	centripetal force	Investigating the inverse relations between angu velocity and radius rotation when magnitude of the centripetal fo and the rotating masses constant	Measure the experiment practically in the laboratory	Daily exam assignments and reports
Ninth	Three hours of work	centripetal force	Investigating the direct relationship between the centripetal force and the square of the rotational speed	Measure the experiment practically in the laboratory	Daily exam assignments and reports
tenth	Three hours of work	Finding the unknown frequency of a tuning fork using a sonsonometer	sonometer	Measure the experiment practically in the laboratory	Daily exam assignments and reports
eleventh	Three hours of work	Finding the coefficient of tangential and sliding friction	coefficient tangential and sliding friction	Measure the experiment practically	Daily exam assignments and reports

				in the laboratory	
twelfth	Three hours of work	General review of experiences			
thirteenth	Three hours of work	practical exam			
fourteenth	Three hours of work	Hooke's law	Fulfillment of Hooke's law	Measure the experiment practically in the laboratory	Daily exam assignments and reports
fifteenth	Three hours of work	Hooke's law	Finding acceleration due to gravity and the spring constant using oscillation meth	Measure the experiment practically in the laboratory	Daily exam assignments and reports
sixteenth	Three hours of work	Finding surface tension using a capillary tube	surface tension	Measure the experiment practically in the laboratory	Daily exam assignments and reports
seventeenth	Three hours of work	Find the moment of inertia of the flywheel practically and compare it with the theoretical value.	moment of inertia	Measure the experiment practically in the laboratory	Daily exam assignments and reports
eighteenth	Three hours of work	Finding the viscosity coefficient	viscosity coeffici	Measure the experiment practically in the laboratory	Daily exam assignments and reports
nineteenth	Three hours of work	General review of experiences			

The twentieth	Three hours of work	practical exam			
21st	Three hours of work	Determination of specific heat capacity of solids	specific heat capacity solids	Measure the experiment practically in the laboratory	Daily exam assignments and reports
twenty-second	Three hours of work	Verify Boyle's Law and find the value of atmospheric pressure	Boyle's Law	Measure the experiment practically in the laboratory	Daily exam assignments and reports
Twenty-third	Three hours of work	Study of heat transfer in insulating bodies and poor conductors and finding the thermal conductivity coefficient using the Lee method	thermal conductivity coefficient	Measure the experiment practically in the laboratory	Daily exam assignments and reports
twenty-fourth	Three hours of work	General review of experiences			
twenty-fifth	Three hours of work	practical exam			

23. Course Evaluation and Marks

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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Practical Physics in (SI) Director of the /E Armitage MA BSc / sixth from center at the city of Ely college

Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	-library.net/free-https://books download-847990259
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrato

Muayad Abdullah Ahmed

Name and Signature

of Department or Branch Head

Dr. Marwan Hafeedh Younus

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

University:Mosul **College: College of Education forPure Sciences**

Department or Branch:Physics

25. Course Name and Stage:	
Mechanics Lab (Practical)	
26. Course Code:	
27. Semester / Year:	
Year 2024/2025	
28. Description Preparation Date:	
1/9/2024	
29. Available Attendance Forms:	
Full presence in the laboratory	
30. Number of Credit Hours (Total) / Number of Units (Total)	
Three hours a week	
31. Course administrator's name (mention all, if more than one name) and Scientific title	
Name: Zeena Hameed Sailh Email Zeena.h82 @uomosul.edu.iq	
32. Course Objectives	
Subject Objectives	***Practical application for students and providing them with all the basic concepts and theoretical calculations in mechanics, represented by (the simple pendulum, the modulus of rigidity, Archimedes' principle, the speed of sound, the centripetal force, the frequency of an unknown tuning fork using a sonar, surface tension, the moment of inertia, the coefficient of static and sliding friction, and Hooke's law)……** ***Introduce students to the laws of physics……** ***Verifying the validity of theoretical ideas in a practical way through experimentation and enabling**

	the student to support and develop his skills in the field of mechanics, so that student has a good scientific foundation and basis upon which he can rely if he decides to continue to obtain higher degrees……

33. Teaching and Learning Strategies

Strategy	

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	Three hours of work	Finding the acceleration of the Earth using a simple pendulum	simple pendulum	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
the second	Three hours of work	Finding the modulus of rigidity of a thin metal rod using a torsion(twisting)	modulus rigidity	Measure the experim practically in laboratory	Daily exam assignments and reports
the third	Three hours of work	Determine specific gravity using Archimedes' principle	Archimedes' principle	Measure the experiment practically in the laboratory	Daily exam assignments and reports
Fourth	Three hours of work	Measuring the speed of sound in air using a resonance tube	speed of sound	Measure the experiment practically in the	Daily exam assignments and reports

				laboratory	
Fifth	Three hours of work	General review of experiences			
Sixth	Three hours of work	practical exam			
Eighth	Three hours of work	centripetal force	Investigating the inverse relations between angu velocity and radius rotation when magnitude of the centripetal fo and the rotating masses constant	Measure the experiment practically in the laboratory	Daily exam assignments and reports
Ninth	Three hours of work	centripetal force	Investigating the direct relationship between the centripetal force and the square of the rotational speed	Measure the experiment practically in the laboratory	Daily exam assignments and reports
tenth	Three hours of work	Finding the unknown frequency of a tuning fork using a sonsonometer	sonometer	Measure the experiment practically in the laboratory	Daily exam assignments and reports
eleventh	Three hours of work	Finding the coefficient of tangential and sliding friction	coefficient tangential and sliding friction	Measure the experiment practically in the laboratory	Daily exam assignments and reports

twelfth	Three hours of work	General review of experiences			
thirteenth	Three hours of work	practical exam			
fourteenth	Three hours of work	Hooke's law	Fulfillment of Hooke's law	Measure the experiment practically in the laboratory	Daily exam assignments and reports
fifteenth	Three hours of work	Hooke's law	Finding acceleration due to gravity and the spring constant using oscillation meth	Measure the experiment practically in the laboratory	Daily exam assignments and reports
sixteenth	Three hours of work	Finding surface tension using a capillary tube	surface tension	Measure the experiment practically in the laboratory	Daily exam assignments and reports
seventeenth	Three hours of work	Find the moment of inertia of the flywheel practically and compare it with the theoretical value.	moment of inertia	Measure the experiment practically in the laboratory	Daily exam assignments and reports
eighteenth	Three hours of work	Finding the viscosity coefficient	viscosity coefficient	Measure the experiment practically in the laboratory	Daily exam assignments and reports
nineteenth	Three hours of work	General review of experiences			
The twentieth	Three hours of	practical exam			

	work				
21st	Three hours of work	Determination of specific heat capacity of solids	specific heat capacity solids	Measure the experiment practically in the laboratory	Daily exam assignments and reports
twenty-second	Three hours of work	Verify Boyle's Law and find the value of atmospheric pressure	Boyle's Law	Measure the experiment practically in the laboratory	Daily exam assignments and reports
Twenty-third	Three hours of work	Study of heat transfer in insulating bodies and poor conductors and finding the thermal conductivity coefficient using the Lee method	thermal conductivity coefficient	Measure the experiment practically in the laboratory	Daily exam assignments and reports
twenty-fourth	Three hours of work	General review of experiences			
twenty-fifth	Three hours of work	practical exam			

35. Course Evaluation and Marks

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

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Practical Physics in (SI) Director of the /E Armitage MA BSc / sixth from center at the city of Ely college
Recommended books and references (scientific journals, reports…)	

Electronic References, Websites	-library.net/free-https://books download-847990259
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrator Assist. Prof. D Marwan Hafeed Younus

Zeena Hameed Salih

Name and Signature

of Department or Branch Headd

Course Description Form

University: Mosul **College:** College Of Basic Education **Department:** Physics

37. Course Name and Stage:
Heat and State Properties

38. Course Code:
EDPH25F103

39. Semester / Year:
2024-2025

40. Description Preparation Date:
1/9/2024

41. Available Attendance Forms:
Actual attendance in class

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

43. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Soham Younis Moustafa Email: soham200019@uomosul.edu.iq

44. Course Objectives	
Subject Objectives	• **The student learns the basics of heat and Materials properties** • **The student is able to solve all the various problems related to the subject** • **Developing the student's knowledge about the subject by adding some mod topics**

45. Teaching and Learning Strategies	
Strate	Theoretical lecture, dialogue and discussions, daily assignments, quiz

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2	temperature	Temperature, basics of temperat measurement, temperature gauges,	Lecture	Quiz
2.	2	temperature	Types of thermometers, thermom gradient, effect of temperature change states of matter,	Lecture	Quiz
3.	2	temperature	Thermal expansion of materials	Lecture	Quiz
4.	2	temperature	Heat transfer and the mechanism of h transfer in materials, black body, l temperatures	Lecture	Quiz
5.	2	Heat and ph transitions	Quantity of heat, mechanical equivalen heat, condensed property comprehensive property, heat capacity specific heat of materials	Lecture	Quiz

6.	2	Heat and ph transitions	Methods of measuring specific heat, concept of phase, homogeneous syst and heterogeneous system, types of st phase transformations of matter, format of glass,	Lecture	Quiz
7.	2	Heat and ph transitions	Phase diagram and its types, steam and types,	Lecture	Quiz
8.	2	Heat and ph transitions	Laws of thermodynamics, thermodynar systems, applications of the first law thermodynamics	Lecture	Quiz
9.	2	Gases	Facts about gases, ideal gases and r gases, kinetic theory of gases,	Lecture	Quiz
10.	2	Gases	The mole and Avogadro's number, ideal gas law, Boyle's law, Charles (C Lussac's) law, the gas constant,	Lecture	Quiz
11.	2	Gases	The Vanderwaals equation, the interna potential energy of a gas, the specific h of gases, the relationship between Cp a Cv for an ideal gas,	Lecture	Quiz
12.	2	Gases	Calculating Cp and Cv for an ideal g entropy, work done by the gas, pressure an ideal gas	Lecture	Quiz
13.	2	Fluids	Fluids, density, specific gravity, surf tension, capillary action, viscos pressure in fluids, Pascal's r Archimedes' rule,	Lecture	Quiz
14.	2	Fluids	Fluid flow, Poiseuille's equati Bernoulli's equation, continuity equati flow meters,	Lecture	Quiz
15.	2	Fluids	Venturi scale, calculating the pressure any point for a static fluid, Pitot tu Torricelli equation, Venturi scale,	Lecture	Quiz
16.	2	Fluids	Calculating the pressure at any point fo static fluid, Pitot tube, Torricelli equatio	Lecture	Quiz
17.	2	Mechanical properties materials	Types of solid materials, stress and types, strain and its types, crystal defect	Lecture	Quiz
18.	2	Mechanical properties materials	, modulus of elasticity, stress-strain curv	Lecture	Quiz
19.	2	Mechanical properties materials	, ductility, fragility, hardness, fatig creep, durability	Lecture	Quiz
20.	2	Mechanical properties materials	Coefficients of elasticity, Poisson's ra work and strain	Lecture	Quiz
21.	2	Magnetic properties materials	Magnetic moment of materials, angu momentum of electron,	Lecture	Quiz
25.	2	Magnetic properties materials	The relationship between (μ) and (magnetic susceptibility	Lecture	Quiz
24.	2	Magnetic	Classification of magnetic materi	Lecture	Quiz

		properties materials	magnetic elements		
25.	2	Electrical properties materials	Electrical conductivity, electri resistivity, electrical conducti phenomenon, critical magnetic field	Lecture	Quiz
25.	2	Electrical properties materials	Properties of insulators, electric fi capacitance, polarization	Lecture	Quiz
26.	2	Electrical properties materials	Piezoelectricity, ferroelectricity, dielec constant and refractive index, electri breakdown	Lecture	Quiz
27.	2	Plasma	The presence of plasma in the three sta of matter, the presence of plasma nature, the generation of plasma,	Lecture	Quiz
28.	2	Plasma	Comparison between plasma and ot states of matter, shapes of plasma, types plasma, general properties of plasma,	Lecture	Quiz
29.	2	Plasma	Plasma coefficients, plasma and magn field, plasma containment,	Lecture	Quiz
30.			Final Exam		

47. Course Evaluation and Marks
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

48. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	• Heat and the properties of matter, written by Dr. Kazem Ahmed, University of Mosul
Main references (sources)	• Basics of physics / Bosch • Heat and thermodynamics / translated by Dr. Mohieddin Abbas Hussein Al-Sayes.
Recommended books and references (scientific journals, reports...)	Callister, W. D., & Rethwisch, D. G. (2014). Materials science engineering: an introduction. New York: John wiley & sons
Electronic Referenc Websites	https://www.google.com/search?q=Heat+and+the+properties+of+ma r&sca_esv=179251790b8982d2&sca_upv=1&biw=1246&bih=527& srf=ACQVn09CYffSUG5t55RL4bGb1LHvri0cHQ%3A1709476785 2&ei=sYvkZauWDv-F7NYP-8-VgA4&ved=0ahUKEwjrsqSkqdiEAxX_AtsEHftnBeAQ4dUDCBA& q=Heat+and+the+properties+of+matter&gs_lp=Egxnd3Mtd2l6LXN AiIUhlYXQgYW5kIHRoZSBwcm9wZXJ0aWVzIG9mIG1hdHRlcj EAAYFhgeMgYQABgWGB4yBhAAGBYYHjILEAAYgAQYigUY MyCxAAGIAEGIoFGIYDMgsQABiABBiKBRiGA0iEJlDCDljCD BeAGQAQCYAbECoAGxAqoBAzMtMbgBDMgBAPgBAfgBApg qAC0AKoAgrCAgcQIxjqAhgnmAMQkgcFMS4zLTE&sclient=gws wiz-serp
Percentage of Curricul update	40%

Name and Signature

of Curriculum Administrator

Dr. Sahar Younis Moustafa

Name and Signature

of Department or Branch Head

Dr. Marwan Ibrahim Fasola

University: Mosul **College: Education for Pure Sciences**
Department or Branch: Physics

49. Course Name and Stage:
Mechanics Lab (Practical)
50. Course Code:
51. Semester / Year:
2025/2024
52. Description Preparation Date:
1/ 9 /2024
53. Available Attendance Forms:
Full presence in the laboratory
54. Number of Credit Hours (Total) / Number of Units (Total)
Three hours a week
55. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Assistant Lecturer Asmaa Zaki Khalil Email: asmaa.zaki@uomosul.edu.iq

56. Course Objectives	
Subject Objectives	⁎Practical application for students and providing them with all the basic concepts and theoretical calculations in mechanics, represented by (the simple pendulum, the modulus of rigidity, Archimedes' principle, the speed of sound, the centripetal force,the frequency of an unknown tuning fork using a sonar, surface tension, the moment of inertia, the coefficient of static and sliding friction, and Hooke's law)..... *****Introduce students to the laws of physics..… *****Verifying the validity of theoretical ideas in a practical way through experimentation and enabling the student to support and develop his skills in the field of mechanics, so that the student has a good scientific foundation and basis upon which he can rely if he decides to continue to obtain higher degrees.....
57. Teaching and Learning Strategies	
Strategy	

58. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	Three hours of work	Finding the acceleration of the Earth using a simple pendulum	simple pendulum	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
the second	Three hours of work	Finding the modulus of rigidity of a thin metal rod using a torsion(twisting)	modulus of rigidity	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
the third	Three hours of work	Determine specific gravity using Archimedes' principle	Archimedes' principle	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
Fourth	Three hours of work	Measuring the speed of sound in air using a resonance tube	speed of sound	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
Fifth	Three hours of work	General review of experiences			
Sixth	Three hours of work	practical exam			
Eighth	Three hours of work	centripetal force	Investigating the inverse relationship between angular velocity and radius of rotation wh the magnitude of The centripetal force and the rotating mas are constant	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
Ninth	Three	centripetal force		Measure	Daily exam,

	hours of work		Investigating the direct relationship between the centripetal force and the square of the rotational speed	the experiment practically in the laboratory	assignments and reports
tenth	Three hours of work	Finding the unknown frequency of a tuning fork using a sonsonometer	sonometer	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
eleventh	Three hours of work	Finding the coefficient of tangential and sliding friction	coefficient of tangential and sliding friction	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
twelfth	Three hours of work	General review of experiences			
thirteenth	Three hours of work	practical exam			
fourteenth	Three hours of work	Hooke's law	Fulfillment of Hooke's law	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
fifteenth	Three hours of work	Hooke's law	Finding the acceleratı due to gravity and th spring constant using the oscillation method	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
sixteenth	Three hours of work	Finding surface tension using a capillary tube	surface tension	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
seventeenth	Three hours of	Find the moment of inertia of the flywheel	moment of inertia	Measure the experiment practically	Daily exam, assignments and reports

	work	practically and compare it with the theoretical value.		in the laboratory	
eighteenth	Three hours of work	Finding the viscosity coefficient	viscosity coefficient	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
nineteenth	Three hours of work	General review of experiences			
The twentieth	Three hours of work	practical exam			
21st	Three hours of work	Determination of specific heat capacity of solids	specific heat capacity of solid	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
twenty-second	Three hours of work	Verify Boyle's Law and find the value of atmospheric pressure	Boyle's Law	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
Twenty-third	Three hours of work	Study of heat transfer in insulating bodies and poor conductors and finding the thermal conductivity coefficient using the Lee method	thermal conductivity coefficient	Measure the experiment practically in the laboratory	Daily exam, assignments and reports
twenty-fourth	Three hours of work	General review of experiences			
twenty-fifth	Three hours of work	practical exam			

59. Course Evaluation and Marks

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

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Practical Physics in (SI) Director of the /E Armitage MA BS sixth from center at the city of college
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	-847990259-library.net/free-https://boo download
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrat

Name and Signature

of Department or Branch Head

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Course Description Form

University: Mosul College: Education for pure sciences
Department or Branch: Department of Physics

61. Course Name and Stage:

Classic mechanics / First Stage

62. Course Code:

EDPH25F101

63. Semester / Year:

2024−2025

64. Description Preparation Date:

1/9/2024

65. Available Attendance Forms:

Class

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

3 Credit Hours/ 3 Number of Units

67. Course administrator's name (mention all, if more than one name) and Scientific title

Name: Dr. Odai Falah Ameen Email: odai.ameen@uomosul.edu.iq

68. Course Objectives

Subject Objectives	• **This course provides the student with mechanical knowledge and scientific knowledge.** • **Designate this course to enable the student to learn about the physical phenomena that cause bodies to move.** • **This course enables the student to know the characteristics and types of forces.** • **To organize this course, the student must know the laws of accuracy.** • **This course aims to enable the student to know the laws of torque and centers of equilibrium of rigid bodies.**

69. Teaching and Learning Strategies

Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz .

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Physical Quantity	Definition of physical quantity	Lecture	Quiz
2	3	Systems of Units	Unit and system of units	Lecture	Quiz
3	3	Dimensions and Dimensio equations	Check the physical equation through the dimensional equation	Lecture	Quiz
4	3	Vectors	Concept of direction and classification vectors	Lecture	Quiz
5	3	Representative of Vectors	Addition and Subtracted of Vectors	Lecture	Quiz
6	3	Addition of Several Vecto	Component of Vector and find the sum of several vectors	Lecture	Quiz

7	3	Vector Multiplication	Scalar product (or dot product) & Vector product (or cross product)	Lecture	Quiz
8	3	Solving examples	Solving examples	Lecture	Quiz
9	3	Motion in One Dimension	Concept Rest and Motion	Lecture	Quiz
10	3	Equations of motion	Derivation of motion equations	Lecture	Quiz
11	3	Freely Falling Bodies	The concept of free fall and free fall equations	Lecture	Quiz
12	3	Motion in a plane (Two Dimension)	The concept of movement in two dimensions	Lecture	Quiz
13	3	Motion in a plane (Two Dimension)	Projectile Motion	Lecture	Quiz
14	3	Equations of the path of a projectile	Flight time, horizontal range, maximum height of the projectile	Lecture	Quiz
15	3	Circular Motion	Angular displacement, angular velocity, angular acceleration,	Lecture	Quiz
16	3	Forces	The concept of forces and effect of a forc and methods for finding out the resultant force	Lecture	Quiz
17	3	The laws of motion	Newton's laws of motion and Centripetal Force	Lecture	Quiz
18	3	Frictional forces	Applications second law of newton(Atw machine)	Lecture	Quiz
19	3	Torque	The concept of torque and its laws	Lecture	Quiz
20	3	Composition of parallel fo	Find the position of the resultant of the parallel forces	Lecture	Quiz
21	3	Center of mass	Find the Center of mass and Equilibrium a particle and Equilibrium of a solid bod (Bar	Lecture	Quiz
25	3		Examination	Lecture	Quiz

71. Course Evaluation and Marks

- The evaluation by involving students in discussions.
- Simple attempt (test).
- Practical and theoretical Monthly and quarterly exams.

72. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Applied book in Arabic: Mechanics for science and engineering applications
Main references (sources)	Applied book in Arabic: Mechanics for science and engineering applications
Recommended books and references (scientific journals, reports…)	Physics for Scientists and Engineers with Modern Physics
Electronic References, Websites	https://objectstorage.ap-mumbai-1.oraclecloud.com/n/bmzytd5z5pt3/b/Class12/o/1653331658-ncert-6.pdf
Percentage of Curriculum update	

Dr. Odai Falah Ameen

Course Description Form

Dr. Marwan Hafeedh Younus

Department Head of Physics

University: Mosul College: Education for pure sciences
Department or Branch: Department of Physics

1. Course Name:

English Language

2. Course Code:

EDPH25F110

3. Semester / Year:

2024–2025

4. Description Preparation Date:

1/10/2024

5. Available Attendance Forms:

Class

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

1Credit Hour

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

Name: Abdulazeez Taha Ahmed Al-Sheikh Ahmed
Email: abdulazeez.ahmed@uomosul.edu.iq

8. Course Objectives

Course Objectives	**• The student learns the basics of the English Language.** **• The student is able to solve all the various problems related to the subject.** **• Developing the student's knowledge about the subject by adding some modern topics**

9. Teaching and Learning Strategies

Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	1	Subject Pronouns	Subjects and their pronouns	Lecture	Quiz
2.	1	Present simple of "**be"**	Affirmative and Negative forms	Lecture	Quiz
3.	1	Present simple of "be"	Questions and Short answers	Lecture	Quiz
4.	1	Definite and Indefinite Articles	**a**/**an** and **the**	Lecture	Quiz
5.	1	Part of Speech	Adjectives	Lecture	Quiz

6.	1	Position of Adjectives: nationality, and color Adjectives	Two positions of Adjectives	Lecture	Quiz
7.	1	Part of Speech	Noun	Lecture	Quiz
8.	1	Plural of Nouns	Adding (s) and (es) to pluralize nouns.	Lecture	Quiz
9.	1	Comprehension	Reading Passage	Lecture	Quiz
10.	1	Comprehension	Reading Passage	Lecture	Quiz
11.	1	Possessive Adjectives	My, our, your, their, his, her, and its.	Lecture	Quiz
12.	1	Present simple	Affirmative and Negative	Lecture	Quiz
13.	1	Present simple	Question and Answer	Lecture	Quiz
14.	1	Demonstrative	This, these, that, and those	Lecture	Quiz
15.	1	Possessive ('s/s')	Children's book boys' book	Lecture	Quiz
16.	1	Possessive pronouns	Mine, yours, his, hers, ours, yours, theirs.	Lecture	Quiz
17.	1	Countable nouns	Apple – Apples	Lecture	Quiz
18.	1	Uncountable nouns	Milk – milk	Lecture	Quiz
19.	1	Comprehension	Reading Passage	Lecture	Quiz
20.	1	Comprehension	Reading Passage	Lecture	Quiz
21.	1	Present simple of **have got**	Has got Have got	Lecture	Quiz
22.	1	Present continuous	Affirmative and negative	Lecture	Quiz
23.	1	Present continuous	Questions and answers	Lecture	Quiz
24.	1	Object pronouns	Me, you, him, her, it, us, them.	Lecture	Quiz
25.	1	There is/ there are.	Questions and short answers	Lecture	Quiz
26.	1	Past simple	Affirmative and negative	Lecture	Quiz
27.	1	Past simple	Questions and answers	Lecture	Quiz
28.	1	Comprehension	Reading passage	Lecture	Quiz
29.	1	Comprehension	Reading passage	Lecture	Quiz
30.			Final Exam		

1. Course Evaluation

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

2. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Grammar Starter/Grammar One
Main references (sources)	Grammar Starter/Grammar One
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.eltbooks.com/item_spec.ph

	=p?item=307001&cat https://www.eltbooks.com/item_spec.ph =p?item=307002&cat

Name and Signature	Name and of Department or Branch
of Curriculum administrator	Head Signature
Assist. Lect. Abdulazeez Taha Ahmed	Assist. Prof. Dr. Marwan Hafeedh

Course Description Form

University: Mosul College: Education for pure sciences
Department or Branch: Department of Physics

11. Course Name:
HUMAN RIGHTS AND DEMOCRACY
12. Course Code:
EDPH25F108
13. Semester / Year:
2024-2025
14. Description Preparation Date:
1/9/2024
15. Available Attendance Forms:
Class-Electronic
16. Number of Credit Hours (Total) / Number of Units (Total)
1Credit Hours
17. Course administrator's name (mention all, if more than one name)
Name: HOTHAIFA FATHALLAH ALI Email: Hothaifa.Fathallah@uomosul.edu.iq

18. Course Objectives	
Course Objectives	**• the student gets to know basics of human rights and basics of democratic regime** **• crystallizing awareness raising thought areas of human rights and democracy it reflects positively on the social and poltical field** **• Developing student skills and employment every single one or science subject in his studies or his field of work in the future**

19. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

20. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
31.	1	Basics of human rights	The concept of human rights	lecture	Quiz
32.	1	Basics of human rights	The features and characteristics human rights	Lecture	discussion

33.	1	The historical development of an idea human rights	The human rights in eastern civilizations(mesopotamia-nile valley-persain)	Lecture	Quiz
34.	1	The historical development of an idea human rights	The human rights in western civilization(Greek-Roman)	electric	discussion
35.	1	The historical development of an idea human rights	The human rights in middle ages and the beginning of the modern era	Lecture	discussion
36.	1	The historical development of an idea human rights	The human rights in global revolutions(french-english-american-russian)	Lecture	discussion
37.	1	The historical development of an idea human rights	The human rights in the international agreements	Lecture	Quiz
38.	1	The human rights in inforatics era	The digital human rights	Lecture	Quiz
39.	1	The human rights in the heavenly laws	The human rights in the jewish law and the chritian law	Lecture	discussions
40.	1	The human rights in the heavenly laws	The human rights in the Islamic law	Lecture	Quiz
41.	1	The human rights classifications	The individual and collective human rights	Lecture	Oral exams
42.	1	The human rights in exceptional cases	The human rights in times of war and occupation	Lecture	discussions
43.	1	The guarantees of respect and protection of human rights	The protecting human rights at the national level	Lecture	Quiz
44.	1	The guarantees of respect and protection of human rights	The protecting human rights at the regional and international levels	electric	discussions
45.	1	The human rights in Iraq	The human rights in Iraqi constitutions	Lecture	Quiz
46.	1	The basics of the democratic regime	Introducing the concept of democracy	Lecture	discussions
47.	1	The basics of the democratic regime	The emergence of democracy and its historical development	Lecture	Oral exams
48.	1	The basics of the democratic regime	The objectives of the democratic regime	Lecture	Quiz
49.	1	The basics of the democratic regime	The characteristics	electrical	discussions

			of ademocratic regime		
50.	1	Forms and images of the democratic regime	The direct democracy	Lecture	Quiz
51.	1	Forms and images of the democratic regime	The semi direct democracy	Lecture	Quiz
52.	1	Forms and images of the democratic regime	The indirect democracy	Lecture	Quiz
53.	1	The democracy and the Islamic regime	The disperse between the democracy and the shura	Lecture	discussions
54.	1	The electoral system as an application of democracy	The concept of election and distinguish it from other concepts	Lecture	discussions
55.	1	The electoral system as an application of democracy	The election methods	Lecture	Quiz
56.	1	The electoral system as an application of democracy	The methods of rigging elections	Lecture	reports
57.	1	The Forms of governments and contemporary governance systems	The Parliamentary system	Lecture	Quiz
58.	1	The Forms of governments and contemporary governance systems	The Presidential system	Lecture	Quiz
59.	1	The Forms of governments and contemporary governance systems	The council system	Lecture	Oral exams
60.	1		Final Exam		

3. 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

4. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Not found book systematic
Main references (sources)	Hameed Hanon ,human rights
Recommended books and references (scientific journals, reports…)	1-Mohammed Aabid Aljaberey,human rights in Arabic thought 2-Hasan Shafeeq Alanie,the regimes political and constitutional comparison
Electronic References, Websites	https://www.ohchr.org//

Name and Signature
of Curriculum administrator
HOTHAIFA FATHALLAH ALI Younus

Name and Signature
of Department or Branch Head
Assist. Prof. Dr. Marwan Hafeed


جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Course Description Form

University: Mosul College: college of education for pure sciences

Department or Branch: physics

21. course Name:
Optics
22. Course Code:
EDPH25F202
23. Semester / Year:
2024-2025
24. Description Preparation Date:
1/9/2024
25.Available Attendance Forms:
Class
26.Number of Credit Hours (Total) / Number of Units (Total)
3 Credit Hours
27. Course administrator's name (mention all, if more than one name)
Name: Ivan Bahnam Karomi Email: ivanbahnam@uomosul.edu.iq
28. Course Objectives

Course Objectives	**• The student learns the basics of geometric and wave optics** **• The student is able to solve all the various problems related to the subject** **• Developing the student's knowledge about the subject by adding some modern topics**

29. Teaching and Learning Strategies

Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

30. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
61	3	Concept of a ray of light, laws of reflection and refraction, graphical construction for reflection, principle of Reversibilit	**Light rays**	Lecture	Quiz

62.	3	Fermat's principle, problems.	**Light rays**	Lecture	Quiz
63	3	Wave front and ray, Huygen's principle, Index of refraction, the electromagnetic spectrum, problems.	Propagation of light	Lecture	Quiz
64	2	Focal points and Focal lengths, Image formation, virtual Images, conjugate points and planes, signs convention	**Spherical surfaces**	Lecture	Quiz
65	2	The parallel-ray method, oblique-ray method, Magnification Reduced vergence, Gaussian Formula. Problems.	**Spherical surfaces**	Lecture	Quiz
66	3	Focal points and lengths, Formation of the Image, Conjugate points and planes	**Thin lenses**	Lecture	Quiz
67	3	The parallel- ray and oblique-ray methods, lens Formula, Lateral Magnification, Virtual Image.	**Thin lenses**	Lecture	Quiz
68	3	Lens Maker's equation The power of a thin lens, Derivation of the lens Maker's formula.	**Thin lenses**	Lecture	Quiz
69	3	Two Spherical Surfaces, Focal points and principal points	**Thick lenses**	Lecture	Quiz
70	3	General Thick-lens Formulas, problem.	**Thick lenses**	Lecture	Quiz
71	3	Focal point and length, Graphical constructions, Mirror formulas, power of Mirrors	**Spherical mirrors**	Lecture	Quiz
72	3	Thick mirrors, Thick mirrors Formulas, other Thick mirrors, problems.	**Spherical mirrors**	Lecture	Quiz
73	3	Spherical aberration of a lens	**Aberration**	Lecture	Quiz
74	3	spherical aberration of mirrors.	**Aberration**	Lecture	Quiz
75	3	Coma, Astigmatism, curvature of Field, Kind of aberration	**Aberration**	Lecture	Quiz
76	3	The eye, Defect of vision, spectacle, The simple microscope	**Optical instruments**	Lecture	Quiz
77	3	magnifier, Refracting telescope, Normal magnification	**Optical instruments**	Lecture	Quiz
78	3	The reflecting telescope, camera, problems.	**Optical instruments**	Lecture	Quiz
79	3	Young's EXP. Interference Fringes from double source, Intensity distribution,	**Interference**	Lecture	Quiz
80	3	Fresnel's Biprism, Division of Amplitude, Michelson's Interferometer	**Interference**	Lecture	Quiz
81	3	circular Fringes, visibility of	**Interference**	Lecture	Quiz

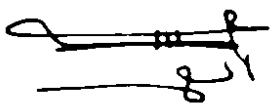
		Fringes, Twyman and Green Interferometer			
82	3	Fringes of equal Inclination, Newton's Rings, Problem.	**Interference**	Lecture	Quiz
83	2	Fresnel and Fraunhofer diffraction, Diffraction by a single slit, Rectangular aperture,	**Diffraction**	Lecture	Quiz
84	3	chromatic Resolving power of a Telescope, Resolving power of Microscope	**Diffraction**	Lecture	Quiz
85	3	The double slit, Equation Intensity, comparison of single-slit and double-slit patterns	**Diffraction**	Lecture	Quiz
86	3	Distinction between Interference and Diffraction, problems.	**Diffraction**	Lecture	Quiz
87	2	Polarization by Reflection, Polarization angle and Brewsters law	**Polarization**	Lecture	Quiz
88	3	polarization by a pile of plates, Malus law, polarization by Dichroic crystals	**Polarization**	Lecture	Quiz
89	3	polarization by double refraction, polarization by scattering.	**Polarization**	Lecture	Quiz
90	2		Final Exam		

31. 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.

32. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Geometrical Optics: Lectures in Optics, Volume 2 By: George Asimellis
Main references (sources)	Modern Geometrical Optics By:Richard Ditteon / Module lectures
Recommended books and references (scientific journals, reports…)	Optics express, Applied optics.
Electronic References, Websites	https://ocw.mit.edu/courses/2-71-optics-spring-2009/resources/lecture-1-course-organization-introduction-to-optics/
Percentage of Curriculum update	15% 10%



Dr. Ivan Bahnam Karomi

Dr. Marwan Hafeedh Younus

Name and Signature

of Department or Branch Head

Course Description Form

University: Mosul, College: Education for Pure Science, Department or Branch: Physics

1. Course Name and Stage:
Advanced Electricity and Magnetism/Second
2. Course Code:
3. Semester / Year:
First and second / 2024-2025
4. Description Preparation Date:
2024-9-1
5. Available Attendance Forms:
Physical attendance, and if that is not possible, attendance will be electronic.
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours (theoretical)
7. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Asst. Prof. Dr. Yasir Hussein Mohammed Email: yasir.h.m@uomosul.edu.iq

8. Course Objectives	
Subject Objectives	**1. To study magnetic fields caused by electric current.** **2. To learn about some electrical devices and their operating principles.** **3. To understand induced voltage and the methods of generating it.** **4. To study self-induction.** **5. To understand alternating current circuits and electromagnetic waves.** **6. To learn about Maxwell's equations.**

9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Magnetic Fields	Magnetic Fields	Providing	Direct questions to all

				printed lectures from modern, diverse sources, rich with examples.	students to see how engaged they are, and to get everyone to pay attention.
2	2	Magnetic Flux	Magnetic Flux	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
3	2	Motion of a Charged Particle in a Magnetic Field	Motion of a Charged Particle in a Magnetic Field	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
4	2	Biot's and Savart's Laws	Biot's and Savart's Laws	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
5	2	Magnetic Force Between Two Parallel Conductors	Magnetic Force Between Two Parallel Conductors	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
6	2	Ampere's Law	Ampere's Law	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
7	2	Magnetic Field of a Solenoid	Magnetic Field of a Solenoid	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
8	2	Hall Effect	Hall Effect	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
9	2	Magnetic Torque on a Current-Carrying Loop	Magnetic Torque on a Current-Carrying Loop	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
10	2	Electric Motors	Electric Motors	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
11	2	Electrical Machines	Electrical Machines	Providing printed lectures from modern, diverse sources, rich with	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.

				examples.	
12	2	Induced Electromotive Force	Induced Electromotive Force	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
13	2	Faraday's Law of Induction	Faraday's Law of Induction	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
14	2	Kinetic Electromotive Force	Kinetic Electromotive Force	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
15	2	exam	exam	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
16	2	Generators and Motors	Generators and Motors	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
17	2	Sinusoidal waveform or Sine wave in an AC circuit	Sinusoidal waveform or Sine wave in an AC circuit	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
18	2	Self-Inductance	Self-Inductance	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
19	2	Energy Stored In Magnetic Field	Energy Stored In Magnetic Field	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
20	2	Motors and Back EMF	Motors and Back EMF	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
21	2	RL Circuits	RL Circuits	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
25	2	Mutual Inductance	Mutual Inductance	Providing printed lectures from modern,	Direct questions to all students to see how engaged they are, and

				diverse sources, rich with examples.	to get everyone to pay attention.
24	2	Transformer	Transformer	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
25	2	Eddy Current	Eddy Current	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
25	2	Alternating Current Circuits and Electromagnetic Waves	Alternating Current Circuits and Electromagnetic Waves	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
26	2	Kirchhoff's Current Law	Kirchhoff's Current Law	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
27	2	Kirchhoff's Voltage Law	Kirchhoff's Voltage Law	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
28	2	Introduction to Electromagnetic Waves	Introduction to Electromagnetic Waves	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
29	2	Maxwell's Equations	Maxwell's Equations	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.
30	2	exam	exam	Providing printed lectures from modern, diverse sources, rich with examples.	Direct questions to all students to see how engaged they are, and to get everyone to pay attention.

11. Course Evaluation and Marks

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)	• Serway, R. A., Faughn, J. S., and Vuille, (2006). College Physics: Thomsc Brooks/Cole.

Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	1) MultiSim 11 2) https://www.electronics-tutorials.ws/
Percentage of Curriculum update	20 %

Name and Signature
of Curriculum Administrat
Dr. Yasir Hussein Mohamm

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Name and Signature

of Department or Branch Head

Course Description Form

University: Mosul, College: Education for Pure Science, Department or Branch: Physics

33. Course Name:
English Language
34. Course Code:
EDPH25F210
35. Semester / Year:
2024-2025
36. Description Preparation Date:
1/9/2024
37. Available Attendance Forms:
Class
38. Number of Credit Hours (Total) / Number of Units (Total)
1Credit Hour
39. Course administrator's name (mention all, if more than one name)
Name: Abdulazeez Taha Ahmed Al-Sheikh Ahmed Email: abdulazeez.ahmed@uomosul.edu.iq
40. Course Objectives

Course Objectives	**• The student learns the basics of English Language.** **• The student is able to solve all the vari problems related to the subject.** **• Developing the student's knowledge ab the subject by adding some modern topi**
41. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments quiz

42. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
91.	1	Subject Pronouns	Subjects and their pronouns	Lecture	Quiz
92.	1	Present simple of "**be**"	Affirmative and	Lecture	Quiz

			Negative forms		
93.	1	Present simple of "be"	Questions and Short answers	Lecture	Quiz
94.	1	Definite and Indefinite Articles	**a**/**an** and **the**	Lecture	Quiz
95.	1	Part of Speech	Adjectives	Lecture	Quiz
96.	1	Position of Adjectives: nationality, and color Adjectives	Two positions of Adjectives	Lecture	Quiz
97.	1	Part of Speech	Noun	Lecture	Quiz
98.	1	Plural of Nouns	Adding (s) and (es) to pluralize nouns.	Lecture	Quiz
99.	1	Comprehension	Reading Passage	Lecture	Quiz
100.	1	Comprehension	Reading Passage	Lecture	Quiz
101.	1	Wh-questions	What, who, why, when, where.	Lecture	Quiz
102.	1	Prepositions of Time	In – On – At.	Lecture	Quiz
103.	1	Imperatives	Affirmative and Negative	Lecture	Quiz
104.	1	Go + ing	Talking about Sports and free time activities	Lecture	Quiz
105.	1	There is/ there are.	Questions and short answers	Lecture	Quiz
106.	1	Some and Any with plural nouns	Affirmative and negative	Lecture	Quiz
107.	1	Preposition of Place	In, On, Next to, Between,	Lecture	Quiz
108.	1	Preposition of Place	Behind, Under, In from of,	Lecture	Quiz
109.	1	Can for Ability	Affirmative and Negative	Lecture	Quiz
110.	1	Use of (Let us/ Let's)	Let's learn English	Lecture	Quiz
111.	1	Present continuous (ing)	Affirmative and Negative	Lecture	Quiz
112.	1	Present continuous (ing)	Questions and answers	Lecture	Quiz
113.	1	Object pronouns	Me, you, him, her, it, us, them.	Lecture	Quiz
114.	1	Like, Love, Hate + ing form	I like reading	Lecture	Quiz
115.	1	Use one/ones/ for substitutions	Using them instead of repeating countable nouns	Lecture	Quiz
116.	1	Would like + noun	Polite form of "want"	Lecture	Quiz
117.	1	Comprehension	Reading passage	Lecture	Quiz
118.	1	Comprehension	Reading passage	Lecture	Quiz
119.				Lecture	Quiz
120.			Final Exam		

5. Course Evaluation

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

6. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Grammar One

Main references (sources)	Grammar One
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.eltbooks.com/item_=spec.php?item=307002&cat

Name and Signature of Curriculum administrator

Assist. Lect. Abdulazeez Taha Ahmed Younus

Name and Signature of Department or Branch Head

Assist. Prof. Dr. Marwan Hafeed

Course Description Form

University: Mosul, College: Education for Pure Science, Department or Branch: Physics

43. Course Name and Stage:
Physics of sound and wave motion / B.Sc / Second class
44. Course Code:
EDPH25F203
45. Semester / Year:
2024−2025
46. Description Preparation Date:
1/9/2024
47. Available Attendance Forms:
Class
48. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
49. Course administrator's name (mention all, if more than one name) and Scientific title
Name: dr. Muhsin Waleed Mohammed Email:physicsmuhsin8@uomosul.edu.iq
50. Course Objectives

Subject Objectives	**• The student learns the basics of Sound and wave motion.** **• The student is able to solve all the Various problems related to the subject.** **• Developing the student's knowledge about the subject adding some modern topics.**

51. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, tests, Recorded video lectures, dialogue, asking questions, and solving examples and exercises.

52. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

121.	2	Acquire related to knowledge of the basics of wave motion	Basic concepts in wave motion ,Means of energy transfer, what is wave motion, types of wave motion	Lecture	Quiz
122.	2	Acquire related knowledge: The properties of wave motion and its models	Basic properties of mechanical wave transmission, models of mechanical wave motion	Lecture	Quiz
123.	2	Acquire related knowledge : the nature of sound And the conditions for its occurrence and transmission	Sound waves, types of mechanical wave motion, features of mechanical wave motion, wave speed and particle speed	Lecture	Quiz
124.	2	Acquire related knowledge to: Representing waves with mathematical equations.	Mathematical representation of wave motion, general equation of wave motion.	Lecture	Quiz
125.	2	Acquire related knowledge with free vibration	Free vibration theory	Lecture	Quiz
126.	2	Acquire related knowledge : simple harmonic motion.	Simple harmonic motion	Lecture	Quiz
127.	2	Acquire related knowledge Applications of simple harmonic motion.	Applications to simple harmonic motion Pendulum - pulsation - movement of fluid in a tube	Lecture	Quiz
128.	2	Acquire related knowledge Applications of simple harmonic motion.	Applications to simple harmonic motion Floating body - torsion pendulum - physical pendulum	Lecture	Quiz
129.	2	composition of two simple harmonic motions	Composition of simple harmonic motions (composition rule, composition of two simple harmonic motions in the same direction)	Lecture	Quiz
130.	2	Lissajous figures	Lissajous shapes, the composition of two simple	Lecture	Quiz

			harmonic movements in two perpendicular directions with the same frequency		
131.	2	Method of graphical representation of orthogonal harmonic motions.	Graphically composing two simple perpendicular harmonic motions with the same frequency.	Lecture	Quiz
132.	2	How to represent harmonic motions with a rotating vector	Representing the harmonic motion with the rotating vector, composing two simple perpendicular harmonic motions whose frequency ratio is 2 to 1 - the phenomenon of strikes	Lecture	Quiz
133.	2	Damping vibration	The force that causes vibrations to decay	Lecture	Quiz
134.	2	Decaying harmonic motion	The equation of decaying harmonic motion, solving the equation of decaying harmonic motion	Lecture	Quiz
135.	2	Cases of decaying harmonic motion	state of motion without decay, The state of incomplete motion decay.	Lecture	Quiz
136.	2	Cases of decaying harmonic motion	Critical state of motion. The state of decaying harmonic motion, practical examples of states of decaying harmonic motion, the decay scale.	Lecture	Quiz
137.	2	Acquire related knowledge : Forced vibration and the resonance	Forced vibration Forced oscillations	Lecture	Quiz
138.	2	Acquire related knowledge : Forced motion equation	Study the equation of motion for a decaying vibrator under the influence of a periodic external force	Lecture	Quiz
139.	2	Acquire related knowledge : Forced motion equation	Solve the equation of forced motion.	Lecture	Quiz
140.	2	Acquire related knowledge : The	Resonance, the amplitude of vibration at resonance, the relationship between the	Lecture	Quiz

		phenomenon of resonance And ringing applications	resonant frequency and the natural frequencies of the vibrator, practical examples of resonance.		
141.	2	Acquire related knowledge : Transverse waves	Transverse waves Properties of transverse wave motion, speed of the transverse wave in a stretched string	Lecture	Quiz
142.	2	Acquire related knowledge : Mathematical representation of wave, phase and phase difference	Mathematical representation of the wave, its phase and phase difference, the differential equation of the simple harmonic wave, standing waves, the theory of vibration of a stretched string of finite length.	Lecture	Quiz
143.	2	Acquire related knowledge : sound waves	Longitudinal waves (sound waves) The longitudinal wave in a metal rod, the longitudinal wave in a column of fluid.	Lecture	Quiz
144.	2	Acquire related knowledge : Effects on the speed of transmission of sound waves	Longitudinal wave speed in a gas, Laplace correction, effect of temperature on the speed of sound	Lecture	Quiz
145.	2	Acquire related knowledge : Effects on the speed of transmission of sound waves.	The effect of humidity on the speed of sound, pressure changes in the sound wave.	Lecture	Quiz
146.	2	Acquire related knowledge : Longitudinal standing waves in resonance tubes.	The energy density of the sound wave, the standing waves in the resonance tubes, are closed at both ends, open at both ends, open at one end and closed at the other end.	Lecture	Quiz
27	2	Acquire related knowledge : Some phenomena related to the propagation of sound.	Doppler phenomenon, sound reflection phenomenon, sound diffraction phenomenon, medical applications.	Lecture	Quiz
28	2	Ultrasound waves	Ultrasound , The mechanism of the generation of ultrasound waves, the components of	Lecture	Quiz

			the ultrasound device, the effect of ultrasound waves on living cells, the behavior of ultrasound waves in the human body.		
29	2	Ultrasound applications	Some applications of ultrasound.	Lecture	Quiz
30			Final Exam		

53. Course Evaluation and Marks

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

54. Learning and Teaching Resources

Required textbooks (curricular books any)	Physics of Sound and Wave Motion, Amjad Abdul Razzaq Gurgiya, University of Mosul, Second Edition, 2000.
Main references (sources)	THE PHYSICS OF VIBRATIONS AND WAVES, H. J. Pan, Sixth Edition, John Wiley & Sons, 2005.
Recommended books and references (scientific journals, reports…)	Acoustics, Heinrich Kuttruff, Taylor & Francis, 2007. Vibrations and Waves, George C. King, WILEY, 2009.
Electronic References, Websites	https://ocw.mit.edu/courses/8-03sc-physics-iii-vibrations-and-waves-fall-2016/ https://cod.pressbooks.pub/physics1100/chapter/vibrations-and-waves/
Percentage of Curriculum update	90%

Name and Signature

of Curriculum Administrator

dr. Muhsin Waleed Mohammed

Name and Signature

of Department or Branch Head

Dr. Marwan Hafeedh Younus

ion Form

University: Mosul College: Education for Pure Science Department or Branch: Physics

55. Course Name and Stage:

Astronomy for 2nd Year stage
56. Course Code:
EDPH25F204
57. Semester /
First and second Year:2024/2025
58. Description Preparation Date:
1/9/2024
59.Available Attendance Forms:
Class
60.Number of Credit Hours (Total) / Number of Units (Total)
2 Units/ 2 Hours per week
61. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Lecturer Dr. Younis Thanoon Younis Email: younisthannon@uomosul.edu.iq
62. Course Objectives

Subject Objectives	**The student learns the basics of Astronomy** **• The student is able to solve all the various problems related to the subject** **• Developing the student's knowledge about the subject by adding some modern topics**.....
63. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

64. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
147.	2	Explaining phenomenon of Astronomy and its branches	Fundamentals of Astronomy and its branches	Lecture	Quiz
148.	2	Describing Sphere Geometry	Sphere geometry	Lecture	Quiz
149.	2	Study spherical triangulation	Spherical triangulation	Lecture	Quiz
150.	2	Describing celestial sphere and parts	celestial sphere and its parts	Lecture	Quiz
151.	2	Explaining celestial spheres coordinate systems	Explaining celestial spheres coordinate systems	Lecture	Quiz
152.	2	Describing Horizon system of coordinates	Horizon system of coordinates	Lecture	Quiz
153.	2	Describing Equatorial system of coordinates	Converting horizon system to equatorial and vice versa	Lecture	Quiz
154.	2	Explaining Converting horizon	Converting horizon	Lecture	Quiz

		system to equatorial and vice versa	system to equatorial and vice versa		
155.	2	Explaining Constellation , Ataxia and nutation	Constellation , Ataxia and nutation of Earth rotation axis	Lecture	Quiz
156.	2	Explanation of Astronomical measurements and conversions	Astronomical measurements and conversions	Lecture	Quiz
157.	2	Study physical properties of the sun	Physical properties of the sun	Lecture	Quiz
158.	2	Explanation of solar distant measurement (Astronical unit)	solar distant measurement (Astronical unit)	Lecture	Quiz
159.	2	Explanation solar mass evaluation	Solar mass	Lecture	Quiz
160.	2	Solar diameter, gravity and escape velocity measurements	Solar diameter, gravity and escape velocity measurements	Lecture	Quiz
161.	2	Explanation solar constant, Luminosity and spots	solar constant, Luminosity and spots	Lecture	Quiz
162.	2	Explanation measurements the physical properties of the Luna	physical properties of the Luna	Lecture	Quiz
163.	2	Explanation the periodic times of the moon	the periodic times of the moon	Lecture	Quiz
164.	2	Description the Moon phases, Luna eclipse and solar eclipse	the Moon phases, Luna eclipse and solar eclipse	Lecture	Quiz
165.	2	Explanation solar systems and solar planets	solar systems and solar planets	Lecture	Quiz
166.	2	Explanation of Bod rule, Asteroids , Meteors and comets	Bod rule, Asteroids , Meteors and comets state	Lecture	Quiz
167.	2	Explanation stellar magnitudes	stellar magnitudes	Lecture	Quiz
168.	2	Explanation stellar magnitudes as a function of distance factor, luminosity and temperature	Stellar magnitudes as a function of distance factor, luminosity and temperature	Lecture	Quiz
169.	2	Explanation of Absolute and bolometric stellar magnitudes	Absolute and bolometric stellar magnitudes	Lecture	Quiz
170.	2	Explanation of stellar velocities	stellar velocities	Lecture	Quiz
171.	2	Explanation of Spectral mattresses and mass-luminosity of stars	Spectral mattresses and mass-luminosity of stars	Lecture	Quiz
172.	2	Exlanation Hertzsprung–Russell diagram	Hertzsprung–Russell diagram	Lecture	Quiz
173.	2	Explanation of the life cycle of stars	the life cycle of stars	Lecture	Quiz
174.	2	Explanation of Binary stars and their characteristics	Binary stars and their characteristics	Lecture	Quiz
175.	2	Explanation Stellar clusters	Stellar clusters	Lecture	Quiz

176.			Final Exam		

65. Course Evaluation and Marks

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

66. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Astronomy Lecture notes** by Dr. Saad Mahmood Younis
Main references (sources)	Golden Book of Space exploration, 2nd edition, NY
Recommended books and references (scientific journals, reports…)	Astronomy by Hobokinm 7th edition, John wiley and sons
Electronic References, Websites	https://www.astronomy.com
Percentage of Curriculum update	60%

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Name and Signature
of Curriculum Administrator
Dr. Younis Thanoon Younis

Name and Signature
of Department or Branch Head
Dr. Marwan Hafeedh Younus

Course Description Form

University: Mosul College: Education for Pure Science Department or Branch: Physics

67. Course Name:
Optics Lab
68. Course Code:
EDPH25F202
69. Semester / Year:
2024-2025
70. Description Preparation Date:
1/9/2024
71. Available Attendance Forms:
Lab
72. Number of Credit Hours (Total) / Number of Units (Total)
3 Credit Hours Total hours (69)
73. Course administrator's name (mention all, if more than one name)
Name: Zeyad Tareq Ahmed Ragheed M. Ibrahim Odai Falah Ameen Ivan Bahnam Karomi Email: ivanbahnam@uomosul.edu.iq Asmaa Zaki Khalil
74. Course Objectives

Course Objectives	• **Know how to deal with different optical components** • **Deal with lenses, mirrors, telescopes, filters and other optics tools and apparatus.** • **Know how to deal with different light sources** • **Knowledge of the use of interference and diffraction phenomena in measuring serval physical quantities**

75. Teaching and Learning Strategies	
Strategy	Experimental work in lab and dealing with the equipment and various optical tools.

76. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
17	3	Health and safety	Instructions	Experimentally	----
178	3	Health and safety	Instructions	Experimentally	-----
17	3	Measure the focal length of	Focal length of a	Experimentally	Report with

		a positive lens	convex lens using the displacement method		discussion
18	2	Measure the power of a negative lens	Determine the power of a negative lens using a positive lens	Experimentally	Report with discussion
18	2	Determine the radius of curvature of the lens surfaces and calculate the its refractive index	Use the Boys method to measure the radii of the surface of a biconvex lens as well as calculate the refractive index of the lens material	Experimentally	Report with discussion
18	3	Measurement of the refractive index of a liquid	Determine the refractive index of a liquid using a convex lens and a plane mirror	Experimentally	Report with discussion
18	3	Measure the magnification of the microscope	Study the magnification power (M) of a compound microscope	Experimentally	Report with discussion
18	3	Review	Reviewing the previous experiments	Experimentally	-----
18	3	First set test	Experimental test	Experimentally	Test
18	3	Calculating the radius of curvature of the eye lens	Study of the relationship of the resolving power (R) of the eye or telescope as a function of the wavelength of light	Experimentally	Report with discussion
18	3	Determine the wavelengths of invisible rays in the mercury light spectrum	Finding the wavelengths of invisible rays in the spectrum of mercury using a Roland reflective concave diffraction grating	Experimentally	Report with discussion
18	3	Investigating Malus' law and studying different types of polarization	Investigating Malus' law and studying different types of polarization	Experimentally	Report with discussion
18	3	Measure the radii of small particles	Determining the radii of small particles using the phenomenon of optical interference	Experimentally	Report with discussion
19	3	Measure the wavelength of single-wavelength light	Distribution of optical density in the Fraunhofer diffraction model resulting from a narrow slit.	Experimentally	Report with discussion
19	3	Review	Reviewing the previous experiments	Experimentally	-----
19	3	Second set test	Experimental test	Experimentally	Test
19	3	Determination of monochromatic wavelength (sodium light)	Determine the wavelength of sodium light using Newton's rings method	Experimentally	Report with discussion
19	3	Measure the thickness of a thin plate	Measuring the thickness of a thin plate using the phenomenon of interference in an air layer of variable	Experimentally	Report with discussion

			thickness		
19	3	Determine the wavelength of a monochromatic source (sodium light) using a light-permeable diffraction grating	Determine the wavelength of a monochromatic source (sodium light)	Experimentally	Report with discussion
19	3	Determine the wavelength of helium-neon laser light by light interference	Determine the wavelength of helium-neon laser light	Experimentally	Report with discussion
19	3	Study of the properties of a helium-neon laser beam	Study of the properties of a helium-neon laser beam	Experimentally	Report with discussion
19	3	Review	Reviewing the previous experiments	Experimentally	-----
19	2	Third set test	Experimental test	Experimentally	Test
20					

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)	Geometrical Optics: Lectures in Optics, Volume 2 By: George Asimellis
Main references (sources)	Modern Geometrical Optics By:Richard Ditteon / Module lectures
Recommended books and references (scientific journals, reports…)	Optics express, Applied optics.
Electronic References, Websites	https://ocw.mit.edu/courses/2-71-optics-spring-2009/resources/lecture-1-course-organization-introduction-to-optics/
Percentage of Curriculum update	10%

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Dr. Ivan Bahnam Karomi

Name and Signature

of Curriculum Administrator

Dr. Marwan Hafeedh Younus

Name and Signature

of Department or Branch Head

University: AL – Mosul College: AL- Education for Pure science
Department or Branch : Physics

77. Course Name and Stage:
Advance Electricity and Magnetism laboratory, second stage
78. Course Code:
EDPH25F201
79. Semester / Year:
2024−2025
80. Description Preparation Date:
1/9/2024
81.Available Attendance Forms:
Class
82.Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
83. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Mohammed Ibrahim Ismael Email: mohammedalsalihi@uomosul.edu.iq
84. Course Objectives

Subject Objectives	• The student learns the basics of quantum mechanical theory • The student is able to solve all the various problems related to the subject • Developing the student's knowledge about **the** subject by adding some modern topics

85. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

86. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	3	Enabling students to read an unknown resistance using the time method, Ohm's law, comparison, and the direct method.	How to read an unknown resistance and measure it practically	Conduct a practical experiment in the laboratory	Quiz
2.	3	Learn how to connect elements in series and parallel.	Implementing the laws of connecting elements	Lecture	Quiz

			(resistors, capacitors, coils) in series and parallel		
3.	3	Knowing the conversion and arrangement of resistors from delta form to star form and vice versa	Arrange the resistors in delta and star form	Lecture	Quiz
4.	3	Kirchhoff's first law for current and the second law for voltage	Practical implementation of Kirchhoff's laws for DC circuits	Lecture	Quiz
5.	3	Realizing the superposition theory practically	Superposition theory	Lecture	Quiz
6.	3	Review the first course with practical experiments	Review		
7.	3		Testing the first course with practical experiments		Quiz
8.	3	Learn about using O.R.C and making some measurements	Cathode ray oscilloscope O.R.C	Lecture	Quiz
9.	3	Students learned how to mix two sine waves and take advantage of the phas model to measure the resistance, capacitance, or inductance of a coil	Lissajous figures	Lecture	Quiz
10.	3	Calculating the inductance of the L co Studying the change in inductance wit frequency	Inductive will	Lecture	Quiz
11.	3	Calculating capacitance amplitude and studying the change of capacitive impulse with frequency	The capacity will	Lecture	Quiz
12.	3	Calculate resonant frequency bandwidth	Series ringing	Lecture	Quiz
13.	3	Calculate resonant frequency and bandwidth	Parallel ringing	Lecture	Quiz
14.	3	Review	Review the second course with practica experiments	Lecture	Quiz
15.	3		Testing the first cou with practical experiments		Quiz

87. Course Evaluation and Marks

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

88. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**الكتاب المنهجي باللغة العربية** • **فيزياء الألكترونيات للدكتور صبحي الراوي**

	• مبادىء الألكترونيات مالفينو **الكتاب المنهجي باللغة الإنكليزية:** Electronic devises (Floyed, 200
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	
Percentage of Curriculum update	

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Name and Signature

of Curriculum Administrat

Ass .Lec. Mohammed Ibrahim Ismael

Name and Signature

of Department or Branch Head

Ass.Prof .Dr. Marwan Hafeed Younus

Course Description Form

University: AL – Mosul College: AL- Education for Pure science
Department or Branch: Physics

89. Course Name and Stage:
Advance Electricity and Magnetism laboratory, second stage
90. Course Code:
EDPH25F201
91. Semester / Year:
2024–2025
92. Description Preparation Date:
1/9/2024
93. Available Attendance Forms:
Class
94. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
95. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Zahraa Mohammed Hussein Email: Zahraa.m.hussein@uomosul.edu.iq
96. Course Objectives

Subject Objectives	• The student learns the basics of quantum mechanical theory • The student is able to solve all the various problems related to the subject • Developing the student's knowledge about **the** subject by adding some modern topics

97. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

98. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	3	Enabling students to read an unknown resistance using the time method, Ohm's law, comparison, and the direct method.	How to read an unknown resistance and measure it practically	Conduct a practical experiment in the laboratory	Quiz
2.	3	Learn how to connect elements in series and parallel.	Implementing the laws of	Lecture	Quiz

			connecting elements (resistors, capacitors, coils) in series and parallel		
3.	3	Knowing the conversion and arrangement of resistors from delta form to star form and vice versa	Arrange the resistors in delta and star form	Lecture	Quiz
4.	3	Kirchhoff's first law for current and the second law for voltage	Practical implementation of Kirchhoff's laws for DC circuits	Lecture	Quiz
5.	3	Realizing the superposition theory practically	Superposition theory	Lecture	Quiz
6.	3	Review the first course with practical experiments	Review		
7.	3		Testing the first course with practical experiments		Quiz
8.	3	Learn about using O.R.C and making some measurements	Cathode ray oscilloscope O.R.C	Lecture	Quiz
9.	3	Students learned how to mix two sine waves and take advantage of the phas model to measure the resistance, capacitance, or inductance of a coil	Lissajous figures	Lecture	Quiz
10.	3	Calculating the inductance of the L co Studying the change in inductance wit frequency	Inductive will	Lecture	Quiz
11.	3	Calculating capacitance amplitude and studying the change of capacitive impulse with frequency	The capacity will	Lecture	Quiz
12.	3	Calculate resonant frequency bandwidth	Series ringing	Lecture	Quiz
13.	3	Calculate resonant frequency and bandwidth	Parallel ringing	Lecture	Quiz
14.	3	Review	Review the second course with practica experiments	Lecture	Quiz
15.	3		Testing the first cou with practical experiments		Quiz

99. Course Evaluation and Marks

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

100. Learning and Teaching Resources

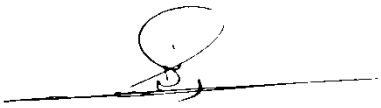
Required textbooks (curricular books, if any)	**الكتاب المنهجي باللغة العربية** • **فيزياء الألكترونيات للدكتور صبحي**

	الراوي • مبادىء الألكترونيات مالفينو الكتاب المنهجي باللغة الإنكليزية: Electronic devises (Floyed, 200
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	
Percentage of Curriculum update	

Name and Signature

Of Curriculum Administrat

Zahraa Mohammed Husse



Name and Signature

Of Department or Branch Head

Marwan Hafidh Younus

University:MosulCollege:EducationforpureScienceDepartmentorBranch :Physics

- **The student learns the basics of semiconconductor theory**
- **The student is able to solve all the various problems related to the subject**
- **Developing the student's knowledge about the subject by adding some modern topics**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Hours	ed g he	Unit or subject name	Learning method
	2	Clas sification of solids	metals, semiconductors and insulators					
	2	Atomic structure and quantum numbers	Bohr's atomic model and Pauli's principle of exclusion					
	2	Basic principles of semiconduct ors	Arrangement of atoms in space					
	2	Unit Cell	Types of unit Cells					
	2	Crystal Systems	Paravisian Lattice					
	2	Crystal structure	Translation operator					
	2	Two-dimensional Lattices	Types of two-dimensional Lattices					
	2	Three-dimensional Lattices	Types of three-dimensional Lattices					
	2	Directions in the crystal	Crystal Planes and Miller Indices					
	2	Reciprocal Lattice	Fourier Transformation					
	2	Thermally activated processes	Thermal activation energy					
	2	Atomic diffusion in solids	Diffusion coefficient					
	2	Crystalline defects	Classification of crystalline defects					
	2	Point defects	Vacancies and impurities					
	2	Point defects in ionic crystals	Schottky defects and Frenkel defects					
	2	Vacanices in metals and semiconduct ors	Concentration of Vacanices in the crystal					
	2	Substitutional impurities as Dopants	Extrinsic semiconductors					

	2	Electron Behavior in crystal	Free Electron		
	2	Power & Momentum Packs	The relationship of energy with momentum in semiconductors		
	2	Semiconductor Energy Gap	Direct and indirect energy gap		
	2	Charge carriers in semiconductors	Electrons and Vacanices		
	2	Effective mass	Effective electron mass		
	2	Density of cases	Density of states in an Energy bands		
	2	Fermi Dirac Statistics	Density of state and probability of distribution		
	2	Ionization of impurity atoms	Electron-hole pair at equilibrium	Lecture	Quiz
	2	Charge carrier mobility	Charge carriers diffusion and drift	Lecture	Quiz
	2	Generation and recombination processes	Radiactive and non-radiative recombination	Lecture	Quiz
	2	Electronic transitions	Direct and indirect transitions	Lecture	Quiz
	2	P – n junction	Characteristics curve of a p–n junction	Lecture	Quiz
			Final Exam		

Dr. Marwan Hafeph Younis

Dr.Fathi Mohammed Jasim

Name and Signature

of Curriculum Administrat

Name and Signature

of Department or Branch Head

University:
Mosul

College: Education college for pure science Department: Physics

101. Course Name and Stage:
Analytical Mechanic
102. Course Code:
EDPH25F302
103. Semester / Year:
2024-2025
104. Description Preparation Date:
1/9/2024
105. Available Attendance Forms:
Class
106. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours+ 1 hour tutorial / 4 Unit
107. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Ali Abbas Mohammed Salih Email: dr.ali1969@uomosul.edu.iq\
108. Course Objectives

Subject Objectives	• **The student learns the basics of analytical mechanical theory.** • **The student is able to solve all the various problems related to the subject.** • **Developing the student's knowledge about the subject by adding some modern topics.** • **Developing the students skills in mathematics and physics.**

109. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

110. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Basic principle of vectors	Defined vectors and representation	Lecture	Quiz
2	2	Basic principle of vectors	Dot and cross product And solve problems	Lecture	Quiz
3	2	Basic principle of vectors	Triple product and solve problems	Lecture	Quiz
4	2	Change of Coordinate System	The Transformation Matrix	Lecture	Quiz
5	2	Derivative and integral of vecto	Derivative and integral of vectors with solve problems and Gradient, Divergence and Curl.	Lecture	Quiz
6	2	Newtonian Mechanics: the rectilinear motic	Position , velocity and acceleration	Lecture	Quiz
7	2	Coordinate syste	Velocity and Acceleration in Plane Polar Coordinates	Lecture	Quiz

8	2	Coordinate syste	Velocity and Acceleration in Cylindrical and Spherical Coordinates	Lecture	Quiz
9	2	Rectilinear Moti of a Particle	Uniform Acceleration Under a Constant Force	Lecture	Quiz
10	2	Rectilinear Moti of a Particle in c dimension	Forces that Depend on Position: The Concepts of Kinetic and Potential Energy Velocity-Dependent Forces: Fluid Resistance	Lecture	Quiz
11	2	Vertical Fall Through a Fluid	No air resistance and with air resistance	Lecture	Quiz
12	2	Linear Restoring Force	Harmonic Motion and Energy Considerations in Harmonic Motion	Lecture	Quiz
13	2	Damped Harmo Motion	Explain Damped Harmonic Motion w solve problems	Lecture	Quiz
14	2	General Motion a Particle in Thr Dimensions	The Potential Energy Function in 3D Motion: The Del Operator	Lecture	Quiz
15	2	Forces of the Separable Type	Projectile Motion	Lecture	Quiz
16	2	General Motion a Particle in 3D	Constrained Motion of a Particle	Lecture	Quiz
17	2	General Motion a Particle in 3D	Moving Reference coordinate systems	Lecture	Quiz
18	2	Gravitation and central Forces	Kepler's Laws of Planetary Motion	Lecture	Quiz
19	2	Gravitation and central Forces	Potential Energy in a Gravitational Field: Gravitational Potential	Lecture	Quiz
20	2	Dynamics of Systems of Particles	Center of Mass and Linear Momentur of a System	Lecture	Quiz
21	2	Dynamics of Systems of Particles	Dynamics of a Particle in a Rotating Coordinate System	Lecture	Quiz
25	2	Dynamics of Systems of Particles	Motion of Two Interacting Bodies: The Reduced Mass	Lecture	Quiz
24	2	Mechanics of Ri Bodies	Center of Mass and Rotation of a Rigid Body about a Fixed Axis	Lecture	Quiz
25	2	Mechanics of Ri Bodies	Calculation of the Moment of Inertia ar Solving Problems	Lecture	Quiz
25	2	Introduction to Lagrangian mechanics	Lagrangian Mechanics	Lecture	Quiz
26	2	Lagrangian Mechanics	Generalized Coordinates	Lecture	Quiz
27	2	Lagrangian Mechanics	Generalized forces for conservative systems	Lecture	Quiz
28	2	Lagrangian Mechanics	Solve problems	Lecture	Quiz

111. Course Evaluation and Marks

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 .

112. Learning and Teaching Resources

Required textbooks (curricular boo if any)	Analytical Mechanic
Main references (sources)	Basic Analytical Mechanic
Recommended books and	* Analytical Mechanic 7th edition by Fowles and

references (scientific journals, reports...)	Cassiday. * AN INTRODUCTION TO MECHANICS, by Daniel Kleppner and Robert Kolenkow,2014 * الميكانيك التحليلي ترجمة الدكتور طالب ناهي الخفاجي * سلسلة ملخصات شوم * متابعة الدروس النظرية عبر قناة خاصة باليوتيوب والتي يتم من خلالها شرح تفصيلي للمقرر
Electronic References, Websites	https://nicadd.niu.edu/~jahreda/phys300/phys300%20Chapter%201%20and%20intro.pdf https://www.youtube.com/channel/UCxieMwKNtR8XL-waDHVLbGg
Percentage of Curriculum update	5%

Name and Signature

of Curriculum Administrator

Dr. Ali Abbas Mohammed Salih

Name and Signature

of Department or Branch Head

Dr. Marwan Hafeez Younis Ali

Course Description Form

University: Mosul College: Education college for pure science Department: Physics

113. Course Name and Stage:	
Analytical Mechanic	
114. Course Code:	
EDPH25F302	
115. Semester / Year:	
2024-2025	
116. Description Preparation Date:	
1/9/2024	
117. Available Attendance Forms:	
Class	
118. Number of Credit Hours (Total) / Number of Units (Total)	
2 Credit Hours+ 1 hour tutorial / 4 Unit	
119. Course administrator's name (mention all, if more than one name) and Scientific title	
Name: Ali Abbas Mohammed Salih Email: dr.ali1969@uomosul.edu.iq\	
120. Course Objectives	
Subject Objectives	• **The student learns the basics of analytical mechanical theory.** • **The student is able to solve all the various problems related to the subject.** • **Developing the student's knowledge about the subject by adding some modern topics.** • **Developing the students skills in mathematics and physics.**
121. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

122. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Basic principle of vectors	Defined vectors and representation	Lecture	Quiz
2	2	Basic principle of vectors	Dot and cross product And solve problems	Lecture	Quiz
3	2	Basic principle of vectors	Triple product and solve problems	Lecture	Quiz
4	2	Change of Coordinate System	The Transformation Matrix	Lecture	Quiz
5	2	Derivative and integral of vecto	Derivative and integral of vectors with solve problems and Gradient, Divergence and Curl.	Lecture	Quiz
6	2	Newtonian	Position , velocity and acceleration	Lecture	Quiz

		Mechanics: the rectilinear motic			
7	2	Coordinate syste	Velocity and Acceleration in Plane Polar Coordinates	Lecture	Quiz
8	2	Coordinate syste	Velocity and Acceleration in Cylindrical and Spherical Coordinates	Lecture	Quiz
9	2	Rectilinear Moti of a Particle	Uniform Acceleration Under a Constant Force	Lecture	Quiz
10	2	Rectilinear Moti of a Particle in c dimension	Forces that Depend on Position: The Concepts of Kinetic and Potential Energy Velocity-Dependent Forces: Fluid Resistance	Lecture	Quiz
11	2	Vertical Fall Through a Fluid	No air resistance and with air resistance	Lecture	Quiz
12	2	Linear Restoring Force	Harmonic Motion and Energy Considerations in Harmonic Motion	Lecture	Quiz
13	2	Damped Harmo Motion	Explain Damped Harmonic Motion w solve problems	Lecture	Quiz
14	2	General Motion a Particle in Thr Dimensions	The Potential Energy Function in 3D Motion: The Del Operator	Lecture	Quiz
15	2	Forces of the Separable Type	Projectile Motion	Lecture	Quiz
16	2	General Motion a Particle in 3D	Constrained Motion of a Particle	Lecture	Quiz
17	2	General Motion a Particle in 3D	Moving Reference coordinate systems	Lecture	Quiz
18	2	Gravitation and central Forces	Kepler's Laws of Planetary Motion	Lecture	Quiz
19	2	Gravitation and central Forces	Potential Energy in a Gravitational Field: Gravitational Potential	Lecture	Quiz
20	2	Dynamics of Systems of Particles	Center of Mass and Linear Momentur of a System	Lecture	Quiz
21	2	Dynamics of Systems of Particles	Dynamics of a Particle in a Rotating Coordinate System	Lecture	Quiz
25	2	Dynamics of Systems of Particles	Motion of Two Interacting Bodies: The Reduced Mass	Lecture	Quiz
24	2	Mechanics of Ri Bodies	Center of Mass and Rotation of a Rigid Body about a Fixed Axis	Lecture	Quiz
25	2	Mechanics of Ri Bodies	Calculation of the Moment of Inertia ar Solving Problems	Lecture	Quiz
25	2	Introduction to Lagrangian mechanics	Lagrangian Mechanics	Lecture	Quiz
26	2	Lagrangian Mechanics	Generalized Coordinates	Lecture	Quiz
27	2	Lagrangian Mechanics	Generalized forces for conservative systems	Lecture	Quiz
28	2	Lagrangian Mechanics	Solve problems	Lecture	Quiz

123. Course Evaluation and Marks

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 .

124. Learning and Teaching Resources

Required textbooks (curricular boc	Analytical Mechanic

if any)	
Main references (sources)	Basic Analytical Mechanic
Recommended books and references (scientific journals, reports...)	* Analytical Mechanic 7th edition by Fowles and Cassiday. * AN INTRODUCTION TO MECHANICS, by Daniel Kleppner and Robert Kolenkow,2014 * الميكانيك التحليلي ترجمة الدكتور طالب ناهي الخفاجي * سلسلة ملخصات شوم * متابعة الدروس النظرية عبر قناة خاصة باليوتيوب والتي يتم من خلالها شرح تفصيلي للمقرر
Electronic References, Websites	https://nicadd.niu.edu/~jahreda/phys300/phys300%20Chapter%201%20and%20intro.pdf https://www.youtube.com/channel/UCxieMwKNtR8XL-waDHVLbGg
Percentage of Curriculum update	5%

Name and Signature

of Curriculum Administrator

Dr. Ali Abbas Mohammed Salih

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

Name and Signature

of Department or Branch Head

Dr. Marwan Hafeez Younis Ali

Course Description Form

University: Mosul College: Education college for pure science Department: Physics

125. Course Name and Stage:

Psychological Heath and Guidance /The third stage

126. Course Code:

EDPH25F308

127. Semester / Year:

Annual system /2024-2025

128. Description Preparation Date:

1/9/2024

129. Available Attendance Forms:

Class

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

2 / 2

131. Course administrator's name (mention all, if more than one name) and Scientific title

Name: ZINAH TARQ DAHHAM
Email: zenatalhayaly@uomosul.edu.iq

132. Course Objectives

Subject Objectives	• The student learns the basics of counseling • Enabling the student to acquire skills about psychological and family counseling and its theories • Developing the student's knowledge about psychological counseling and therapeutic counseling • Developing student knowledge about modern counseling methods

133. Teaching and Learning Strategies

Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

134. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2	Introducing the student to counseling	Introduction general idea	Lecture	Quiz

		psychology			
2.	2	Introducing the student to the importance of recognizing the relationship between the concept of guidance and these concepts.	Basic definitions counseling psychology	Lecture	Quiz
3.	2	Introducing student to characteristics counseling in ligh the prev definitions	The relationship counseling to o terms (guida psychotherapy)	Lecture	Quiz
4.	2	Introducing student to overview counseling and practice historicall	A brief histo overview of development psychological counselling	Lecture	Quiz
5.	2	Introducing student to importance psychological counseling and goals he seeks achieve	The importance psychological counselling, its go justifications, function	Lecture	Quiz
6.	2	Introducing student to the goa psychological counseling, inclu self-actualization, achieving me health, and achie compatibility, and the basis of them can add these g to his professi work in the future.	Practical object of psycholog educational counseling	Lecture	Quiz
7.	2	Defining the stu that any profes cannot grow flourish without th being a function this profes performs constitutes justification for growth and the n for it, as well guidance.	Justifications psychological educational counseling and need for it	Lecture	Quiz
8.	2	Enabling students become familiar the regulations allow the counselo accept the condit of work at the sc or any institution which he may prac the counse process on the hand, and to meet responsibilities towards himself, profession, and clients.	The mentor's et and professi specifications	Lecture	Quiz
9.	2	Introducing student to importance	Fields psychological counseling and	Lecture	Quiz

		recognizing relationship betw the concept guidance and th concepts.	practical applicati		
10.	2	Defining student: There three approaches achieving the goal guidance counseling in counseling proc and the couns must take a spe goal from them according to what need and prob require.	Methods methods psychological counseling	Lecture	Quiz
11.	2	Introducing student psychological counseling metho	Development approach	Lecture	Quiz
12.	2	Introducing student to importance psychological counseling and goals he seeks achieve	Curricula methods psychological counseling, Prerentive approa	Lecture	Quiz
13.	2	Introducing the student to the goals of psychological counseling, including self-actualization, achieving mental health, and achieving compatibility, and on the basis of them, he can add these goals to his professional work in the future.	-Therapeutic approach	Lecture	Quiz
14.	2	Defining the stu that any profes cannot grow flourish without th being a function this profes performs constitutes justification for growth and the n for it, as well guidance.	Psychological counseling metho	Lecture	Quiz
15.	2	Enabling students to become familiar with the regulations that allow the counselor to accept the conditions of work at the school or any institution in which he may practice the counseling process on the one hand, and to meet his responsibilities towards himself, his profession, and his	**Individual guida**	Lecture	Quiz

		clients.			
16.	2	Enabling students to become familiar with the interview method	**the interview**	Lecture	Quiz
17.	2	Introducing the student to the feedback method	Observation meth	Lecture	Quiz
18.	2	Introducing the student to the case study method	**Case Study**	Lecture	Quiz
19.	2	Introducing the student to the psychological counseling method	**Psychological counseling methods methods: Part 1**	Lecture	Quiz
20.	2	Introducing the student to the psychological counseling method	**Psychological counseling methods and methods: Part 2**	Lecture	Quiz
21.	2	Introducing the student to the concepts of individual counseling	**Individual guidance: its concept and importance**	Lecture	Quiz
22.	2	Introducing the student about the disadvantages of individual counselling	**Individual guidance: Disadvantages and advantages of individual guidance**	Lecture	Quiz
23.	2	Introducing the student to the concepts of group counseling	**Group counseling: its concept and importance**	Lecture	Quiz
24.	2	Introducing student to negatives of gr counseling	**Group Guidance: Disadvantages and Advantages of Group Guidance**	Lecture	Quiz
25.	2	Introducing student to concepts of acade advising	**Academic advising: its concept and importance**	Lecture	Quiz
26.	2	Introducing student to concepts of electr counseling	**Electronic guidance: its concept and importance**	Lecture	Quiz

27.	2	Introducing student to mod guidance methods	**Group counseling, play counseling, behavioral counseling**	Lecture	Quiz
28.	2	Introducing student to mod and professi counseling fields	**Areas of guidar Professional guidance**	Lecture	Quiz
29.	2	Introducing student to sc guidance	**Guidance in school and the comprehensive school program**	Lecture	Quiz
30.		Semester exam			

135. Course Evaluation and Marks

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

136. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodological book in Arabic Educational and psychological guidance in educational institutions Written by: Dr. Rafida Al-Hariri, Dr. Samir Al-Imami
Main references (sources)	1- Theoretical trends in counseling. Jalal Kayed Damra, 1st edition, Safaa Publishing and Distribution House, Amman, Jordan 2. Basics in Psychological Counseling, Mahmoud Abdullah Saleh, Saudi Arabia - Riyadh, Dar Al-Marikh, 1989. 3. Applications in educational supervision, Dr. Ahn Jamil Ayesh, 1st edition, Dar Al-Masirah for Publish and Distribution, Jordan - Amman,
Recommended books and references	Journal of Psychological Counseling: A pe

(scientific journals, reports…)	reviewed scientific journal published by t “Psychological Counseling Center,” Ain Sha University, Volume 76, 2024
Electronic References, Websites	http://www.rameztaha.net/tadrebat%20al%20seha%20al%20nafsia.h http://www.eawraq.com/news.php?action=view&id=69 http://www.cocegypt.8m.com/page2.htm
Percentage of Curriculum update	nothing

Name and Signature

of Curriculum Administrato

Name and Signature

of Department or Branch Head

University: Mosul College: of Education for Pure Sciences
Department or Branch: Physics

137. Course Name and Stage:	
Electronics	
138. Course Code:	
EDPH24M303	
139. Semester / Year:	
2025/2024	
140. Description Preparation Date:	
1/ 9 / 2024	
141. Available Attendance Forms:	
Class / practical/ online	
142. Number of Credit Hours (Total) / Number of Units (Total)	
135	
143. Course administrator's name (mention all, if more than one name) and Scientific title	
Name: Ammar Tahseen Zakar Email: ammar_za25@uomosul.edu.iq	
144. Course Objectives	
Subject Objectives	• Providing enough information to t students regarding electronics • Learning the nature of the electro components and how to use them • Learning the methods of circ analyzing • The student learns how to connect t electronic circuits • Making student qualified in the circ designing in real life
145. Teaching and Learning Strategies	
Strategy	• Preparing high qulity lectures from different sources with a wealth of examples • Optimal use of the boards to clarify the issues included in the lecture and simplify the problems • Solving the problems step by step allowing the rise of the discussion • Introducing direct questions to

	keep attention Providing the students with number of question to keep the connected with the provided lectur

10. Course Structure

week	Time/ hour	outcomes of the Required learning	Subjet Name	Evaluation Methods
1	9	Reaching maximum thinking , analyzing, designing capabilities	Atomic structure, Band theory, material classification, Semiconducto	Quize and homework based
2	9	Reaching maximum thinking , analyzing, designing capabilities	Band gap relation, the conductivity in solids, electronic distribution and Fermi level, intrinsic semiconductors, The doping, p-n junction	Quize and homework based
3	9	Reaching maximum thinking , analyzing, designing capabilities	p-n formation and its energy bands, depletion potential and its calculation, biased pn, pn equation	Quize and homework based
4	9	Reaching maximum thinking , analyzing, designing capabilities	The impact of the temperature on the pn junction, the equivalent circuit, pn characteristics, load line and operation point	Quize and homework based
5	9	Reaching maximum thinking , analyzing, designing capabilities	Rectifier, half and full wave rectifier, ripple factor, the efficiency, PIV	Quize and homework based
6	9	Reaching maximum thinking , analyzing, designing capabilities	The filters, RC filter, LC filter, RLC filter, clipping, clamping, special purposes diodes	Quize and homework based
7	9	Reaching maximum thinking , analyzing, designing capabilities	Zener diode, Zener characteristics the equivalent circuit, thermal factor of Zener, dissipated power in Zener,	Quize and homework based
8	9	Reaching maximum thinking , analyzing, designing capabilities	Temperature impact on Zener, Zener applications, voltage regulator, clipping using Zener	Quize and homework based

9	9	Reaching maximum thinking , analyzing, designing capabilities	The transistor and its types, energy band diagram, Biasing	Quize and homework based
10	9	Reaching maximum thinking , analyzing, designing capabilities	Transistor connection types, CB CB biasing, CE biasing, load line and the operation poin	Quize and homework based
11	9	Reaching maximum thinking , analyzing, designing capabilities	The effect of operation point, the effect of the temperature, stability factor	Quize and homework based
12	9	Reaching maximum thinking , analyzing, designing capabilities	CE biasing types	Quize and homework based
13	9	Reaching maximum thinking , analyzing, designing capabilities	Types of transistor amplifiers	Quize and homework based
14	9	Reaching maximum thinking , analyzing, designing capabilities	Review	Quize and homework based
15	9	Reaching maximum thinking , analyzing, designing capabilities	Examination	Quize and homework based

11.Course Evaluation and Marks

1- Monthly Exams (10 marks)
2- Mid year (20 marks)
3- Experimental (20 marks)
4- Final Exam (50 marks)

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	• فيزياء الألكترونيات للدكتور صبحي الراوي • مبادىء الألكترونيات مالفينو
Main references (sources)	Electronic devises (Floyed, 2005)
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Google scholar AI data base Online electronics basics related subjects
Percentage of Curriculum update	20% yearly

Ammar Tahseen Zakar Younus

Name and Signature

of Curriculum Administrat

Marwan Hafeedh

Name and Signature

of Department or Branch Head

Course Description Form

University: University of Mosul College: Education for pure sciences Department or Branch: Physics

146. Course Name and Stage:
Complex Functions
147. Course Code:
EDPH25F305
148. Semester / Year:
2024–2025
149. Description Preparation Date:
1/9/2024
150. Available Attendance Forms:
Class + E-Learn
151. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
152. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Ekram Mohammed Abdullah, Email: : ekramm.abdullah@uomosul.edu.iq
153. Course Objectives

Subject Objectives	**The student gets to know an extended concept in mathematics, which is the complex number, and how to solve problems related to complex numbers and functions.**
154. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, electron assignment, quiz

155. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1.	2	Fundamentals of complex numbers	Complex numbers	Lecture	Quiz
2.	2	Conjugates of complex number	Complex numbers	Lecture	Quiz
3.	2	Geometric representation complex number	Complex numbers	Lecture	Quiz
4.	2	Ellipse	Conic sections	Lecture	Quiz
5.	2	Hyperbola	Conic sections	Lecture	Quiz
6.	2	Parabola	Conic sections	Lecture	Quiz
7.	2	Polar representation complex number	Polar representatic	Lecture	Quiz
8.	2	Euler's formula	Euler's formula complex number	Lecture	Quiz
9.	2	Complex function	Complex function	Lecture	Quiz
10.	2	Limits and continues for comple functions	Complex function	Lecture	Quiz
11.	2	Derivative of compl function	Complex function	Lecture	Quiz
12.	2	Couchy-Rieman conditions for derivative	Derivative	Lecture	Quiz
13.	2	Analytic function	Derivative	Lecture	Quiz
14.	2	Harmonic function	Derivative	Lecture	Quiz
15.	2	Exponential	Elementary functions	Lecture	Quiz

		funct ion			
16.	2	Logarithm function	Elementary functions	Lecture	Quiz
17.	2	Trigonome ic function	Elementary functions	Lecture	Quiz
18.	2	Inverse trigonomet c functions	Elementary functions	Lecture	Quiz
19.	2	Hypobaric function	Elementary functions	Lecture	Quiz
20.	2	Inverse hypobaric function	Elementary functions	Lecture	Quiz
21.	2	Paths	Complex Integral	Lecture	Quiz
25.	2	Parametric equations	Complex Integral	Lecture	Quiz
24.	2	Applicatio s complex integral	Complex Integral	Lecture	Quiz
25.	2	Couchy-Gorsat theorem f integral	Complex Integral	Lecture	Quiz
25.	2	Mourier theorem f integral	Complex Integral	Lecture	Quiz
26.	2	Basic-Theorem algebra	Complex Integral	Lecture	Quiz
27.	2	Sequences and series complex formula	Sequences ar series	Lecture	Quiz
28.	2	Infinite series	Sequences ar series	Lecture	Quiz
29.	2	Applicatio s complete functions	Complete function	Lecture	Quiz
30.	2	Final exam		Lecture	Quiz

156. Course Evaluation and Marks

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

Daily preparation and daily exams: 5 points

Monthly exams: 10 points Midterm exam: 25 points Final exam: 60 points

157. Learning and Teaching Resources	
Required textbooks (curricular books, any)	Complex Functions
Main references (sources)	The complex function
Recommended books and references (scientific journals, reports…)	Complex Analysis : Mc Graw-Hill ; 2nd Edition
Electronic References, Websites	-https://fastercapital.com/arabpreneur/%D9%81%D9%8 D8%A7%D9%84%D8%B4%D9%81%D8%B1%D8% -D8%A5%D8%AA%D9%82%D8%A7%D9%86%--A9 D8%A7%D9%84%D8%AF%D9%88%D8%A7%D9% -84 D8%A7%D9%84%D9%85%D8%B1%D9%83%D8% -D9%81%D9%8A%-A8%D8%A9 D8%A7%D9%84%D8%B1%D9%8A%D8%A7%D8% D8%A7%D8%AA.html%B6%D9%8A
Percentage of Curriculum update	10 %

Name and Signature

of Curriculum Administrat

Ekram Mohammed

Name and Signature

of Department or Branch Head

Marwan Hafidh Younis

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

1. Course Name and Stage:	
Curriculums and Methods of Teaching / Third Stage	
2. Course Code:	
EDPH25F307	
3. Semester / Year:	
2025 / 2024	
4. Description Preparation Date:	
2024 / 9 / 1	
5. Available Attendance Forms:	
In-person meeting	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours / 2 units	
7. Course administrator's name (mention all, if more than one name) and Scientific title	
Name: Lect. Dr. Radwan Mohammed Mustafa Email: dr.radwanmohammed@uomosul.edu.iq	
8. Course Objectives	
Subject Objectives	**• Understand the concept of traditional and moder educational curricula.** **• Compare curricula types.** **• Explain the stages of curriculum development.** **• Understand the scientific basis used in writing behavioral objectives.** **• Classify behavioral objectives.** **• Understand the concepts of teaching methods, teaching styles, and teaching strategies.** **• Describe types of teaching methods related to cognitive, behavioral, and social theories and thei characteristics.** **• Clarify the concept of evaluation, its importance, and types.** **• Understand the concept of planning in teaching, importance, and types.** **• Provide students with the skills to write annu semester, and daily teaching plans.**
9. Teaching and Learning Strategies	

Strategy	Lecture, discussion and dialogue, advanced lecture, questioning, cooperative learning, educational games, blended learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	- Introduction - The concept of science and the concept of technology	Introduction to Science	Lecture	Oral discussion
2	2	- Components of Science - Scientific Thinking Skills	Components of science and scientific thinking skills	Lecture and Discussion	Oral discussion
3	2	- Characteristics of Science - Philosophy of Science Teaching - Modern Trends in Science Teaching	Philosophy of Science Teaching	Lecture and Discussion	Oral discussion
4	2	- The development of the concept of curriculum - Types of curriculums and the criticism directed at them	curriculums	Lecture and Discussion	Classroom questions and oral discussions
5	2	The meaning of the old and modern concept of curriculum and a comparison between them	The old and modern concept of curriculum	Lecture and Discussion	Classroom questions and oral discussions
6	2	- Factors that contributed to the development of the curriculum - Curriculum organizations	Curriculum Organizations	Lecture and Discussion	Classroom questions and oral discussions
7	2	The philosophical basis for curriculum construction and its philosophical schools	Foundations of curriculum construction	Lecture and Questioning	Constructive oral discussions
8	2	The cognitive basis for curriculum construction and its philosophical schools	Foundations of curriculum construction	Lecture and Questioning	Constructive oral discussions
9	2	- The social basis for curriculum construction - The relationship between society and curriculum	Foundations of curriculum construction	Lecture and Questioning	Constructive oral discussions

10	2	The relationship between culture and curriculum, components of culture, generalities, specificities and alternatives, the relationship between curriculum and social change	Foundations of curriculum construction	Lecture and Questioning	Classroom questions and oral discussions
11	2	The psychological basis for curriculum construction	Foundations of curriculum construction	Lecture and Questioning	Constructive oral discussions
12	2	Types of curriculums, advantages and disadvantages	Types of curriculums	Lecture and Questioning	Classroom questions and oral discussions
13	2	Educational objectives, their importance, sources of derivation, and levels	Elements of the curriculum as a four-part system (educational objectives)	Lecture and Discussion	Classroom questions and oral discussions
14	2	Behavioral objectives, their formulation, specifications, and classification	Elements of the curriculum as a four-part system (educational objectives)	Lecture and Discussion	Quiz
15	2	Educational content and experiences	Elements of the curriculum as a four-part system (content and learning experiences)	Lecture	Classroom questions are answered electronically. (Google Classroom)
16	2	Written exam	-	-	-
17	2	- The concept of teaching method, teaching style, and teaching strategy - The foundations of good teaching - Characteristics of a good method	Elements of the curriculum as a four-part system (teaching methods and educational techniques)	Advanced lecture and Questioning	Oral discussions & Writing a summary report submitted electronically (Google Classroom)

18	2	- Teaching methods related to cognitive theories - The guided exploration method	Teaching methods related to cognitive theories	Advanced lecture and Questioning	Classroom questions and oral discussions
19	2	- The lecture method, its development, techniques, advantages, and disadvantages - The problem-solving method, its steps, advantages, and disadvantages	Teaching methods related to cognitive theories	Advanced lecture and Questioning	Classroom questions and oral discussions
20	2	- Teaching methods related to behavioral theories - Programmed learning method	Teaching methods related to behavioral theories	Lecture, Discussion and Questioning	Classroom questions and oral discussions
21	2	- Teaching methods related to social theories - Cooperative learning method, its basic pillars, steps, advantages, and disadvantages	Teaching methods related to social theories	Lecture and Cooperative learning	Classroom questions and oral discussions
25	2	- Discussion method, steps, role, advantages, and disadvantages - Project method, steps, advantages, and disadvantages	Teaching methods related to social theories	Advanced lecture and Discussion	Quiz
24	2	Educational games method, steps, disadvantages and advantages	Teaching methods related to social theories	Lecture and Educational games	Constructive oral discussions
25	2	- The direct presentation method, steps, scope, advantages, and disadvantages - The interrogation method, steps, advantages, and disadvantages	Teaching methods related to social theories	Advanced lecture and Questioning	Classroom questions

25	2	- Field visit methods, steps, advantages, and disadvantages - Report preparation methods, areas of use, and means	Teaching methods related to social theories	Lecture and Discussion	Classroom questions
26	2	Philosophy of laboratory teaching, ancient and modern philosophy, importance of the laboratory in science teaching, occupational safety in laboratories	The role of laboratory in teaching science	Lecture and Discussion	Writing a summary report submitted electronically (Google Classroom)
27	2	- The concept of educational technologies and their types - The concept of educational evaluation, characteristics, types, and curriculum evaluation	Elements of the curriculum as a four-part system (educational evaluation)	Lecture and Discussion	Classroom questions and oral discussions
28	2	The concept of the textbook, its importance, its function, and the foundations for its preparation: - Social and cultural foundations - Educational and philosophical foundations - Psychological foundations - Characteristics of a good textbook	textbook	Lecture, Discussion and Questioning	Classroom questions and oral discussions
29	2	The concept of planning, the concept of educational planning, the importance of planning, the annual plan, the semester plan, the daily plan	Planning in teaching	Advanced lecture and Discussion	Create a simple daily plan that can be submitted electronically (Google Classroom)
30	2	Written exam	-	-	-

11. Course Evaluation and Marks	
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)	Curriculums and Teaching Methods: Written by (Dr. Abdul Razzaq Yassin Abdullah, Dr. Enas Younis Mustafa, Dr. Marib Younis Al-Mawla)
Main references (sources)	- General Teaching Methods: Written by (Tawfiq Ahmad Mar'i, Muhammad Mahmoud Al-Hila) - Science Teaching Methods: Concepts and Practical Applications: Written by (Abdullah bin Khamis Ambo Saidi, Sulaiman bin Muhammad Al-Balushi)
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Directing students to websites related to the course topics
Percentage of Curriculum update	40%

Name and Signature

of Curriculum Administrator

Lect. Dr. Radwan Mohammed Mustaf

Name and Signature

of Department or Branch Head

Ass.Prof. Dr. Marwan Hafiz Younes

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

University: AL – Mosul College: AL- Education for Pure science
Department or Branch : Physics

158. Course Name and Stage:
159. Course Code:
EDPH25F403
160. Semester / Year:
2024–2025
161. Description Preparation Date:
1/9/2024
162. Available Attendance Forms:
Class
163. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
164. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Mohammed Ibrahim Ismael Email: mohammedalsalihi@uomosul.edu.iq
165. Course Objectives

Subject Objectives	• The student learns the basics of quantum mechanical theory • The student is able to solve all the various problems related to the subject • Developing the student's knowledge about t subject by adding some modern topics

166. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments quiz

167. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject	Learning method	Evaluation method

			name		
		Investigation of Si diode propertyes		Lecture	Quiz
		Investigation of Ge diode properties		Lecture	Quiz
		Investigation of GaAs light emitter diode properties		Lecture	Quiz
		Investigation of temperature effect on the Si diode using direct method		Lecture	Quiz
		Investigation of temperature effect on the Si diode using indirect method		Lecture	Quiz
		Investigation of the change in Isc lue to the change in temperature and Eg calculation		Lecture	Quiz
		Half wave rectifier		Lecture	Quiz
		Full wave rectifier		Lecture	Quiz
		Bridge rectifier		Lecture	Quiz
		Clipping circuts		Lecture	Quiz
		Th e effect of operation point, the effect of temperature, stability factor		Lecture	Quiz
		Clamping Circuts and voltage multiplier		Lecture	Quiz
		Forward and reverse biasin characteristics of Zener diode		Lecture	Quiz
		Zener as a voltage regulator		Lecture	Quiz
		Examination		Lecture	Quiz
		Input characteristics of NPN transistor		Lecture	Quiz
		Output characteristics of NPN transistor		Lecture	Quiz
		Two source CE amplifier		Lecture	Quiz
		CE amplifier biased using base resistor method		Lecture	Quiz
		CE amplifier biased using collector feedback resistor		Lecture	Quiz
		CE amplifier biased using voltage divider		Lecture	Quiz
		Transit characteristics of JFET		Lecture	Quiz
		Output characteristics of JEFT		Lecture	Quiz
		JEFT amplifier		Lecture	Quiz
		sinusoidal oscillators		Lecture	Quiz
		Non sinusoidal oscillators		Lecture	Quiz
		Operational Amplifiers		Lecture	Quiz
		Logic circuts		Lecture	Quiz
		Review		Lecture	Quiz
		Examination			

168. Course Evaluation and Marks	
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	
169. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	**الكتاب المنهجي باللغة العربية** • **فيزياء الألكترونيات للدكتور صبحي الراوي** • **مبادىء الألكترونيات مالفينو** **الكتاب المنهجي باللغة الإنكليزية:** Electronic devises (Floyed, 200
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	
Percentage of Curriculum update	

Name and Signature

of Curriculum Administrat

Ass.Lec. Mohammed Ibrahim Ismael

Name and Signature

of Department or Branch Head

Ass.Prof .Dr. Marwan Hafeed Younus

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

University:MosulCollege:EducationforpureScienceDepartmentorBranch :Physics

170. Course Name:
English Language
171. Course Code:
EDPH25F309
172. Semester / Year:
2024-2025
173. Description Preparation Date:
1/9/2024
174. Available Attendance Forms:
Class
175. Number of Credit Hours (Total) / Number of Units (Total)
1Credit Hour
176. Course administrator's name (mention all, if more than one name)
Name: Abdulazeez Taha Ahmed Al-Sheikh Ahmed Email: abdulazeez.ahmed@uomosul.edu.iq

177. Course Objectives	
Course Objectives	**• The student learns the basics of the Engl Language.** **• The student is able to solve all the vari problems related to the subject.** **• Developing the student's knowledge about subject by adding some modern topics**

178. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

179. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
231.1		Subject Pronouns	Subjects and their pronouns	Lecture	Quiz
232.1		Present simple of "**be"**	Affirmative and Negative forms	Lecture	Quiz
233.1		Present simple of "be"	Questions and Short answers	Lecture	Quiz
234.1		Definite and Indefinite Articles	**a**/**an** and **the**	Lecture	Quiz
235.1		Part of Speech	Adjectives	Lecture	Quiz

236.	1	Position of Adjectives: nationality, and color Adjectives	Two positions of Adjectives	Lecture	Quiz
237.	1	Part of Speech	Noun	Lecture	Quiz
238.	1	Plural of Nouns	Adding (s) and (es) to pluralize nouns.	Lecture	Quiz
239.	1	Comprehension	Reading Passage	Lecture	Quiz
240.	1	Comprehension	Reading Passage	Lecture	Quiz
241.	1	Present simple	Affirmative and negative	Lecture	Quiz
242.	1	Present simple	Questions and answers	Lecture	Quiz
243.	1	Present continuous (ing)	Affirmative and Negative	Lecture	Quiz
244.	1	Present continuous (ing)	Question and answer	Lecture	Quiz
245.	1	Past simple	Affirmative and negative	Lecture	Quiz
246.	1	Past simple	Questions and answers	Lecture	Quiz
247.	1	Could for Ability	Past of can	Lecture	Quiz
248.	1	Comparison of adjectives 1	Adding er/est	Lecture	Quiz
249.	1	Comparison of adjectives 2	Using more/most	Lecture	Quiz
250.	1	Using "Should"	Obligation and advice	Lecture	Quiz
251.	1	Comprehension	Reading passage	Lecture	Quiz
252.	1	Comprehension	Reading passage	Lecture	Quiz
253.	1	Using "Shall"	Offer to do something for someone	Lecture	Quiz
254.	1	Expressing quantity	A lot of/ lots of/ a little/ a few	Lecture	Quiz
255.	1	Past continuous	Affirmative and negative	Lecture	Quiz
256.	1	Past continuous	Question and answer	Lecture	Quiz
257.	1	Comprehension	Reading passage	Lecture	Quiz
258.	1	Comprehension	Reading passage	Lecture	Quiz
259.				Lecture	Quiz
260.			Final Exam		

7. Course Evaluation

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

8. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Grammar Two
Main references (sources)	Grammar Two
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.eltbooks.com/item_spe=c.php?item=307003&cat

Name and Signature

of Curriculum administrator

Assist. Lect. Abdulazeez Taha Ahmed Younus

Name and Signature

of Department or Branch Head

Assist. Prof. Dr. Marwan Hafeed

180. Course Name:
English Language
181. Course Code:
EDPH25F410
182. Semester / Year:
2024–2025
183. Description Preparation Date:
1/9/2024
184. Available Attendance Forms:
Class
185. Number of Credit Hours (Total) / Number of Units (Total)
1Credit Hour
186. Course administrator's name (mention all, if more than one name)
Name: Abdulazeez Taha Ahmed Al-Sheikh Ahmed Email: abdulazeez.ahmed@uomosul.edu.iq
187. Course Objectives

Course Objectives	**• The student learns the basics of the Engl Language.** **• The student is able to solve all the vari problems related to the subject.** **• Developing the student's knowledge about subject by adding some modern topics**

188. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

189. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
261	1	Subject Pronouns	Subjects and their pronouns	Lecture	Quiz
262	1	Present simple of "**be"**	Affirmative and Negative forms	Lecture	Quiz
263	1	Present simple of "be"	Questions and Short answers	Lecture	Quiz
264	1	Definite and Indefinite Articles	**a**/**an** and **the**	Lecture	Quiz

265.	1	Part of Speech	Adjectives	Lecture	Quiz
266.	1	Position of Adjectives: nationality, and color Adjectives	Two positions of Adjectives	Lecture	Quiz
267.	1	Part of Speech	Noun	Lecture	Quiz
268.	1	Plural of Nouns	Adding (s) and (es) to pluralize nouns.	Lecture	Quiz
269.	1	Comprehension	Reading Passage	Lecture	Quiz
270.	1	Comprehension	Reading Passage	Lecture	Quiz
271.	1	Present simple	Affirmative and negative	Lecture	Quiz
272.	1	Present simple	Questions and answers	Lecture	Quiz
273.	1	Present continuous (ing)	Affirmative and Negative	Lecture	Quiz
274.	1	Present continuous (ing)	Question and answer	Lecture	Quiz
275.	1	Past simple	Affirmative and negative	Lecture	Quiz
276.	1	Past simple	Questions and answers	Lecture	Quiz
277.	1	Could for Ability	Past of can	Lecture	Quiz
278.	1	Comparison of adjectives 1	Adding er/est	Lecture	Quiz
279.	1	Comparison of adjectives 2	Using more/most	Lecture	Quiz
280.	1	Using "Should"	Obligation and advice	Lecture	Quiz
281.	1	Comprehension	Reading passage	Lecture	Quiz
282.	1	Comprehension	Reading passage	Lecture	Quiz
283.	1	Using "Shall"	Offer to do something for someone	Lecture	Quiz
284.	1	Expressing quantity	A lot of/ lots of/ a little/ a few	Lecture	Quiz
285.	1	Past continuous	Affirmative and negative	Lecture	Quiz
286.	1	Past continuous	Question and answer	Lecture	Quiz
287.	1	Ing form	Gerund	Lecture	Quiz
288.	1	So and Neither	So and Neither	Lecture	Quiz
289.	1	Present perfect	Affirmative and negative	Lecture	Quiz
290.			Final Exam		

9. Course Evaluation

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

10. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Grammar Two/Grammar Three
Main references (sources)	Grammar Two/Grammar Three
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.eltbooks.com/item_spe=c.php?item=307003&cat https://www.eltbooks.com/item_spe

	=c.php?item=307004&cat

Name and Signature

of Curriculum administrator

Assist. Lect. Abdulazeez Taha Ahmed Younus

Name and Signature

of Department or Branch Head

Assist. Prof. Dr. Marwan Hafeed

190. Course Name and Stage:
Solid state physics(Four stage)
191. Course Code:
EDPH24F404
192. Semester / Year:
2024-2025
193. Description Preparation Date:
1/9/2024
194. Available Attendance Forms:
Class
195. Number of Credit Hours (Total) / Number of Units (Total)
2 Credit Hours
196. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Name: Dr. Ghazwan Ghazi Ali Email: dr.ghazwan39@uomosul.edu.iq
197. Course Objectives

Subject Objectives	The student learns the basics of solid state theory **• The student is able to solve all the various problems related to the subject** **• Developing the student's knowledge about the subject by adding some modern topics**

198. Teaching and Learning Strategies

Strategies	Theoretical lecture, dialogue and discussions, daily assignments, quiz

199. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2	Fundamental of crystal structure	Crystal structure	Lectur	
2.	2	W-S primitive cell	Properties of the W-S primitive cell	Lectur	
3.	2	Fill factor	Calculation of the Fill factor	Lectur	
4.	2	Example of Fill factor	Example of Fill factor	Lectur	
5.	2	Crystal symmetric	Type of Crystal symmetric	Lectur	
6.	2	Calculation of Madlonic constant in three dimensi	Solve the Madlonic constant in three dimension	Lectur	
7	2	X-ray diffraction	Define X-ray diffraction	Lectur	
8	2	Experimental methods to study of X-ray diffractior	Types of Experimental methods to study of X-ray diffraction	Lectur	
9	2	Reciprocal lattice	Reciprocal lattice	Lectur	
1	2	Elastic scattering of wave	Elastic scattering of waves	Lectur	
1	2	Ewald construction	Ewald construction	Lectur	
1	2	Brillouin Zone	Define of Brillouin Zone	Lectur	
1	2	Lattice dynamic	Define of Lattice dynamic	Lectur	
1	2	Lattice dynamic in one dimension	Calculation of Lattice dynamic in one dimension	Lectur	
1	2	Lattice dynamic in two dimension	Calculation of Lattice dynamic in two dimension	Lectur	

1	2	Classical theory	What's the Classical theory	Lectur	
1	2	Einstein theory	Calculation of Einstein theory	Lectur	
1	2	Deby theory	Calculation of Deby theory	Lecture	
1	2	Thermal properties of So state	Calculation of Thermal properties of Solid state	Lecture	
2	2	Electrical properties of Solid state	Calculation of Electrical properties of Solid state	Lecture	
2	2	Free electron gas	Define Free electron gas	Lecture	
2	2	Elastic scattering of wave	Define Elastic scattering of waves	Lecture	
2	2	Phonon and photon properties	Phonon and photon properties	Lecture	
2	2	Comparison between Einstein and Deby theory	Comparison between Einstein and Deby theory	Lecture	
2	2	Theories of free electro gas	Theories of free electron gas	Lecture	
2	2	Drod theory of free electron gas	Define Drod theory of free electron gas	Lecture	
2	2	Question solve	Question solve	Lecture	
2	2	Question solve	Question solve	Lecture	
2	2	Question solve	Question solve	Lecture	
3			Final Exam		

200. Course Evaluation and Marks

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

201. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Solid state physics
Main references (sources)	Charles Kittel, (1974)Introduction to solid state physics

Recom and (scient reports…)	Elementary soli **Name and Signature** **of Curriculum Administrat**
Electronic References, Websites	https://archive.org/details/ElementarySolidS ePhysics..PrinciplesAndApplicationsM.A.Omar mpressed
Percentage of Curriculum update	20% جامعة الموصل كلية التربية للعلوم الصرفة رئيس قسم الفيزياء

Name and Signature
of Department or Branch Head

University: Mosul **College: Education for Pure Science**
Department or Branch: Physics

202. Course Name and Stage:
Measurement and Evaluation/ Phase IV
203. Course Code:
EDCPH25M409
204. Semester / Year:
First and Second Semester/2024-2025
205. Description Preparation Date:
1/9/2024
206. Available Attendance Forms:
Daily working hours (in presence)
207. Number of Credit Hours (Total) / Number of Units (Total)
There are two divisions that is, the number of hours for per week = 4.....Down bel the Month=4*4 weeks= 16hours
208. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Aziz Mohammed Ali Email: dr.aziz@uomosul.edu.iq
209. Course Objectives

Subject Objectives of the course **Part no. (1)** **1- Introducing the student to the meaning of measurement and evaluation.** **2-Identifying the most important measure and achievement tests.** **3. Clarify the relationship between measurement, evaluation and testing.** **4-Identifying the specification table.** **5-Clarifying the types of achievement tests.** **6-Identifying the most**	1- Introducing the student to the meaning of measurement and evaluation. 2-Identifying the most important measure and achievem tests. 3. Clarify the relationship between measurement, evaluat and testing. 4-Identifying the specification table. 5-Clarifying the types of achievement tests. 6-Identifying the most important determinants of knowle goals. 7. Comparison of target types.

important determinants of knowledge goals. **7. Comparison of target types.** **8. Draw a diagram showing my cognitive goals?** **9. Classification of behavioral purposes.** **10-Learn the basic rule of writing behavioral purposes.** **Section II:** **1- Learn about the concept of measurement and evaluation.** **2- Clarify the specification table.** **3- Give examples of the specification table associated with the objectives** **4- Cognitive and its characteristics.** **5- Give examples of ease and difficulty.** **6- Recognize the importance of measurement in achievement tests** **which is related to students' abilities, tendencies, and readiness.** **7- Classification of achievement tests.** **8- Detailed explanation of the specification table with some attachments** **Illustrative models of the solution.** **1. TEACHING AND LEARNING STRATEGIES**	8. Draw a diagram showing my cognitive goals? 9. Classification of behavioral purposes. 10-Learn the basic rule of writing behavioral purposes. Section II: 1- Learn about the concept of measurement a evaluation. 2- Clarify the specification table. 3- Give examples of the specification table associated with the objectives 4- Cognitive and its characteristics. 5- Give examples of ease and difficulty. 6- Recognize the importance of measurement achievement tests which is related to students' abilities, tendencies, a readiness. 7- Classification of achievement tests. 8- Detailed explanation of the specification table so attachments Illustrative models of the solution.....
210. Teaching and Learning Strategies	
211. Course Structure	

Week			Hours	Required Learning Outcomes	Unit or subject name	Learning method
	Measurement Definition, Recognition, Definition, Applications and Uses of Testing	Measurement - Definition	Course			
	Recognize the relationship between measurement, testing and evaluation	Test Definition, Applications and Uses	Discussion	Asking questions and discussing		
	Learn about evaluation and its importance in the educational process	Relationship between measurement, testing and evaluation	Lecture	Asking questions and discussing		
	Learn about the steps of the achievement test	Evaluation, its definition and importance in the educational process	Course	Asking questions and discussing		
	Identify goal setting	Steps to construct an achievement test	Course	Asking questions and discussing		
	Identify content selection	Defining goals	Course	Asking questions and discussin		

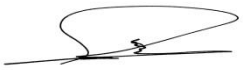
						g			
2		To know the wording of the paragraphs and the steps to be followed	Selecting Content	Course		Asking questions and discussing			
2		Identify the order of the questions	Drafting paragraphs and general principles to be taken into account when drafting them	Course		Asking questions and discussing			
2		Identifying the preparation of instructions	Questions sorting options	Course		Asking questions and discussing			
2		Identify the types of testing	Preparing Instructions	Course		Asking questions and discussing			
2		Identify the multiple choice tests and the rules of their preparation and their advantages and disadvantages	Test Types and Formulation	Course		Asking questions and discussing			
2		Identify the essay tests, their types, and the rules for preparing and correcting them	Types of tests	Course		Asking questions and discussing			

2		Learn about statistical analysis and paragraph analysis for the test	Statistical Analysis	Course		Asking questions and discussing			
2		Learn about the subject tests and how to extract their difficulty and ease coefficients	Statistical Analysis of Test Paragraphs	Course		Asking questions and discussing			
2		Learn about essay tests and how to extract their difficulty and ease coefficients	Statistical Analysis of Test Paragraphs	Course		Asking questions and discussing			
2		30% written exam	30% written exam						
9, 5,	6-12	− Students /practitioners practicing teaching skills in the real field (schools)	− Aggregate application	Practical application in schools		Evaluating the performance of students /practitioners according to the observation form educationally and practically			
2		Effectiveness of Wrong Alternatives	Statistical Analysis of Test Items	Course		Asking questions and discussin			

						g		
		Identify the ability to apply for students of the fourth stage for a period of 6 weeks	Non-test methods Observation - interview - estimation lists	Course		Asking questions and discussing		
		Getting to know a good quiz	Non-experimental means	Course		Asking questions and discussing		
		Types of honesty	Test Characteristics	Course		Asking questions and discussing		
		Stability of all kinds	Test Characteristics	Course		Asking questions and discussing		
		Methods for Finding Stability	Test Characteristics	Course		Asking questions and discussing		
		30% written exam	30% written exam					

212. Course Evaluation and Marks: Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports …. etc

213. Learning and Teaching Resources



Name and Signature

of Curriculum Administrat

dr. Aziz Mohammed Ali

Name and Signature

of Department or Branch Head

dr .Marwan Hafeath Yones

Course Description Form

University: Mosul **College:** Education for Pure Sciences **Department :** Physics

214. Course Name and Stage:					
Electromagnetism/ Fourth Stage					
215. Course Code:					
EDPH25F402					
216. Semester / Year:					
2024−2025					
217. Description Preparation Date:					
1/9/2024					
218. Available Attendance Forms:					
Attendance					
219. Number of Credit Hours (Total) / Number of Units (Total)					
3 Credit hours / 3 units					
220. Course administrator's name (mention all, if more than one name) and Scientific title					
Name: Assistant Professor Dr.Musab Salh Mohammed **Email:** wesamusab_67@uomosul.edu.iq					
221. Course Objectives					
Subject Objectives	• **The student learns the basics electromagnetic theory** • **The student is able to solve all the vari problems related to the subject** • **Developing the student's knowledge ab the subject by adding some modern topics**				
222. Teaching and Learning Strategies					
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz				
223. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**

291.	2	Basics of vector algebra	Vector basics	Lecture	Quiz
292.	2	The electric force between charges	Coulomb's law	Lecture	Quiz
293.	2	Electric field	Calculating the electric field for various types From distribution	Lecture	Quiz
294.	2	Gauss's law	Explanation of Gauss's law	Lecture	Quiz
295.	2	Gauss's law	Various examples of Gauss's law	Lecture	Quiz
296.	2	Electrical potential	Potential calculation for various types of distributions	Lecture	Quiz
297.	2	Electrical potential	Examples of electric potential	Lecture	Quiz
298.	2	Electric dipole	Derivation of potential and field for Electric dipole	Lecture	Quiz
299.	2	Electric dipole	Various examples of Electric dipole	Lecture	Quiz
300.	2	Electrical energy of the field	Calculation of the electrical energy of the field	Lecture	Quiz
301.	2	A conductor within an electric field	Calculate the surface charge density ofA conductor within an electric field	Lecture	Quiz
302.	2	An insulator within an electric field	Calculate the potential for an insulator within an electric field	Lecture	Quiz
303.	2	A point charge inside a dielectric fluid	Derivation of the potential of Point charge inside an insulating fluid	Lecture	Quiz
304.	2	Equipotential surfaces and classification of materials	Clarification and understanding of equipotential surfaces and classification of materials	Lecture	Quiz
305.	2	Boundary conditions for field and displacement vector	Deriving boundary conditions for field and displacement	Lecture	Quiz
306.	2	Boundary conditions for field and displacement vector	Various examples of boundary	Lecture	Quiz

			conditions for field and displacement		
307.	2	Coaxial cable	Derivation of potential and capacitance for coaxial cable	Lecture	Quiz
308.	2	Continuity equation	Deriving Continuity equation	Lecture	Quiz
309.	2	Continuity equation	Applications on Continuity equation	Lecture	Quiz
310.	2	Maxwell's equations	Explain Maxwell's equations	Lecture	Quiz
311.	2	Maxwell's equations	Applications of Maxwell's equations	Lecture	Quiz
312.	2	Wave equation and Poynting vector	Explain Wave equation and Poynting vector	Lecture	Quiz
313.	2	Wave equation and Poynting vector	Various examples of Wave equation and Poynting vector	Lecture	Quiz
314.	2	Magnetic fields of constant currents	Explain Magnetic fields of constant currentS	Lecture	Quiz
315.	2	Magnetic fields of constant currents	Constant current magnetic field applications	Lecture	Quiz
316.	2	Bayot Savart Laws	Explain Bayot Savart Laws	Lecture	Quiz
317.	2	Bayot Savart Laws	Applications of the Bayot-Savart laws	Lecture	Quiz
318.	2	Laws of magnetism	Clarification and explanation Laws of magnetism	Lecture	Quiz
319.	2	Laws of magnetism	Applications to the laws	Lecture	Quiz

			of magnetism		
320.	2	Laws of magnetism	Applications to the laws of magnetism	Lecture	Quiz

224. Course Evaluation and Marks

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

225. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of Electromagnetic Theory, written by Ritz Milford, translated by Yahya Abdel Hamid, Rahman Rustom, University o Mosul
Main references (sources)	ELEMENTS OF ELECTROMAGNET MATTHEW NO SADIKU New York • Oxfo OXFORD UNIVERSITY PRESS 2018
Recommended books and references (scientific journals, reports…)	Electromagnetism, written by B. B. Lo translated by Dr. Ali Mahdi Ibrahim, Mustansiriya University
Electronic References, Websites	https://www.sciencedirect.com/topics/com uter-science/electromagnetic-theory
Percentage of Curriculum update	10%

Dr.Musab Salh Mohammed

Name and Signature

of Curriculum Administrator

.Dr.Marwan Hafeedh younus

Name and Signature

of Department or Branch Head

University: Mosul College: college of education for pure sciences

Department or Branch: physics

226. Course Name:
laser
227. Course Code:
EDPH25F405
228. Semester / Year:
2024-2025
229. Description Preparation Date:
/19/2024
230. Available Attendance Forms:
Class
231. Credit Hours (Total) / Number of Units (Total)
2 Credit Hours in week - Total hours (58)/ 2 Units
232. Course administrator's name (mention all, if more than one name)
Name: Ragheed Mekhael Ibrahim Email: ragheed_ibrahim@uomosul.edu.iq

233. Course Objectives	
Course Objectives	The program aims to understand all the basics related by The program aims to understand all the basics related by the light theories , concept of Blackbody radiation, the Blackbody Radiation Theories, the concept of Spontaneous Emission, Stimulated Emission and Absorption Emission, the properties of laser beam. concept of coherence and coherence types, difference between laser and Maser, the Laser Idea, Laser structure, active media, the types of active media. Optical Resonators, the types of Optical Resonators. the concept of pumping and pumping process, (optical, Electrical, chemical thermal pumping). the Emission and absorption condition, the gain condition, the gain coefficient at threshold. The losses in Laser, the active media losses, the relation between Spontaneous Emission to Stimulated Emission. the concept of optical feedback. the relation between pumping power and threshold, laser modes, the types of laser modes, the Dynamics of the Q-Switching Process, the Q-Switching Methods, aser types, the properties of semiconductor laser, the principles of work and structure, the application of laser (medical, optical communication, Material processing, Nuclear fusion. in which That the student be able to support and develop his skills and consolidate all the basic concepts in The field of laser so that the student has a good scientific base and the basis on which to rely if He decides to keep getting higher scores.

234. Teaching and Learning Strategies	
Strategy	

	Theoretical lecture, dialogue and discussions, daily assignments, quiz

235. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Light theory	light theory , light theory development, electromagnetic spectrum	Lecture	Quiz
2	2	Blackbody Radiation Theory	Blackbody Radiation Theory, Stefan boltzman & Rayleigh-Jeans and Planck Radiation Formula, Planck's Hypothesis and Field Quantization	Lecture	Quiz
3	2	Basic transitions between energy levels	Spontaneous Emission, Absorption and Stimulated Emission Rates	Lecture	Quiz
4	2	Transition Cross Section, Absorption, and Gain Coefficient	Transition Cross Section, Absorption, and Gain Coefficient	Lecture	Quiz
5	2	Einstein Thermodynamic Treatment	Einstein Thermodynamic Treatment for both spontaneous and stimulated transitions	Lecture	Quiz
6	2	Spectral line broadening	Line-Broadening Mechanisms, Homogeneous & Inhomogeneous Broadening.	Lecture	Quiz
7	2	Maser & Laser Idea	Maser & Laser Idea, Laser components, Laser Beam Properties	Lecture	Quiz
8	2	Population inversion	Population inversion, threshold condition, gain coefficient at threshold.	Lecture	Quiz
9	2	Pumping Processes	Pumping Processes, (Four-Level and Three-Level Lasers)	Lecture	Quiz
10	2	Pump Rate and total Pump Efficiency	Pump Rate and total Pump Efficiency	Lecture	Quiz
11	2	Optical Resonators	Optical Resonators types, Plane Parallel (Fabry-Perot), Concentric (Spherical) Resonator, Confocal Resonator & Ring Resonator	Lecture	Quiz
12	2	Stability condition of laser resonator	Stability condition of laser resonator , Unstable Resonators	Lecture	Quiz
13	2	Cavity Modes	Cavity Modes, types and definitions	Lecture	Quiz
14	2	theoretical calculation for laser spot size	theoretical calculation for laser spot size	Lecture	Quiz
15	2	Power & Energy of laser	Power & Energy of laser, laser Efficiency, CW & pulse laser	Lecture	Quiz
16	2	Q-Switching	Dynamics of the Q-Switching Process,	Lecture	Quiz
17	2	Q-Switching	Rotating mirror, Electrooptical Q-Switching, , Acoustooptic Q-Switches	Lecture	Quiz

338.	2	Mode locking	Mode locking	Lecture	Quiz
339.	2	Nonlinear optics	Nonlinear optics, double frequency,	Lecture	Quiz
340.	2	Nonlinear optics	converting efficiency, birefringence	Lecture	Quiz
341.	2	Solid-State Lasers	Solid-State Lasers, Ruby Laser, Nd:YAG & Nd:Glass Lasers	Lecture	Quiz
342.	2	Gas laser	Neutral Atom Lasers (He-Ne Laser) , Ion Lasers (Argon Laser)	Lecture	Quiz
343.	2	Gas laser	Molecular Gas Lasers (Co_2 Laser)	Lecture	Quiz
344.	2	Dye Lasers	Dye Lasers, Photophysical Properties of Organic Dyes, Characteristics of Dye Lasers	Lecture	Quiz
345.	2	Semiconductor Laser	Principle of Semiconductor Laser Operation, Semiconductor Laser structure	Lecture	Quiz
346.	2	Semiconductor Laser	Properties of Semiconductor Laser, Homojunction & Double-Heterostructure Lasers, Laser Devices and Performances	Lecture	Quiz
347.	2	application of laser,	Medical application of laser, Material processing, Nuclear fusion	Lecture	Quiz
348.	2	application of laser,	Optical communication , Holography, Military	Lecture	Quiz
349.	2	Laser safety	Laser safety	Lecture	Quiz
350.			Final Exam		

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Siham A. Kandela, Laser Physics with som application , Baghdad University ,1988.
Main references (sources)	Principles of Lasers , 4th Edition , Orazio Svelto, Springer Science and Business Me Inc. 1998.
Recommended books and references (scientific journals, reports…)	*Laser Fundamentals, second Edition , William T. Silfvast , Cambridge University Press, 2004. * Lasers Fundamentals and Applications, Second Edition, K. Thyagarajan and Ajoy Ghatak Springer Science and Business Media, LLC , 2010.

Name and Signature of	**Name and Signature**
Curriculum Administrator	**of Department or Branch Head**
Dr. Ragheed M. Ibrahim	**.Dr.Marwan Hafeedh younus**

University: Mosul **College: Education for Pure Science** **Department or Branch: Physics**

Course Name and Stage:
Measurement and Evaluation/ Phase IV
237. Course Code:
EDCPH25M409
238. Semester / Year:
First and Second Semester/2024-2025
239. Description Preparation Date:
1/9/2024
240. Available Attendance Forms:
Daily working hours (in presence)
241. Number of Credit Hours (Total) / Number of Units (Total)
There are two divisions that is, the number of hours for per week = 4.....Down bel the Month=4*4 weeks= 16hours
242. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Aziz Mohammed Ali Ema dr.aziz@uomosul.edu.iq
243. Course Objectives

Subject Objectives of the course : Part no. **1- Introducing the student to the meaning measurement and evaluation.** **2-Identifying the most important measure achievement tests.** **3. Clarify the relationship between measureme evaluation and testing.** **4-Identifying the specification table.** **5-Clarifying the types of achievement tests.** **6-Identifying the most important determinants knowledge goals.** **7. Comparison of target types.** **8. Draw a diagram showing my cognitive goals** **9. Classification of behavioral purposes.** **10-Learn the basic rule of writing behavio purposes.** **Section II:**	1- Introducing the student to the meaning measurement and evaluation. 2-Identifying the most important measure achievement tests. 3. Clarify the relationship between measureme evaluation and testing. 4-Identifying the specification table. 5-Clarifying the types of achievement tests. 6-Identifying the most important determinants knowledge goals. 7. Comparison of target types. 8. Draw a diagram showing my cognitive goals? 9. Classification of behavioral purposes. 10-Learn the basic rule of writing behavio

1- Learn about the concept of measurem and evaluation. **2- Clarify the specification table.** **3- Give examples of the specification ta associated with the objectives** **4- Cognitive and its characteristics.** **5- Give examples of ease and difficulty.** **6- Recognize the importance measurement in achievement tests** **which is related to students' abiliti tendencies, and readiness.** **7- Classification of achievement tests.** **8- Detailed explanation of the specificat table with some attachments** **Illustrative models of the solution.** **1. TEACHING AND LEARNING STRATEGI**	purposes. Section II: 9- Learn about the concept of measurement a evaluation. 10- Clarify the specification table. 11- Give examples of the specification ta associated with the objectives 12- Cognitive and its characteristics. 13- Give examples of ease and difficulty. 14- Recognize the importance of measurement achievement tests which is related to students' abilities, tendenc and readiness. 15- Classification of achievement tests. 16- Detailed explanation of the specification ta some attachments Illustrative models of the solution.....

244. Teaching and Learning Strategies

Strategy: lecture, discussion and dialogue, Goo classroom, problem-solving, **Advanced lecture, cooperative learning, educatio games, brainstorming, questioning.**	lecture, discussion and dialogue, Google classroom, problem-solving, Advanced lecture, cooperative learning, educational games, brainstorming, questioning

245. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

246. Course Evaluation and Marks: Distribution of the score of 100 according to the tasks assigned to the student such as daily preparation, daily, oral,

monthly and written examinations and reports …. etc	
247. Learning and Teaching Resources	
Required textbooks(curricular books, if any):-Measurement and Evaluation in Education and Psychology Written by Dr. Sami Mohammed Melhem Dar Al-Masirah/Sixth Edition, 2017	
Main references (sources): - Measurement and evaluation in the teaching process Written by Dr. Ahmed Suleiman Odeh Dar Al-Amal Publishing and Distribution, 2002 - Psychometry Written by Dr. Mahmoud Ahmed Omar et al Amman, Dar Al Masirah for Publishing and Distribution.	
Recommended books and references (scientific journals, reports…) Instructing students to use the college library to access private resources Curricula and Teaching Methods Department.	
Electronic References, Websites: Directing to websites related to the subjects the material,	
Percentage of Curriculum update: 30%	

Name and Signature

of Curriculum Administrat

dr. Aziz Mohammed Ali

Name and Signature

of Department or Branch Head

dr .Marwan Hafeath Yones

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم الفيزياء

University: of Mosul, Mosul, IRAQ **College: of Physics,**
Department or Branch: College of Education for Pure Sciences

248. Course Name and Stage:
Quantum mechanics
249. Course Code:
EDPH25G404
250. Semester / Year: Fourth year / annual system
2025/2024
251. Description Preparation Date:
2024/9/1
252. Available Attendance Forms: Actual attendance, even for the download case, and there may be a remote study, according to the laws in force
253. Number of Credit Hours (Total) / Number of Units (Total)60
254. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Email: 1- A.M.D Marwan Hafiz Younes Email: Marwan.hafed@uomosul.edu.iq 2-Lubna Haqi Ismael Email: Lubna.haqi_ismael178@uomosul.edu.iq
255. Course Objectives

Subject Objectives	• **The student is introduced to the basics of quantum mechanics theory** • **The student will be able to solve all the various problems related to the subject** • **Developing the student's information about the subject by adding some modern topics** • •

256. Teaching and Learning Strategies

Strategy	

257. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation metho

					d
Course structure .1					
method of assessment	education method	Name of the unit/course or topic	required learning outcomes	hours	the wee
According to point (10) above and as needed	According to point (10) above and as needed	**Influencers and the exchange of influences**	Fundamentals of quantum mechanics	3	1
According to point (10) above and as needed	According to point (10) above and as needed	Properties of the Hermitian operator	Hermitian influencer	3	2
According to point (10) above and as needed	According to point (10) above and as needed	Examples of expected value	expected value	3	3
According to point (10) above and as needed	According to point (10) above and as needed	Solve the time dependent Scherdoncker equation	Scherdoncker equation	3	4
According to point (10) above and as needed	According to point (10) above and as needed	The free particle and the particle inside the box in one and three dimensions	Scherdoncker equation applications	3	5
According to point (10) above and as needed	According to point (10) above and as needed	Through low effort with limited height	reflection and penetration	3	6
According to point (10) above and as needed	According to point (10) above and as needed	Solve the harmonic oscillator equation	harmonic oscillator	3	7
According to point (10) above and as needed	According to point (10) above and as needed	Comparison between quantum theory and classical theory	harmonic oscillator	3	8
According to point (10) above and as needed	According to point (10) above and as needed	Solve the differential equation	The atomic has one electron	3	9
According to point (10) above and as needed	According to point (10) above and as needed	Comparison between quantum theory and classical theory	Angular momentum	3	10
According to point (10) above	According to point (10)	Perturbation theory, first approximation, the	rounding methods	3	11

and as needed	above and as needed	degenerate state and the non-degenerate state			
According to point (10) above and as needed	According to point (10) above and as needed	Applications to perturbation theory	rounding methods	3	1
According to point (10) above and as needed	According to point (10) above and as needed	Covariance method	rounding methods	3	1
According to point (10) above and as needed	According to point (10) above and as needed	Comparison of classical and quantitative scattering	Scattering theory	3	1
According to point (10) above and as needed	According to point (10) above and as needed	Calculation of differential and total cross sectional area	Scattering theory	3	1

258. Course Evaluation and Marks

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

259. Learning and Teaching Resources

Required textbooks (curricular books, if any)	: The textbook in Arabic • Fundamentals of Quantum Mechanics, written by Dr. Salem Al-Shamaa and Dr. Amjad Abdel-Razzaq Karjieh The textbook in English ● Quautum mechanics and spectroscopy:another workbook:M.Kuno
Main references (sources)	: The textbook in Arabic • Fundamentals of Quantum Mechanics, written by Dr. Salem Al-Shamaa and Dr. Amjad Abdel-Razzaq Karjieh The textbook in English
Recommended books and references (scientific journals, reports…)	Introduction to Quantum Mechanics Composition 1-Dr. Arbab Ibrahim Arbab 2-D. Ibrahim is a human crocodile

Electronic References, Websites	GeorgetownX: Quantum Mechanics f Everyone
Percentage of Curriculum update	70%

Name and Signature

of Curriculum Administrator

Marwan Hafeedh Younus

Name and Signature

of Department or Branch Head

M . Lubna Haqi Ismal

University: Mosul College: Education college for pure science
Department or Branch: Physics

260. Course Name and Stage:
Nuclear physics
261. Course Code:
EDPH25F401
262. Semester / Year:
2024−2025
263. Description Preparation Date:
1/9/2024
264. Available Attendance Forms:
Class
265. Number of Credit Hours (Total) / Number of Units (Total)
3 /3
266. Course administrator's name (mention all, if more than one name) and Scientific title
Name: Asst.Prof. Rabee Behnam kheder Email: khayatrabee@uomosul.edu.iq

267. Course Objectives	
Subject Objectives	1.The student gains an understanding of the fundamental principles of nuclear physics. 2. Acquainting learners with fundamental nuclear physics concepts, including terminology and vocabulary pertaining to nuclear processes, various categories of nuclear particles, and the radiation emitted by radioactive nuclei; investigating nuclear decays in their entirety. 3. Expanding the student's understanding of the subject by incorporating contemporary subjects 4. Theoretical Equation Derivation for Different Nuclear Reactions •

268. Teaching and Learning Strategies	
Strategy	Theoretical lecture, dialogue and discussions, daily assignments, quiz

269. Course Structure

Week	Hours	Required	Unit or subject name	Learning	Evaluation

		Learning Outcomes		method	method
1	3	Nuclear properti	Nuclear properties Introduction, definitions, units and dimensions in nuclear physics	Lecture	Quiz
2	3	Nuclear properti	Nuclear properties Binding ratio, binding energy, separation energy, stability valley	Lecture	Quiz
3	3	Radioactivity	Radioactivity, decay, half-life, total number of radioactive nuclei, units of radioactivity (cures), radioactive effectiveness, absorption dose	Lecture	Quiz
4	3	Nuclear chain	Nuclear decay, nuclear chains, alpha decay, beta decay	Lecture	Quiz
5	3	Gamma decay	Gamma decay, energy calculation in gamma decay, interaction of gamma rays with Matter, photoelectric phenomenon, Compton scattering	Lecture	Quiz
6	3	Electromagnetic transition probability	Nuclear decay Pair production, Electromagnetism, selection rules	Lecture	Quiz
7	3	Nuclear reactions	Nuclear reactions Introduction, types of nuclear reactions, Nuclear, exergonic reactions, exergonic reactions, Threshold energy	Lecture	Quiz
8	3	Accelerators	Nuclear reactions Accelerators and nuclear reactors	Lecture	Quiz
9	3	Nuclear models	Nuclear models Introduction, liquid drop model, shell potential and distribution model Nucleons	Lecture	Quiz
10	3	Nuclear models	Nuclear models, Liquid drop model, meaning of nuclear fission	Lecture	Quiz
11	3	Elementary particles	elementary particles Forces of nature, classification of elementary particles, types of interactions	Lecture	Quiz
12	3	Quark theory	elementary particles Conservation laws, quark theory	Lecture	Quiz
13	3	Radiation sources	Risks of nuclear radiation, Radiation sources, depleted uranium, and methods for detecting it	Lecture	Quiz
14	3	Astronuclear	Astronuclear physics. Nuclear fission in stars	Lecture	Quiz
15	3	Astronuclear	Astronuclear physics, helium combustion, heavy element combustion	Lecture	Quiz

270. Course Evaluation and Marks	
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	
271. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Nuclear physics by منيب عادل
Main references (sources)	Nuclear physics by منيب عادل
Recommended books and references (scientific journals, reports…)	1. THE ATOMIC NUCLEUS by Robley D. Evans. 2. Nuclear physics by Irving Kaplan
Electronic References, Websites	https://www.youtube.com/watch?v=wIzjQoMYlhs https://ocw.mit.edu/courses/25-02-introduction-to-applied-nuclear-physics-spring-2012/
Percentage of Curriculum update	10%

Name and Signature

of Department or Branch Head

Dr. Marwan Hafeedh Younus

Name and Signature

of Curriculum Administrat

Dr. Rabee Behnam Kheder