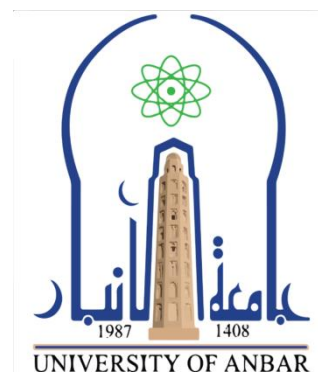


University of Anabr

جامعة الانبار



First Cycle – Bachelor's degree (B.Sc.) – Physics

بكالوريوس علوم - فيزياء



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1. About Department

The Physics Department was established in the faculty of Science in 1989. The study period in the department is four years. The department grants a bachelor's degree in general physics after the student has completed a systematic scientific preparation that qualifies him/her to keep pace with technical progress in the field of scientific research and to provide service to the public and private sectors.

The department includes laboratories for postgraduate and undergraduate such as Nano thin films, plasma ,advance materials as well as for radiation measurements that contain devices and equipment within international standards. Dozens of scientific research have been published in international journals with an impact factor and indexed in the Scopus classification.

The department included the following degrees: –

- **Bachelor's degree:**

This includes four stages; each stage includes two semesters meaning for the students to be graduated, they must have completed eight semesters. These includes BSc in general physics.

- **Master's degree**

It includes two stages, namely the preparatory year, and it is divided into two semesters (two courses), in the first semester, basic courses are given while in the second semester basic courses together with optional courses are given that are mostly specialized. The second stage includes conducting a scientific research, whether in the theoretical or practical side, and continues for a period of one calendar year, after which the student defend his research work (thesis) through a committee of specialists in order to grant him/her a higher degree that qualifies him/her to practice his work in that specialization.

- **PhD degree**

It includes two stages. The first stag is the preparatory stage of the PhD course, and this is divided into two semesters, in the first semester, advanced courses in physics are given while in the second semester advanced specialized courses together with optional courses in specified fields of physics (e.g. Nanoscience, medical physics, radiation physics...etc). The second stage includes conducting a scientific research spending at least two years. After completing the thesis, the student submits his these for final viva.

2. **Mission & Vision Statement**

- **Vision Statement**

The Department of Physics seeks to establish and develop scientific knowledge in the community and upgrading it by preparing specialized human cadres with high efficiency to use modern technology for use in the fields of scientific research and capable of serving society and science and providing the student with knowledge in the fields of physics because of its expansion and great connection with the rest of other sciences, whether in natural and industrial fields, and advanced research that have an effective impact on the development of scientific knowledge and the service of the labor market.

- **Mission Statement**

The mission of the department is to prepare students professionally and scientifically through a scientific program that focuses on the student's need for educational and learning tools and to work to meet one of the most important objectives upon which the faculty was founded, which is to qualify the student academically and scientifically in a way that is fully consistent with the requirements of the progress in science regarding basic sciences, which represent the basic of the rest of the sciences and the basis on which international scientific and knowledge development depends.

The basic tasks of the Physics Department are based on three essentials basics:

- The educational process: providing an excellent educational environment for students and equipping them with science to develop their intellectual level and abilities and make them responsible in society, especially with regard to scientific and applied matters.

- Scientific research: revitalizing scientific research through the participation of faculty members and students in conducting physics research and disseminating knowledge to contribute to the development of the local community as required by the labor market.
- Community service: Consolidating relations with state departments benefiting from their specializations by providing basic and applied research, as well as holding seminars and scientific lectures inside and outside the department, especially medical, agricultural, educational and environmental institutions.

3. Program Specification

Program code:	BSc-Physics	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Physics is one of the most important and leading science that has a wide range of applications in natural life that is a key in serving the community as a whole and individuals in specific. The physics also has its essential role in prompt development of recent technology.

Level 1 offers students the fundamentals of physics, suitable for progression in the all programs within the physics fields. Specific physics related core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. At Levels 3 and 4, students are free to select four modules with a range of modules that reflect cutting edge subjects. The research ability is developed and fostered from the start via practical coursework, which are either embedded in lecture modules or taught in dedicated practical modules (research seminars and tutorials). There is a compulsory physics course in Level 1, which students must pass in order to progress into Level 2. At Level 4 all students carry out an independent research project.

4. Program Goals

1. To provide a comprehensive education in physics that stresses scientific reasoning and problem solving across the spectrum of disciplines within physics
2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of Physics
3. To provide extensive hands-on training in electronic technology, statistical analysis, laboratory skills, and field techniques
4. To provide thorough training in written and oral communication of scientific information

5. Student Learning Outcomes

The Department of Physics has been working on preparing specialized staffs in physics and scientific research as well as preparing professional and educational staffs for the different state directorates. One of the most important aims of the department in the Faculty of Sciences is working on qualifying the students academically and scientifically to completely cope with the modernized technology in physics. The department is also looking forward to developing the research skills of the students and get them acquainted with technology and programs throughout their research.

A student completing a major in Physics shall demonstrate the ability to:

1. Demonstrate conceptual understanding of fundamental physics principles
2. Communicate physics reasoning in oral and in written form
3. Solve physics problems using qualitative and quantitative reasoning including sophisticated mathematical techniques
4. Conduct independent research or work successfully in a technical position.

6. Academic Staff

Asmiet Ramizy	Professor	PhD	Nano.optoelectronic	asmat_hadithi@uoanbar.edu.iq
Israa Kamil Ahmed	Lecturer		Nuclear and Environmental physics	esraa-nuc_med@uoanbar.edu.iq
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Ahmed S Obaid	Associate Prof	PhD	Nanostructured materials	sc.ahmed.s.obaid.alqayssei@uoanbar.edu.iq
Wissam Ahmed Ameen	Lecturer	PhD	Theoretical Physics	wissam.ameen@uoanbar.edu.iq
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Jamal M. Rzaij	Assistant Professor		Nanostructures	sc.jam72al@uoanbar.edu.iq
Sameer Obaid Nawaf	Lecturer	M.Sc.	Theoretical physics	sameer@uoanbar.edu.iq
Akram Mohammed Ali	Asst.Prof.	Ph.D	Nuclear physics	dr.akram@uoanbar.edu.iq
Anhar Abd-Alsalam Oda	Assistant lecturer	M.Sc.	Theoretical Physics	alfahdawi2@uoanbar.edu.iq
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Moaed. M. Motlak	Assistant professor	Ph.D	Nanotechnology	moaaed.motlak@uoanbar.edu.iq

Nabeel F. Lattoofi	Assistant Professor	PhD	Nuclear and environmental physics	dr.nabeel.fawzi@uoanbar.edu.iq
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Hamsa Adnan Ali	Lecturer	Ph.D.	Medical Physics	sc.hams2100@uoanbar.edu.iq
Adil Nameh Ayyash	assistant prof.	Ph.D.	molecular physics	sc.adil_nameh78@uoanbar.edu.iq
Nabeil Ibrahim Fawaz	Professor	Ph.D.	Nuclear structure spectroscopy	nifawaz@uoanbar.edu.iq
Abdulsalam mohammed khalaf	Lecturer	M.Sc.	Photon physics	abdulsalam@uoanbar.edu.iq

7. Credits, Grading and GPA

• Credits

University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

• Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follow

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [(1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots] / 240$$

8. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
One	1	PHY-111	Mechanics I	English	94	81	175	7.00	C
	2	PHY-112	Electricity	English	79	96	175	7.00	C
	3	PHY-113	Mathematics I	English	63	62	125	5.00	B
	4	SCI-101	Computer Programming I	English	64	36	100	4.00	B
	5	UNI-103	Human Rights and democracy	Arabic	48	27	75	3.00	S
	6	UNI-102	Arabic Language	Arabic	48	52	100	4.00	S
			Total		396	354	750	30.00	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
Two	1	PHY-121	Mechanics II	English	94	81	175	7.00	C
	2	PHY-122	Magnetism	English	94	81	175	7.00	C
	3	PHY-123	Mathematics II	English	48	77	125	5.00	B
	4	PHY-124	Computer Programming II	English	49	51	100	4.00	B
	5	PHY-125	General Astronomy	English	48	27	75	3.00	B
	6	UNI-101	English Language	English	63	37	100	4.00	S
			Total		396	354	750	30.00	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
Three	1	PHY-211	Modren Physics I	English	79	71	150	6.00	C
	2	PHY-212	Heat and Thermodynamic	English	79	71	150	6.00	C
	3	PHY-213	Analytical Mechanics I	English	48	52	100	4.00	C
	4	PHY-214	Analog Electronics	English	79	71	150	6.00	C
	5	PHY-215	MathematicsIII	English	48	52	100	4.00	B
	6	PHY-216	Numerical Analytic	English	63	37	100	4.00	B
			Total		396	354	750	30.00	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
Four	1	PHY-221	Modren Physics II	English	48	71	100	4.00	C
	2	PHY-222	Heat and Thermodynamic	English	79	71	150	6.00	C
	3	PHY-223	Analytical Mechanics II	English	63	37	100	4.00	C
	4	PHY-224	Digital Electronics	English	79	71	150	6.00	C
	5	PHY-225	MathematicsIIII	English	48	52	100	4.00	B
	6	PHY-226	Geometrical Optics	English	79	52	150	6.00	C
			Total		396	354	750	30.00	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
Five	1	PHY-311	Physical Optics	English	79	71	150	6.00	C
	2	PHY-312	Laser Physics I	English	79	71	150	6.00	C
	3	PHY-313	Quantum Mechanics II	English	63	37	100	4.00	C
	4	PHY-314	Material Physics I	English	79	71	150	4.00	C
	5	PHY-315	Semiconductor	English	79	71	150	5.00	C
	6	PHY-316	Mathematical Physics I	English	48	52	50	5.00	C
			Total		427	373	750	30.00	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
					hr/sem	hr/sem	hr/sem		
Six	1	PHY-321	sound and wave motion	English	79	71	100	4.00	C
	2	PHY-322	Laser applications	English	79	71	150	6.00	C
	3	PHY-323	Quantum Mechanics II	English	63	37	125	5.00	C
	4	PHY-324	statistical mechanics I	English	79	71	150	6.00	C
	5	PHY-325	Mathematical Physics II	English	63	37	125	5.00	C
	6	PHY-326	Modeling and simulation	English	33	67	100	4.00	E
				Total	396	354	750	30.00	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
						hr/sem	hr/sem	hr/sem	
Seven	1	PHY-411	Nuclaear Physics I	English	94	81	175	7.00	C
	2	PHY-412	Solid State Physics I	English	94	81	175	7.00	C
	3	PHY-413	Electromagnatics Theory I	English	63	37	100	4.00	C
	4	PHY-414	Nanoscience I	English	63	37	100	4.00	B
	5	PHY-415	Nuclear spectrum	English	48	52	100	4.00	E
	6	PHY-416	statistical mechanics II	English	32	68	100	4.00	C
				Total	394	356	750	30.0	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs (general physics)

Semester	No.	Module Code	Module Name in English	Language	SSWL	USSWL	SWL	ECTS	Module Type
						hr/sem	hr/sem	hr/sem	
Eight	1	PHY-421	Nuclaear Physics II	English	79	96	175	7.00	C
	2	PHY-422	Solid State Physics II	English	79	96	175	7.00	C
	3	PHY-423	Electromagnatics Theory II	English	63	37	100	4.00	C
	4	PHY-424	medical Physics	English	63	37	100	4.00	C
	5	PHY-425	Particles Physics	English	63	37	100	4.00	C
	6	PHY-426	Research project	English	48	52	100	4.00	E
				Total	395	355	750	30.0	

9. Contact

Program Manager:

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Mobile no.: +9647800095999

Program Coordinator:

Abdulsalam mohammed khalaf Msc in Physics | lecturer assistance

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Mechanics I		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	PHY-111				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	UGx11	1		Semester of Delivery	1
Administering Department	physics		College	science	
Module Leader	Nabeel. F. Lattoofi		e-mail	dr.nabeel.fawzi@uoanbar.edu.iq	
Module Leader's Acad. Title	Assist. Prof.		Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Name		e-mail	E-mail	
Scientific Committee Approval Date	1-9-2024		Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	None		Semester	
Co-requisites module	None		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of vectors quantities and Properties of Vectors. 2. Studying the science of movement describing an aspect of “kinematics” of movement influences in terms of “dynamics”. 3. The chapter deals with of one-dimensional motion with constant acceleration 4. This is the basic subject for constant acceleration, and Free Fall. 5. The concept of law of motion and the concept of force.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how dot and cross product in the vector quantities. 2. List the various terms associated with Physical Quantity and Measurements. 3. Summarize what meant by vector quantities. 4. Discuss the Application of one-dimensional motion with constant acceleration. 5. Describe constant acceleration, and Free Fall. 6. Define Motion in two dimensions. 7. Identify the basic Motion in two dimension with constant acceleration. 8. Discuss the Projectile motion with horizontal range and maximum height of a projectile. 9. The law of motion and the concept of force. 10. Explain the Newton’s laws of motion. 11. Identify the Work and Energy relationship with Work done by a varying force and Work done by a spring.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Physics and Measurements and Properties of Vectors</u> Physical Quantity – Derived quantities, Dimensional Analysis, Vector and Scalar-Coordinate system. Properties of Vectors, Vector addition and subtraction, Components of a vector, Product of a vector: scalar product and the vector product. [15 hrs] Kinematics Description of Motion – The position vector and the displacement vector, The average and Instantaneous velocity and acceleration. Application of one-dimensional motion with constant acceleration, Free Fall, Motion in two dimensions,

	Projectile motion, Motion in Uniform Circular Motion. [15 hrs]
	Dynamics, The Law of Motion- The concept of force, Newton's laws of motion, Newton's first and second law, Newton's third law. [10 hrs]
	Weight and tension- Force of friction (natural and step responses), Questions with solution [15 hrs]
	Revision problem classes [6 hrs]
	<u>Part B - Analogue Electronics</u>
	Work and Energy Work done by a constant force, Work done by a varying force, Work done by a spring, Work and kinetic energy, Power, Questions with solution. [7 hrs] Potential energy and conservation energy – Potential energy and conservation energy. Conservative forces, Potential energy Conservation of mechanical energy, Total mechanical energy, Non-conservative forces and the work-energy theorem, Questions with solution [15 hrs] The Linear Momentum and Collisions– The Linear Momentum, Conservation of linear momentum, Collisions. Perfectly Inelastic collisions, Elastic collisions, Special cases, Questions with solution. [15 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes,

	interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	200		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5 and 10	LO #1, #2 and #10, #11
	HW	5	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	15% (15)	Continuous	All
	Inside HW	5	5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction: Physics and Measurements
Week 2	Properties of Vectors
Week 3	Product of a vector: The scalar product, and the vector product
Week 4	Kinematics Description of Motion
Week 5	One-dimensional motion with constant acceleration
Week 6	Projectile motion
Week 7	Motion in Uniform Circular Motion
Week 8	Motion in two dimensions, Projectile motion
Week 9	The Law of Motion
Week 10	Mutual Inductance, Force of friction
Week 11	Work and Energy, Work done by a varying force, Power
Week 12	Potential energy and conservation energy, Potential energy
Week 13	Total mechanical energy
Week 14	The Linear Moment and Conservation of linear momentum
Week 15	Perfectly Inelastic collisions, Elastic collisions and Special case
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: determination of the acceleration of gravity by means of spring

Week 2	Lab 2: equilibrium of force
Week 3	Lab 3: determination of liquid density by test tube
Week 4	Lab 4: determination moment of inertia by bifilar
Week 5	Lab 5: determination of the acceleration of gravity
Week 6	Lab 6: coefficient of static friction between two surfaces
Week 7	Lab 7: Freely Falling bodies

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	VECTOR ANALYSIS, Murray R Spiegel Lerner L.S, Physics for scientist and engineers, Jones and Bartell,Publishers, 1996.	No
Recommended Texts	Serway, R. A., Physics for scientists and engineering with modern physics. Saunders College Publishing, 1990.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanics I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PHY-111			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		
Administering Department	physics	College	science	
Module Leader	Nabeel. F. Lattoofi		e-mail	dr.nabeel.fawzi@uoanbar.edu.iq
Module Leader's Acad. Title	Assist. Prof.		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	1-9-2024		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	6. To develop problem solving skills and understanding of vectors quantities and Properties of Vectors. 7. Studying the science of movement describing an aspect of “kinematics” of movement influences in terms of “dynamics”. 8. The chapter deals with of one-dimensional motion with constant acceleration 9. This is the basic subject for constant acceleration, and Free Fall. 10. The concept of law of motion and the concept of force.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 12. Recognize how dot and cross product in the vector quantities. 13. List the various terms associated with Physical Quantity and Measurements. 14. Summarize what meant by vector quantities. 15. Discuss the Application of one-dimensional motion with constant acceleration. 16. Describe constant acceleration, and Free Fall. 17. Define Motion in two dimensions. 18. Identify the basic Motion in two dimension with constant acceleration. 19. Discuss the Projectile motion with horizontal range and maximum height of a projectile. 20. The law of motion and the concept of force. 21. Explain the Newton’s laws of motion. 22. Identify the Work and Energy relationship with Work done by a varying force and Work done by a spring.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Physics and Measurements and Properties of Vectors</u> Physical Quantity – Derived quantities, Dimensional Analysis, Vector and Scalar-

	Coordinate system. Properties of Vectors, Vector addition and subtraction, Components of a vector, Product of a vector: scalar product and the vector product. [15 hrs] Kinematics Description of Motion – The position vector and the displacement vector, The average and Instantaneous velocity and acceleration. Application of one-dimensional motion with constant acceleration, Free Fall, Motion in two dimensions, Projectile motion, Motion in Uniform Circular Motion. [15 hrs] Dynamics, The Law of Motion- The concept of force, Newton's laws of motion, Newton's first and second law, Newton's third law. [10 hrs] Weight and tension- Force of friction (natural and step responses), Questions with solution [15 hrs] Revision problem classes [6 hrs] <u>Part B - Analogue Electronics</u> Work and Energy Work done by a constant force, Work done by a varying force, Work done by a spring, Work and kinetic energy, Power, Questions with solution. [7 hrs] Potential energy and conservation energy – Potential energy and conservation energy. Conservative forces, Potential energy Conservation of mechanical energy, Total mechanical energy, Non-conservative forces and the work-energy theorem, Questions with solution [15 hrs] The Linear Moment and Collisions– The Linear Moment, Conservation of linear momentum, Collisions. Perfectly Inelastic collisions, Elastic collisions, Special cases, Questions with solution. [15 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5 and 10	LO #1, #2 and #10, #11
	HW	5	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	15% (15)	Continuous	All
	Inside HW	5	5% (5)	13	LO #5, #8 and #10

Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction: Physics and Measurements
Week 2	Properties of Vectors
Week 3	Product of a vector: The scalar product, and the vector product
Week 4	Kinematics Description of Motion
Week 5	One-dimensional motion with constant acceleration
Week 6	Projectile motion
Week 7	Motion in Uniform Circular Motion
Week 8	Motion in two dimensions, Projectile motion
Week 9	The Law of Motion
Week 10	Mutual Inductance, Force of friction
Week 11	Work and Energy, Work done by a varying force, Power
Week 12	Potential energy and conservation energy, Potential energy
Week 13	Total mechanical energy
Week 14	The Linear Moment and Conservation of linear momentum
Week 15	Perfectly Inelastic collisions, Elastic collisions and Special case
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: determination of the acceleration of gravity by means of spring
Week 2	Lab 2: equilibrium of force
Week 3	Lab 3: determination of liquid density by test tube
Week 4	Lab 4: determination moment of inertia by bifilar
Week 5	Lab 5: determination of the acceleration of gravity
Week 6	Lab 6: coefficient of static friction between two surfaces
Week 7	Lab 7: Freely Falling bodies

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	VECTOR ANALYSIS, Murray R Spiegel Lerner L.S, Physics for scientist and engineers, Jones and Bartell,Publishers, 1996.	No
Recommended Texts	Serway, R. A., Physics for scientists and engineering with modern physics. Saunders College Publishing, 1990.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors

	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanics I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PHY-111			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		
Administering Department	physics		College	science
Module Leader	Nabeel. F. Lattoofi		e-mail	dr.nabeel.fawzi@uoanbar.edu.iq
Module Leader's Acad. Title	Assist. Prof.		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail

Scientific Committee Approval Date	1-9-2024	Version Number	1.0
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Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	11. To develop problem solving skills and understanding of vectors quantities and Properties of Vectors. 12. Studying the science of movement describing an aspect of “kinematics” of movement influences in terms of “dynamics”. 13. The chapter deals with of one-dimensional motion with constant acceleration 14. This is the basic subject for constant acceleration, and Free Fall. 15. The concept of law of motion and the concept of force.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 23. Recognize how dot and cross product in the vector quantities. 24. List the various terms associated with Physical Quantity and Measurements. 25. Summarize what meant by vector quantities. 26. Discuss the Application of one-dimensional motion with constant acceleration. 27. Describe constant acceleration, and Free Fall. 28. Define Motion in two dimensions. 29. Identify the basic Motion in two dimension with constant acceleration. 30. Discuss the Projectile motion with horizontal range and maximum height of a projectile. 31. The law of motion and the concept of force. 32. Explain the Newton’s laws of motion.

	33. Identify the Work and Energy relationship with Work done by a varying force and Work done by a spring.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Physics and Measurements and Properties of Vectors</u> Physical Quantity – Derived quantities, Dimensional Analysis, Vector and Scalar-Coordinate system. Properties of Vectors, Vector addition and subtraction, Components of a vector, Product of a vector: scalar product and the vector product. [15 hrs] Kinematics Description of Motion – The position vector and the displacement vector, The average and Instantaneous velocity and acceleration. Application of one-dimensional motion with constant acceleration, Free Fall, Motion in two dimensions, Projectile motion, Motion in Uniform Circular Motion. [15 hrs] Dynamics, The Law of Motion- The concept of force, Newton's laws of motion, Newton's first and second law, Newton's third law. [10 hrs] Weight and tension- Force of friction (natural and step responses), Questions with solution [15 hrs] Revision problem classes [6 hrs] <u>Part B - Analogue Electronics</u> Work and Energy Work done by a constant force, Work done by a varying force, Work done by a spring, Work and kinetic energy, Power, Questions with solution. [7 hrs] Potential energy and conservation energy – Potential energy and conservation energy. Conservative forces, Potential energy Conservation of mechanical energy, Total mechanical energy, Non-conservative forces and the work-energy theorem, Questions with solution [15 hrs]

	The Linear Moment and Collisions– The Linear Moment, Conservation of linear momentum, Collisions. Perfectly Inelastic collisions, Elastic collisions, Special cases, Questions with solution. [15 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	Quizzes	3	15% (15)	5 and 10	LO #1, #2 and #10, #11
	HW	5	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	15% (15)	Continuous	All
	Inside HW	5	5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction: Physics and Measurements
Week 2	Properties of Vectors
Week 3	Product of a vector: The scalar product, and the vector product
Week 4	Kinematics Description of Motion
Week 5	One-dimensional motion with constant acceleration
Week 6	Projectile motion
Week 7	Motion in Uniform Circular Motion
Week 8	Motion in two dimensions, Projectile motion
Week 9	The Law of Motion
Week 10	Mutual Inductance, Force of friction
Week 11	Work and Energy, Work done by a varying force, Power
Week 12	Potential energy and conservation energy, Potential energy

Week 13	Total mechanical energy
Week 14	The Linear Moment and Conservation of linear momentum
Week 15	Perfectly Inelastic collisions, Elastic collisions and Special case
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: determination of the acceleration of gravity by means of spring
Week 2	Lab 2: equilibrium of force
Week 3	Lab 3: determination of liquid density by test tube
Week 4	Lab 4: determination moment of inertia by bifilar
Week 5	Lab 5: determination of the acceleration of gravity
Week 6	Lab 6: coefficient of static friction between two surfaces
Week 7	Lab 7: Freely Falling bodies

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	VECTOR ANALYSIS, Murray R Spiegel Lerner L.S, Physics for scientist and engineers, Jones and Bartell,Publishers, 1996.	No
Recommended Texts	Serway, R. A., Physics for scientists and engineering with modern physics. Saunders College Publishing, 1990.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer programming I		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	SCI-101		
ECTS Credits	4		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	1

Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1-9-2024	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of computer programming. 2. Developing students to adapt to the rapid changes of special technologies in the field of information that characterize the age. 3. Developing students' ability to think scientifically through the method of solving problems using computers. 4. Providing students with self-learning, research and investigation skills through the use of various computer software applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. • Teaching the theoretical curriculum by presenting the material to the students while activating the participation of the students. • Teaching the material practically using the computer. • Employing the student to apply the subject in practice using the calculator. • Conducting implicit tests during the lecture. • Activate the material test in the lecture that follows the explanation of the material to confirm and consolidate the material, adding the • Test the effectiveness of the material for students.

	Explanation of the article and its practical application on the computer .Using the Fortran program.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Fortran program,</u> Components of the Fortran Desktop, Components of the Menu bar, Create a new file, Fortran Data Types, Arithmetic Operators, Relational Operators, statements in ForTran..[15 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7

assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Hardware And Software Computer Units
Week 2	Introduction to programming - Problems Solution With Programming
Week 3	Flow charts - Flow Charts For Different Programming Examples Solution - Flow Charts For Different Programming Examples Solution
Week 4	Fortran 90 programming language
Week 5	- Introduction To Fortran 90
Week 6	Components of the Fortran Desktop
Week 7	Mid-term Exam
Week 8	Components of the Menu bar
Week 9	Create a new files and Run the program
Week 10	Save and close the program
Week 11	Fortran Data types, Constants & Variables
Week 12	Input / Outputs Formats
Week 13	Arithmetic Operators
Week 14	Relational Operators
Week 15	read and print statements
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Components of the Fortran Desktop
Week 2	Lab 2: Create a new files and Run the program
Week 3	Lab 3: Save and close the program

Week 4	Lab 4: Fortran Data types, Constants & Variables
Week 5	Lab 5: Input / Outputs Formats
Week 6	Lab 6: Arithmetic Operators
Week 7	Lab 7: read and print statements

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1-اساسيات الحاسوب وتطبيقاته المكتبية الجزء 1- الاول ، أ.د. غسان عبد الحميد وآخرون، ٤١ بغداد	No
Recommended Texts	2-Brooks, David R. Problem solving with Fortran 90: for scientists and engineers. Springer Science & Business Media, 2012. 3- Hahn, Brian. Fortran 90 for scientists and engineers. Elsevier, 1994.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

وصف المقرر

١. اسم المقرر				
مختبر الكهربائية				
٢. رمز المقرر				
٣. الفصل /السنة				
٣الفصل الدراسي الاول 2024-2025				
٤. تاريخ اعداد هذا الوصف				
1-9-2024				
٥. اشكال الحضور المتاحة				
فصلي				
٦. عدد الساعات الدراسية(الكلّي)\عدد الوحدات (الكلّي)				
٣٠ ساعة في الكورس / ١٥ وحدة				
٧. اسم مسؤول المقرر الدراسي (إذا اكثر من اسم يذكر)				
الاسم : م.م عبد السلام محمد خلف البريد الالكتروني: abdulsalam@uoanbar.edu.iq				
٨. اهداف المقرر				
اهداف المادة الدراسية		- تعرف الطلبة على التجارب العلمية في مختبر الكهربائية والمغناطيسية ودورها في فهم اساسيات الكهربائية واستخداماته اليومية . - أن يفهم الطالب ما يطرأ على الحقل العلمي الذي يدرسه (التطبيقات الحديثة للتجارب العلمية في مجال الفيزياء الكهربائية والمغناطيسية). - جعل الطلبة يشعرون بقيمة وأهمية مادة الفيزياء الكهربائية في العلوم والتكنولوجيا وكيفية تعاملهم مع طلبة المدارس بعد التخرج وممارسة اختصاصاتهم كمدرسين في المدارس وبعض المختبرات البحثية في دوائر الدولة المتعلقة بالصناعة وفي مجال البحث والتطوير.		
٩. استراتيجيات التعليم والتعلم				
الاستراتيجية		من خلال هذه الدراسة نتوقع أن يكون الطالب قادرا على التعرف على أساسيات مختبر الكهربائية والمغناطيسية). والتطبيقات العملية فيه. - جعل الطالب قادرا على معرفة وفهم اساسيات الفيزياء الكهربائية. - التعرف على المصطلحات العلمية والعملية المستخدمة في المختبر. - جعل الطالب قادرا على معرفة وفهم التطبيقات العملية لعلم فيزياء الكهربائية والمغناطيسية. - التعرف على الاجهزة العلمية الموجودة في مختبر الكهربائية والمغناطيسية . - التعرف على كيفية عمل الاجهزة الموجودة في المختبر		
١٠. بنية المقرر				
الاسبوع	الساعات	مخرجات	اسم الوحدة او الموضوع	طريقة التعلم
				طريقة التقييم

المتعلم	المطلوبة			
١	٢	اثبات قانون اوم	عملية	أسئلة عامة ومناقشة
٢	٢	تعين القدرة العظمى لمصدر كهربائي		
٣	٢	دراسة العلاقة الغير خطية بين فرق الجهد والتيار المار		
٤	٢	خلال مقاومة ساخنة		
٥	٢	قياس قيمة مقاومه مجهولة باستخدام فنطرة ويتستون		
٦	٢	قياس المقاومة الداخلية لمصدر كهربائي.		
٧	٢	قياس التردد الرنيني		
٨	٢	جمع التقارير وتصحيحها وتسليمها		
٩	٢	امتحان شهر ١		
١٠	٢	تحقيق قانون التربيع العكسي		
١١	٢	ايجاد المركبة الأفقية للمجال المغناطيسي الارضي		
١٢	٢	المحولة الكهربائية		
١٣	٢	ايجاد مقاومة الكلفانوميتر		
١٤	٢	جمع التقارير وتصحيحها وتسليمها		
١٥	٢	امتحان شهر ٢		
	٢	امتحان نهائي		
١١. تقييم المقرر				
توزيع الدرجة من ٣٠ على وفق المهام المكلف بها الطالب مثل التحضير اليومي والامتحانات اليومية والشفوية والشهرية والتحريرية والتقارير... الخ				
١٢. مصادر التعلم والتدريس				
الكتب المقررة المطلوبة (المنهجية ان وجدت)		كتاب الفيزياء العملية		
المراجع الرئيسية (المصادر)		كتاب القياسات الكهربائية		
الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير...)		الشيت الاساسي للتجارب في المختبر		
المراجع الالكترونية ، مواقع الانترنت				

1. Course Name:
Mechanics Lab
2. Course Code:
SCP012
3. Semester / Year:

1, 2 course 2023–2024					
4. Description Preparation Date:					
18/4/2024					
5. Available Attendance Forms:					
Official working hours / attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2 hours a week 2*15 weeks = 30 hours in the course					
7. Course administrator's name (mention all, if more than one name)					
Name: Anhar Abd Alsalam Email: anhar.abdalsalam@uoanbar.edu.iq					
8. Course Objectives					
Course Objectives Knowledge of the basic concepts of mechanical principles Basic knowledge of how to calculate variables.					
9. Teaching and Learning Strategies					
Strategy		Involving the student in knowledge and operation of all devices, and training him to use the Internet to access scientific websites to collect topics related to the course and develop his ability to access the latest scientific findings as a means of verifying: - The ability to deal with information sources. - The ability to develop an appropriate research strategy. - The ability to evaluate the projects of his fellow students. - The ability to analyze the required research information by taking correct readings. - The ability to criticize incorrect readings in discussion circles. -The ability to extract correct readings using modern scientific methods.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Finding the Earth's acceleration using a simple pendulum.		
2	2		Simple harmonic motion Hooke's law.		
3	2		Maxwell's wheel (law of conservation of energy). Coefficient of direct friction.		

4	2		Double suspension pendulum.		
4	2		Simple harmonic motion.		
5	2		Moment of inertia of the flywheel.		
6	2		Find the radius of gyration of a cylinder rolling on an inclined surface.		
7	2		Finding the hardness coefficient of a metal rod using the static method.		
8	2		Calculating Young's modulus for a metric ruler.		
9	2		Calculate the viscosity coefficient of the liquid.		
10	2		Calculate the density of a liquid using a weighted test tube.		
11	2		Calculating the surface tension coefficient of a liquid using capillary tubes.		
12	2		Projectile movement.		
13	2		Calculating the speed of sound in air using a resonance tube.		
14	2				
15	2				
11. Course Evaluation					
Distributing the score out of 30 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)			The basic sheet for experiments in laboratory		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanics II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PHY-121			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		
Administering Department	physics	College	science	
Module Leader	Nabeel. F. Lattoofi		e-mail	dr.nabeel.fawzi@uoanbar.edu.iq
Module Leader's Acad. Title	Assist. Prof.		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	1-9-2024		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	

أهداف المادة الدراسية	16. To develop problem solving skills and understanding of Rotational motion. 17. Studying the science of movement describing an aspect of Rotational kinetic energy. 18. The chapter deals with of the law of universal gravitation 19. This is the basic subject for the periodic and frequency of the motion. 20. The concept of law of Fluid Mechanics, Density and Pressure.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how Rotational motion, angular displacement, angular velocity and angular acceleration. 2. Relationship between angular and linear quantities. 3. Work and energy of rotational motion. 4. Newton's universal law of gravity, Weight and gravitational force. 5. Describe of simple harmonic motion (SHM). 6. The amplitude of motion from the initial condition. 7. The simple pendulum and the torsional pendulum. 8. Discuss the operations of representing the simple harmonic motion with the circular motion. 9. Discuss the various properties of fluid Mechanics, density and Pressure. 10. Explain the Buoyant forces and Archimedes' principle. 11. The Equation of continuity and Bernoulli's equation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Rotational motion</u> Angular displacement, angular velocity and angular acceleration. Rotational motion with constant angular acceleration, Relationship between angular and linear quantities, Angular velocity and linear velocity, angular acceleration and linear acceleration. [15 hrs] Rotational kinetic energy, Torque, Work and energy of rotational motion and Angular momentum, Relation between The torque and the angular momentum [15 hrs] The law of universal gravitation- The law of universal gravitation, Newton's universal law of gravity, Weight and gravitational force. [10 hrs] Gravitational potential energy- Total Energy for circular orbital motion, Escape velocity. [15 hrs] Revision problem classes [6 hrs]

	<u>Part B - Analogue Electronics</u> Periodic Motion: Simple harmonic motion Simple Harmonic Motion (SHM), the periodic time, the frequency of the motion, the angular frequency, the velocity and acceleration of the periodic motion, the maximum velocity and the maximum acceleration, The amplitude of motion from the initial condition, mass attached to a spring. [15 hrs] Total energy of the simple harmonic motion– The simple pendulum, the torsional pendulum, Representing the simple harmonic, motion with the circular motion, Question with solution. [7 hrs] Fluid Mechanics– Fluid Mechanics, Density and Pressure, Variation of pressure with depth, Pascal’s Law, Buoyant forces and Archimedes’ principle, The Equation of continuity, Bernoulli’s equation. [15 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5 and 10	LO #1, #2 and #10, #11
	HW	5	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	15% (15)	Continuous	All
	Inside HW	5	5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Rotational motion Theory

Week 2	Basics of Rotational motion with Angular velocity and Angular acceleration
Week 3	Relationship between angular and linear quantities
Week 4	Rotational kinetic energy, Torque and Work and energy of rotational motion
Week 5	Relation between The torque and the angular momentum
Week 6	The law of universal gravitation, Weight and gravitational force
Week 7	Total Energy for circular orbital motion, Escape velocity
Week 8	Periodic Motion: Simple harmonic motion, Simple Harmonic Motion (SHM)
Week 9	The amplitude of motion from the initial condition
Week 10	The angular frequency, The velocity and acceleration of the periodic motion, The maximum velocity and the maximum acceleration
Week 11	Total energy of the simple harmonic motion, The simple pendulum
Week 12	Representing the simple harmonic motion with the circular motion
Week 13	Fluid Mechanics, Density and Pressure
Week 14	Pascal's Law, Buoyant forces and Archimedes' principle
Week 15	The Equation of continuity and Bernoulli's equation
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Free Falling
Week 2	Lab 2: Projectile
Week 3	Lab 3: Spiral Spring
Week 4	Lab 4: Coefficient of friction

Week 5	Lab 5: Equilibrium of rigid body
Week 6	Lab 6: Simple Harmonic motion
Week 7	Lab 7: Viscosity

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Lerner L.S, Physics for scientist and engineers, Jones and Bartell, Publishers, 1996.	Yes
Recommended Texts	Serway, R. A., Physics for scientists and engineering with modern physics. Saunders College Publishing, 1990.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

نموذج وصف الوحدة

نموذج وصف المادة الدراسية

معلومات الوحدة				
معلومات المادة الدراسية				
تسليم الوحدة	المغناطيسية		عنوان الوحدة	
☒ النظرية ☒ محاضرة ☒ مختبر ☐ البرنامج التعليمي ☐ عملي ☐ ندوة	رئيسيه		نوع الوحدة	
	PH-122		رمز الوحدة	
	٨		اعتمادات النظام الأوروبي	
	٢٠٠		SWL (ساعة / نصف)	
١	فصل التسليم		مستوى الوحدة	
اكتب رمز الكلية		كلية	اكتب رمز القسم	
Sameer@uoanbar.edu.iq		بريد إلكتروني	سمير عبيد نواف	
ماجستير.		مؤهلات مسؤول الوحدة		مدرس
		بريد إلكتروني	محاضر الوحدة	
بريد إلكتروني		بريد إلكتروني	اسم المراجع	
١.٠		رقم الإصدار	تاريخ موافقة اللجنة العلمية	

العلاقة مع الوحدات الأخرى			
تتوافق مع المواد الدراسية الأخرى			
وحدة المتطلبات الأساسية	لا أحد	نصف السنة	
وحدة المتطلبات المشتركة	لا أحد	نصف السنة	

أهداف الوحدة ومخرجات التعلم والمحتويات الإرشادية أهداف الدراسة ونتائج التعلم والمحتويات التجريبية	
أهداف الوحدة الهدف الدراسي	ستغطي هذه الوحدة المفاهيم الأساسية للكهر ومغناطيسية تقدم الوحدة بعض المفاهيم الأساسية للكهر ومغناطيسية لتوفير أساس مادي لمفاهيم المغناطيسية
نتائج التعلم الوحدة مخرجات التعلم في المرحلة المتوسطة	• تحديد مصطلح المغناطيسية. • وصف مبدأ المغناطيسية. • اذكر أربع خصائص لخطوط القوة المغناطيسية. • اذكر قوانين الجذب والتنافر الثلاثة. • وصف المجال المحيط بالموصل الحامل للتيار. • وصف قاعدة اليد اليمنى. • تحديد نوعين من المغناطيس الدائم. • وصف تأثير هول.
المحتويات الإرشادية الاشتراكات الترويجية	١ - استخدام المعلومات النظرية والمهارات اليدوية والفكرية اللازمة في التطبيقات العملية المتعلقة بالرسم الميكانيكي والبناء ٢ - تقييم المعلومات والمهارات المكتسبة/المكتسبة بشكل نقدي. ٣ - استخدام برامج الكمبيوتر اللازمة، وتكنولوجيا الاتصالات .

استراتيجيات التعلم والتدريس للتعليم والتعليم	
الاستراتيجيات	تتمثل الإستراتيجية الرئيسية التي سيتم اعتمادها في تقديم هذه الوحدة في تشجيع مشاركة الطلاب في التمارين، وفي الوقت نفسه تحسين وتوسيع مهارات التفكير النقدي لديهم.

عبء عمل الطالب (SWL)

الحمل للطلاب المصنف لـ ١٥ اسبوعا			
٧	SWL منظم (ح/ث)	الحمل الدراسي المنتظم يدرس للطلاب أسبوعيا	١٠٦
٦	SWL غير منظم (ح/ث)	الحمل المفترض غير للطلاب أسبوعيا	٩٤
إجمالي SWL (ساعة/نصف)		الحمل الكلي للطلاب خلال الفصل	٢٠٠

تقييم الوحدة					
تقييم المادة الدراسية					
		الوقت/الرقم	الوزن (العلامات)	الأسبوع المستحق	نتائج التعلم ذات الصلة
التقييم التكويني	الاختبارات	٥	١٠% (١٠)	١٤ - ١	لو رقم ١، رقم ٢، ورقم ١٠، رقم ١١
	واجبات	٥	١٠% (١٠)	١٤-١	لو #٣، #٤ و #٦، #٧
	مختبر. التقارير	١	١٧% (١٧)	مستمر	الجميع
	ندوة	١	٣% (٣)	١٤-١	لو رقم ٥ ورقم ٨ ورقم ١٠
التقييم التلخيصي	إختبار نصف الفصل	٢ ساعة	١٠% (١٠)	٧	السؤال رقم ١ - رقم ٧
	إمتحان نهائي	٣ ساعات	٥٠% (٥٠)	١٦	الجميع
التقييم الإجمالي			١٠٠% (١٠٠ علامة)		

خطة التسليم (المنهج الأسبوعي)	
المنهاج الأسبوعي	
المواد المغطاة	
الأسبوع ١	القوة المغناطيسية

الأسبوع ٢	حقل مغناطيسي
الأسبوع ٣	حركة شحنة نقطة في المجال المغناطيسي
الأسبوع ٤	القوة المغناطيسية على التيارات
الأسبوع ٥	قانون أمبير
الأسبوع ٦	ثنائي القطب المغناطيسي
الأسبوع ٧	إختبار نصف الفصل
الأسبوع ٨	ثنائي القطب المغناطيسي في مجال ثابت
الأسبوع ٩	الخواص المغناطيسية للمواد
الأسبوع ١٠	قانون فاراداي
الأسبوع ١١	قانون لينز
الأسبوع ١٢	EMF متحرك
الأسبوع ١٣	المجال الكهربائي المستحث
الأسبوع ١٤	مراجعة الدورة
الأسبوع ١٥	إمتحان نهائي

خطة التسليم (منهج المختبر الأسبوعي)	
المنهاج الاسبوعي للمختبر	
المواد المغطاة	
الأسبوع ١	تحقيق قانون اوم للدائرة الكهربائية للتيار والتي تحتوي على سعة كهربائية
الأسبوع ٢	قياس الرادة الحثية والحث
الأسبوع ٣	يؤثر على الافقية للمجال المغناطيسي ليون
الأسبوع ٤	قياس تردد التيار المتردد
الأسبوع ٥	تحقيق قانون التربيع العكسي بالمغناطيسية
الأسبوع ٦	تردد الرنيني

الأسبوع ٧	إمتحان نهائي
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مصادر التعلم والتدريس		
مصادر التعلم والتدريس		
متوفر في المكتبة؟	نص	
لا	الفيزياء للعلماء والمهندسين، الطبعة السادسة بقلم جون دبليو جيويت، سيرواي	النصوص المطلوبة
لا	مقدمة للديناميكا الكهربائية الطبعة الرابعة بقلم ديفيد ج. غريفيث	النصوص الموصى بها
		المواقع الإلكترونية

مخطط الدرجات				
مخططات درجات الحرارة				
تعريف	العلامات %	التقدير	درجة	مجموعة
أداء مذهل	٩٠ - ١٠٠	موافق	أ - ممتاز	مجموعة النجاح (١٠٠ - ٥٠)
فوق المتوسط مع بعض الأخطاء	٨٠ - ٨٩	جيد جداً	ب - جيد جداً	
عمل سليم مع وجود أخطاء ملحوظة	٧٠ - ٧٩	جيد	ج - جيد	
عادلة ولكن مع عيوب كبيرة	٦٠ - ٦٩	متوسط	د - مرضية	
العمل يلبي الحد الأدنى من المعايير	٥٠ - ٥٩	مقبول	هـ - كافية	
مطلوب المزيد من العمل ولكن تم منح الائتمان	(٤٥-٤٩)	راسب (وحدة المعالجة المركزية)	FX - فشل	مجموعة فاشلة (٠ - ٤٩)
كمية كبيرة من العمل المطلوب	(٤٤-٠)	راسب	ف - فاشل	

ملاحظة: سيتم تقريب العلامات العشرية التي تزيد أو تقل عن ٠.٥ إلى العلامة الكاملة الأعلى أو الأدنى (على سبيل المثال، سيتم تقريب علامة ٥٤.٥ إلى ٥٥، في حين سيتم تقريب علامة ٥٤.٤ إلى ٥٤). لدى الجامعة سياسة عدم التفاوض عن "فشل التمريرة القريبة" وبالتالي فإن التعديل الوحيد للعلامات الممنوحة بواسطة العلامة (العلامات) الأصلية سيكون التقريب التلقائي الموضح أعلاه.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Mechanics II			Module Delivery	
Module Type	Core			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PHY-121				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	1	Semester of Delivery			
Administering Department	Type Dept. Code	College	Type College Code		
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Name		e-mail	E-mail	
Scientific Committee Approval Date	te		Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None		Semester
Co-requisites module	None		Semester

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	21. To develop problem solving skills and understanding of Rotational motion. 22. Studying the science of movement describing an aspect of Rotational kinetic energy. 23. The chapter deals with of the law of universal gravitation 24. This is the basic subject for the periodic and frequency of the motion. 25. The concept of law of Fluid Mechanics, Density and Pressure.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 12. Recognize how Rotational motion, angular displacement, angular velocity and angular acceleration. 13. Relationship between angular and linear quantities. 14. Work and energy of rotational motion. 15. Newton's universal law of gravity, Weight and gravitational force. 16. Describe of simple harmonic motion (SHM). 17. The amplitude of motion from the initial condition. 18. The simple pendulum and the torsional pendulum. 19. Discuss the operations of representing the simple harmonic motion with the circular motion. 20. Discuss the various properties of fluid Mechanics, density and Pressure. 21. Explain the Buoyant forces and Archimedes' principle. 22. The Equation of continuity and Bernoulli's equation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Rotational motion</u> Angular displacement, angular velocity and angular acceleration. Rotational motion with constant angular acceleration, Relationship between angular and linear quantities, Angular velocity and linear velocity, angular acceleration and linear acceleration. [15 hrs] Rotational kinetic energy, Torque, Work and energy of rotational motion and Angular momentum, Relation between The torque and the angular momentum [15 hrs] The law of universal gravitation- The law of universal gravitation, Newton's universal law of gravity, Weight and gravitational force. [10 hrs] Gravitational potential energy- Total Energy for circular orbital motion, Escape

	velocity. [15 hrs] Revision problem classes [6 hrs] <u>Part B - Analogue Electronics</u> Periodic Motion: Simple harmonic motion Simple Harmonic Motion (SHM), the periodic time, the frequency of the motion, the angular frequency, the velocity and acceleration of the periodic motion, the maximum velocity and the maximum acceleration, The amplitude of motion from the initial condition, mass attached to a spring. [15 hrs] Total energy of the simple harmonic motion– The simple pendulum, the torsional pendulum, Representing the simple harmonic, motion with the circular motion, Question with solution. [7 hrs] Fluid Mechanics– Fluid Mechanics, Density and Pressure, Variation of pressure with depth, Pascal’s Law, Buoyant forces and Archimedes’ principle, The Equation of continuity, Bernoulli’s equation. [15 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	106	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	94	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	15% (15)	1 to 10	LO #1, #2 and #10, #11
	Inside HW	5	5% (5)	2 and 12	LO #3, #4 and #6, #7 and #10
	Projects / Lab.	1	15% (15)	Continuous	All
	HW	5	5%(5)	1 to 15	LO #5, #8, #9, #12 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Rotational motion Theory
Week 2	Basics of Rotational motion with Angular velocity and Angular acceleration
Week 3	Relationship between angular and linear quantities
Week 4	Rotational kinetic energy, Torque and Work and energy of rotational motion
Week 5	Relation between the torque and the angular momentum
Week 6	The law of universal gravitation, Weight and gravitational force
Week 7	Total Energy for circular orbital motion, Escape velocity
Week 8	Periodic Motion: Simple harmonic motion, Simple Harmonic Motion (SHM)
Week 9	The amplitude of motion from the initial condition
Week 10	The angular frequency, The velocity and acceleration of the periodic motion, The maximum velocity and the maximum acceleration
Week 11	Total energy of the simple harmonic motion, The simple pendulum
Week 12	Representing the simple harmonic motion with the circular motion
Week 13	Fluid Mechanics, Density and Pressure
Week 14	Pascal's Law, Buoyant forces and Archimedes' principle
Week 15	The Equation of continuity and Bernoulli's equation
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	عزم القصور الذاتي لدولاب الموازنة

Week 2	إيجاد نصف قطر التدويم لأسطوانة تتدحرج على سطح مائل
Week 3	إيجاد معامل الصلابة لساق معدنية بطريقة اللي الاستاتيكية
Week 4	حساب معامل يونك لمسطرة مخرية
Week 5	حساب معامل لزوجة السائل
Week 6	حساب كثافة السائل باستخدام انبوبة اختبار مثقله
Week 7	حساب معامل الشد السطحي للسائل باستخدام انابيب شعرية
Week8	حركة القذائف
Week9	حساب سرعة الصوت في الهواء باستخدام انبوبة الرنين

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Lerner L.S, Physics for scientist and engineers, Jones and Bartell, Publishers, 1996.	Yes
Recommended Texts	Serway, R. A., Physics for scientists and engineering with modern physics. Saunders College Publishing, 1990.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded

(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Computer programming II			Module Delivery	
Module Type	B			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	SCI-101				
ECTS Credits	4				
SWL (hr/sem)	75				
Module Level	2	Semester of Delivery			
Administering Department	Type Dept. Code	College	Type College Code		
Module Leader	Name		e-mail	E-mail	
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Name		e-mail	E-mail	
Scientific Committee Approval Date	1-9-2024		Version Number	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	3. To develop problem solving skills and understanding of computer programming. 4. Developing students to adapt to the rapid changes of special technologies in the field of information that characterize the age. 3. Developing students' ability to think scientifically through the method of solving problems using computers. 4. Providing students with self-learning, research and investigation skills through the use of various computer software applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. - Teaching the theoretical curriculum by presenting the material to the students while activating the participation of the students. - Teaching the material practically using the computer. - Employing the student to apply the subject in practice using the calculator. - Conducting implicit tests during the lecture. - Activate the material test in the lecture that follows the explanation of the material to confirm and consolidate the material, adding the - Test the effectiveness of the material for students. - Explanation of the article and its practical application on the computer - Using the Fortran program.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Fortran program,</u> Write and open statement, Do loops statements, If statement, Matrices and vectors, Routing & Remainder functions, Function and Subroutine.[30 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module

	is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	15% (15)	Continuous	All
	seminar	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Write and open statement
Week 2	Do loops statements
Week 3	Do loops

Week 4	Do while loops
Week 5	If statement
Week 6	If/else statement
Week 7	Mid-term Exam
Week 8	Logical- If statement
Week 9	Matrices and vectors
Week 10	Routing & Remainder functions
Week 11	Floor function
Week 12	int: function
Week 13	nint: function
Week 14	Real function
Week 15	Function and Subroutine
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Write and open statement
Week 2	Lab 2: Do loops statements
Week 3	Lab 3: Write and open statement
Week 4	Lab 4: Do loops statements
Week 5	Lab 5: If statement
Week 6	Lab 6: Matrices and vectors
Week 7	Lab 7: Floor function

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Brooks, David R. Problem solving with Fortran 90: for scientists and engineers. Springer Science & Business Media, 2012.	No

Recommended Texts	Hahn, Brian. Fortran 90 for scientists and engineers. Elsevier, 1994.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	English Language I		Module Delivery	
Module Type	S		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	UOA003			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	Semester of Delivery	2	
Administering Department		College		

Module Leader	Qayes Abdullah Abbas	e-mail	qayes a.abbas@uoanbar.edu.iq
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Qayes Abdullah Abbas	e-mail	qayes a. abbas@uoanbar.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1-9-2024	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- The student's knowledge of the basics of the English language 2- Teaching the student the basic pillars of the language, including grammar, pronunciation, listening and writing 3- Training students on the method of dialogue and group work 4- Applying what the student learns in daily life
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Introducing students to the importance of learning English 2- Introduce students to modern language teaching methods 3- Introduce the student to how to speak English 4- Developing the student's ability to deal with technical means

	5- Developing the student's ability to deal with the Internet 6- Developing the student's ability to deal with multiple means 7- Developing the student's ability to dialogue and discussion
Indicative Contents المحتويات الإرشادية	Good knowledge of the rules Good scientific background by refining ideas and applying them in writing The ability to apply reading and deduction. Developing the student's ability to perform daily duties. Easy to deal with the English language Developing the student's skill in dialogue and discussion Developing the student's ability to deal with technical means Developing the student's ability to deal with the Internet Developing the student's ability to deal with multiple means Developing the student's ability to dialogue and discussion

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary strategy that will be adopted in delivering this module is to encourage student's participation in the exercises, while at the same time refining and expanding their critical thinking skills. By presenting the lecture in English, practices, and activities in the classroom through interactive group work, listening to dialogues prepared by local English speakers, watching reports from English news channels, managing the lecture in an applied manner related to the reality of daily life, as well as assigning students with some duties, in addition to allocating a percentage of Grades for daily assignments, tests, and attendance

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	20	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes		10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments		10% (10)	2 and 12	LO #3, #4 and #6, #7
	Seminar		10% (10)		
	Report		10% (10)		
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Lec1: Hello

Week 2	Your World
Week 3	All about You
Week 4	Family and Friends
Week 5	The Way I Live
Week 6	Every Day
Week 7	My Favorites
Week 8	Where I Live
Week 9	Times Past
Week 10	We Had a Great Time
Week 11	I Can Do That
Week 12	Please and Thank You
Week 13	Here and now
Week 14	It's time to go
Week 15	Comprehensive review of previous units
Week 16	A preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	

Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	New Headway Plus Beginner, John and Liz Soars, Oxford	Yes
Recommended Texts		
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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