Ministry of Higher Education and Scientific Research

Misan University

College of science

Physic Department

Module description form of the module of bachelor degree in physical science depend on Bologna Process.

2024-2025

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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: **Misan University**

Faculty/Institute: **Collage of science**

Scientific Department: .**Physics department**.

Academic or Professional Program Name: **General Physics and Medical Physics**

Final Certificate Name: B.Sc. degree **in general physics and medical physics**

Academic System: **Semester (courses) and polonia systems**

Description Preparation Date: **19/1/2025**

File Completion Date: **19/2/2025**

Signature:

Head of Department Name:

Asst. Prof. Dr.. Ahmed Khalaf Zager

Date: / / **2025**

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Salah Hassan Faraj

Date: / / **2025**

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University

Performance Department: **Date**: / / **2025**

Signature:

Approval of the Dean

Date: / / **2025**

	4 LEVEL –8SEMESTER		FULL TIME
Program code	BCs–PHYSIC–SCIENCE	ECTS	240

1. Program Vision

The College of Science aims to prepare graduates in the fields of general and medical physical sciences to work in governmental sectors, and to benefit from specialization in practical and applied fields, particularly in education and healthcare.

The program's vision in the Department of General and Medical Physics is to make a qualitative shift in the quality of higher education, leadership, and innovation in scientific research, to elevate the university to the level of prestigious international institutions and include it in recognized global rankings. It also seeks excellence in delivering educational, research, and community services locally, regionally, and internationally in all physical sciences. This will be achieved by:

- Providing students with fundamental principles and concepts in general and medical physics.
- Offering high-quality courses that equip students with excellent knowledge and professional skills.
- Continuously using modern technologies in the field of physics.
- Providing students with the necessary knowledge to apply what they have studied in hospitals, particularly in diagnosing cancer and other diseases.
- Developing students' scientific and intellectual personalities.
- Preparing outstanding graduates with scientific thinking and research skills to pursue postgraduate studies, teaching, and compete in the job market.
- Conducting continuous improvement.

2. Program Mission

The program's mission is to prepare students professionally and academically through a scientific program that focuses on student needs for education, learning, and developing one of

the college's main goals: to qualify students academically and scientifically in a way that aligns with the evolving requirements of basic and medical sciences.

These sciences are considered the cornerstone of other disciplines and the basis of global scientific and cognitive development. The program also aims to graduate pioneering scientific and leadership competencies in general and medical physics, and to contribute to scientific research in physics to serve local, regional, and international communities and sectors like health and education.

The department's core functions rely on three pillars:

- Educational Process: Providing an excellent learning environment and empowering students with knowledge to develop their intellectual capabilities and make them responsible in society, especially in scientific and practical matters.
- Scientific Research: Promoting research by engaging faculty members and students in conducting physics research and spreading knowledge to support community development.
- Community Service

3. Program Objectives

- Enhancing the quality of graduates by achieving comprehensive quality standards.
- Developing innovative and updated educational programs that prepare graduates to meet the needs of the knowledge society and job market.
- Providing students with fundamental knowledge and skills in general and medical physics.
- Advancing scientific research and qualifying scientific and professional competencies to conduct outstanding research.
- Serving societal institutions through effective partnerships.
- Partnering with reputable research centers and international universities.
- Attracting distinguished academic and administrative talents.
- Developing student skills to meet graduation requirements.
- Providing counseling to students in three main areas: psychological, academic, and professional.
- Ensuring laboratory training that enables graduates to acquire the highest levels of skills and professionalism required in the labor market.

- Activating mechanisms to communicate with graduates and support them through the Career Development and Employment Unit.

4. Program Accreditation

Currently under development and improvement toward ABET accreditation and completion of the self-assessment report.

5. Other external influences

Non

جامعة ميسان كلية العلوم قسم الفيزياء

المنهاج الدراسي لقسم الفيزياء العامة للمرحلتين الاولى والثانية (نظام بولونيا)

Republic of Iraq Ministry of Higher Education and Scientific Research University of Misan Bachelor Four years (eight semesters) - 240 ECTS credits - 1 ECTS = 25 hours Program Curriculum (2024-2025)		جمهورية العراق وزارة التعليم العالي والبحث العلمي جامعة ميسان بكلوريوس قسم الفيزياء (2023-2024) أربع سنوات (ثمانية فصول دراسية) - 240 وحدة اوربية - كل وحدة اوربية = 25 ساعة المنهاج الدراسي للعام (2024-2025)

Level	Semester	No.	Module Code	Module Name	اسم المادة	Language	SSWL (hr/w) CL	Lect	Lab	Pr	Tut	Sm	Cln	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite
1	ONE	1	SCI1101	Computer Programming I	برمجة الحاسب الآلي1	الانجليزية	2	0	0	2	0	3	0	3	67	33	100	4	S	
		2	PHY1102	Electricity	كهربائية	الانجليزية	2	0	2	0	1	0	0	3	78	97	175	7	C	
		3	PHY1101	Mechanics and Properties of Matters I	ميكانيك وخواص مادة1	الانجليزية	2	0	2	0	2	0	0	3	93	82	175	7	C	
		4	UNI1102	Arabic Language	اللغة العربية	العربية	2	0	0	0	0	2	0	2	46	54	100	4	S	
		5	PHY1103	Mathematics I	الرياضيات1	الانجليزية	2	0	0	0	2	0	0	2	63	62	125	5	B	
1	TWO	1	PHY1204	Mechanics and Properties of Matters II	ميكانيك وخواص مادة II	الانجليزية	2	0	2	0	2	2	0	4	122	53	175	7	C	
		2	PHY1205	Magnetism	مغناطيسية	الانجليزية	2	0	2	0	2	0	0	4	94	81	175	7	C	
		3	PHY1206	Mathematics II	الرياضيات II	الانجليزية	2	0	0	0	1	2	0	4	69	56	125	5	B	
		4	PHY1207	General Astronomy	فلك عام	الانجليزية	2	0	0	1	0	2	0	3	58	42	100	4	B	
		5	UNI1103	English Language I	اللغة الانكليزية I	الانجليزية	2	0	0	0	0	0	0	3	33	17	50	2	S	
		6	SIC1202	Computer Programming II	برمجة الحاسب الآلي II	الانجليزية	2	0	2	2	1	2	0	4	103	22	125	5	B	
						Total	12	0	6	3	6	8	0	22	479	271	750	30		

Level	Semester	No.	Module Code	Module Name	اسم المادة	Language	SSWL (hr/w)							Exam	SSWL	USSWL	SWL	ECTS	Module Type	Prerequisite
							CL	Lect	Lab	Pr	Tut	Sm	Cln	hr/ sem	hr/ sem	hr/sem	hr/ sem			
2	Three	1	PHY2108	Analog Electronics	الكترونيك التماثلي	الانجليزية	1	0	2	0	2	5	0	2	68	107	175	7	C	
		2	UOM 122	Computer I	الحاسوب I	الانجليزية	1	0	1	2	0	0	0	3	48	27	75	3	B	
		3	AM010	Analatica mechanics	الميكانيك التحليلي	الانجليزية	3	0	0	0	1	6	0	3	77	73	150	6	C	
		4	UOM 202	English II	اللغة الانكليزية II	الانجليزية	2	0	0	0	2	1	0	3	46	4	50	2	B	
		5	MA05	Mathematics Second	رياضيات ثاني	الانجليزية	1	0	0	0	1	1	0	3	39	61	100	4	C	
		6	HT08	Heat and thermodynamics	الحرارة والثرموديناميك	الانجليزية	3	0	3	0	2	1	0	3	93	57	150	6	C	
2	Four	1	PHY221	Modern Physics	الفيزياء الحديثة	الانجليزية	1	0	4	3	1	1	0	3	76	49	125	5	C	
		2	PHY222	Thermodynamic and Statistics	الديناميكية الحرارية والاحصاء	الانجليزية	4	0	0	1	0	2	0	3	90	60	150	6	C	
		3	PHY224	Digital Electronics	الالكترونيات الرقمية	الانجليزية	2	0	6	1	0	3	0	3	111	64	175	7	C	
		4	PHY226	Sound and Wave motion	الصوت والحركة الموجية	الانجليزية	2	2	0	0	0	3	0	3	51	24	75	3	C	
		5	UOM 201	Computer II	الحاسوب II	الانجليزية	3	0	2	0	0	3	0	3	64	11	75	3	B	
		6	MNS120	Baath Party crimes	جرائم حزب البعث	العربية	2	0	0	0	0	3	0	3	37	13	50	2	S	
		7	PHY223	Analytical Mathematic	الميكانيك التحليلي II	الانجليزية	2	0	2	0	0	2	0	3	73	27	100	4	C	
						Total	16	2	14	5	1	17	0	21	502	248	750	30		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
		1	PHY31017	Geometrical Optics	البصريات الهندسية	English	2		2		1		4	79	71	150	6.00	C	
		2	PHY31018	Laser Physics I	فيزياء الليزر I	English	2		2		1		4	79	71	150	6.00	C	
	Five	3	PHY31019	Quantum Mechanics I	الميكانيك الكمي I	English	2				2		4	64	61	125	5.00	C	
		4	PHY31020	Mathematics IIII	الرياضيات IIII	English	2				2		4	64	61	125	5.00	B	PHY21011
		5	PHY31021	Plasma Physics	فيزياء البلازما	English	2				2		4	64	61	125	5.00	C	
		6	PHY31022	English Language III	اللغة الانكليزية III	English	2				1		4	49	26	75	3.00	S	
						Total	12	0	4	0	9	0	24	399	351	750	30.00		
UGIII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
		1	PHY32023	Physical Optics	البصريات الفيزيائية	English	2		2		1		4	79	71	150	6.00	C	
		2	PHY32024	Laser Physics II	فيزياء الليزر II	English	2		2		1		4	79	71	150	6.00	C	
	Six	3	PHY32025	Quantum Mechanics II	الميكانيك الكمي II	English	2				2		4	64	61	125	5.00	C	

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
		1	PHY41029	solid state physics I	فيزياء الحالة الصلبة I	English	2		2		1		4	79	71	150	6.00	C	
		2	PHY41030	Nuclear Physics I	الفيزياء النووية I	English	2		2		1		4	79	71	150	6.00	C	
	Seven	3	PHY41031	Electromagnetic Theory I	النظرية الكهرومغناطيسية I	English	2				2		4	64	61	125	5.00	C	PHY1102, PHY1205
		4	PHY41032	Mathematical Physics I	الفيزياء الرياضية I	English	2				2		4	64	61	125	5.00	C	PHY31020,
		5	PHY41033	Nano- science	علوم النانو	English	2				2		4	64	61	125	5.00	E	
		6	PHY41034	English Language IV	اللغة الانكليزية IV	English	2				1		3	48	27	75	3.00	S	PHY31022
UGIV						Total	12	0	4	0	9	0	23	398	352	750	30.0		
	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
		1	PHY42035	solid state physics II	فيزياء الحالة الصلبة II	English	2		2		1		4	79	71	150	6.00	C	
		2	PHY42036	Nuclear Physics II	الفيزياء النووية II	English	2		2		1		4	79	71	150	6.00	C	
	Eight	3	PHY42037	Electromagnetic Theory II	النظرية الكهرومغناطيسية II	English	2				2		4	64	61	125	5.00	C	
		4	PHY42038	Mathematical Physics II	الفيزياء الرياضية II	English	2				2		4	64	61	125	5.00	C	
		5	PHY42039	Biophysics	الفيزياء الحياتية	English	2				2		4	64	61	125	5.00	E	
		6	PHY42040	Research project	مشروع البحث	English	2				1	2	3	48	27	75	3.00	C	
						Total	12	0	4	0	9	2	23	398	352	750	30.0		
r Interns																			
						Total	98	0	41	0	63	4	193	3253	2747	6000	240.0		Must be 240 ECTS

Structured SWL (hr/w) type		
	CL	Class Lecture
	Lab	Laboratory
	Pr	Practical Training
	Tut	Tutorial
	Lect	Online lecture
	Semn	Seminar

Module type		
	B	Basic learning activities
	C	Core learning activity
	S	Suport or related learning activity
	E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

Note: Columns O, Q and R are progrmaed, protected and should not be edited

6. Faculty staf

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof. Dr. Subaih Jassim Katea Kattan Al Shammari	Physics	Solid State			staff	Lecturer
Prof. Dr. Ahmed Hashim Aboud Awda Joda Al Shaheen	Physics	Microwave Antennas			staff	Lecturer
Assistant Professor Dr. Ahmed Khalaf Zughair Hassan Al Saadi	Computers	Artificial Intelligence			staff	Head of Departme t
Assistant Professor Dr. Munther Abdul Hassan Khudair Abbas	Physics	Nanomaterials			staff	Lecturer
Assistant Professor Dr. Diaa Badr Habash Awda Al Ameri	Physics	Solid State			staff	Lecturer
Assistant Professor Dr. Zahraa Abdul Hussein Ismail Maala	Physics	Nuclear and Environment			staff	Lecturer
Assistant Professor Dr. Baqer Obaid Thaban Nemah Al Awda	Physics	Nano Optics			staff	Department Rapporteur
Assistant Professor Dr. Ahmed Shihab Ahmed Hadi Al Jazairi	Laser Physics	Laser Interaction with Auction			staff	Lecturer
Assistant Professor Dr. Mohammed Hashim Mohammed Faraj	General Physics	Medical Image Processing Physics			staff	Lecturer
Assistant Professor Dr. Dalia Khaled Nasser Hayat Al Hussaini	Physics	Medical Physics			staff	Lecturer
Eng. Mayada Jassim Mohammed Jaber Al Shuroei	Physics	Nanophysics			staff	Lecturer
Eng. Zainab Saad Karam Al Bakhati	Computers	Computer Networks			staff	Lecturer
Eng. Muslim Eidan Hamel Dakhel Al Saadi	Physics	Nanotechnology			staff	Lecturer

Eng. Alaa Hussein Kamel Hafez Al Saadi	Physics	Upper Atmosphere			staff	Lecturer
Eng. Murtada Mohammed Abdul Redha Jassim	Engineering	Environment and Pollution			staff	Lecturer
Eng. Hussein Saadoun Mashloush Al Ghanami	Physics	Solid State			staff	Lecturer
Eng. Khamail Ibrahim Abdul Wahid Qasim Al Saadi	Physics	Materials			staff	Lecturer
Eng. Hassan Suwadi Taresh Mohsen Al-Furaiji	Computers	Data Technology			staff	Lecturer
Assistant Professor Baha' Al-Din Qasim Ali Al-Bahadli	Physics	General Physics			staff	Lecturer
Assistant Professor Mohammed Jawad Kazim Ali Al-Jarrah	Physics	Medical Physics			staff	Lecturer

First level

Module Information

Module Title	**Computer program 1**	**Module Delivery**	
Module Type	**B**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**SCI1101**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	1	**Semester of Delivery**	1 semester 2022-2023
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Ahmed khalaf Zager	**e-mail**	ahmedkhalafzager@uomisn.edu.iq
Module Leader's Acad. Title	Assist. Prof .Dr	**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	01/06/2023	**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 Aims أهداف المادة الدراسية	1. Understand and state the importance of computer literacy. 2. To develop the concepts of software design and the techniques of computer programming 3. Identify and explain what computers are and how they work, including the computer hardware components and their specifications and types. 4. Understand and use the binary system. Understand system and application software with examples. Understand the main issues of data communications and computer networks. 5. Describe the impact that computers are having on our society 6. To study the Excel and VBA languages as practical tools for software implementation
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Be able to demonstrate the ability to design programs, and to convert a written specification to a procedural software design. 2. Be able to implement programs in the Excel and VBA programming languages. 3. Be able to test software solutions to practical problems against target specifications.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 4. Define the requirement : Computer hardware and program define hardware and software algorithm ,flowchart to design the program 5. Development: implementation the software using computer to solve problems by writing code source. 6. Testing : test the software and program to integrate the woke study 7. Maintenance : to enhancement education and fix error 8. Evaluation education to disposal

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	• Improve students focus so they're ready, willing and able to learn. • Begin class with a mindful minute

	• Incorporate movement. • Take sensory breaks. • Build foundational cognitive skills. • Create a growth mindset classroom

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	21	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
	Chapter one
Week 1	***1.*** Computer system: Hardware and Software
Week 2	• Define hardware
	• Define software
	2. Algorithm and flowchart

	• Define algorithm
	• Define flowchart
	• Difference between Algorithm and Flowchart
Week 3	***3.*** Structure of programming
	4. Sequences structure
Week 4	5. Selection (decision) Structures Decision structures of pseudocode may be IF structure:
Week 5	6. Repeat expression
	Chapter two
Week 6	7. Visual Basic for Application (Excel)
Week 7	• Insert VBA code to Excel Workbook
Week 8	• Code writing
Week 9	• Procedure
Week 10	• Subroutine
Week 11	• Function
	Chapter there
Week 12	8. LOOP IN VBA (Visual Basic for Applications) language
Week 13	• For loop
Week 14	• Do While condition statement Loop
Week 15	• Do statement loop while condition
Week 16	

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab1: Use VBA to displays an input box to ask for the user's name then display a greeting message
Week 2	Lab2: Write the source code in VBA (excel) to extract all the sheet names to the active sheet.
Week 3	Lab3: Add tow numbers
Week 4	Lab4: Area of rectangle (Find the product of length and breadth values.(A= L* W))
Week 5	Lab5: Convert data in Excel from English to Arabic language using VBA (excel).
Week 6	Lab6: Create factorial function in VBA?
Week 7	Lab 7: Create Button (Form Control) in VBA Excel

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**

Required Texts	None	Yes
Recommended Texts		No
Websites	https://trumpexcel.com/vba-msgbox/ https://www.automateexcel.com/vba/list-all-sheets-in-workbook/ https://www.geeksforgeeks.org/add-two-numbers-represented-by-stacks/ https://stackoverflow.com/questions/34776110/excel-function-to-convert-english-names-to-arabic https://www.geeksforgeeks.org/difference-between-hardware-and-software/ https://www.edrawsoft.com/explain-algorithm-flowchart.html https://learn.microsoft.com/en-us/dotnet/visual-basic/programming-guide/language-features/control-flow/loop-structures	

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 Information
معلومات المادة الدراسية

Module Title	**Heat and Thermodynamic**	**Module Delivery**
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab.**
Module Code	**PHY2107**	

ECTS Credits	**7**	☐ **Tutorial** ☐ **Seminar**	
SWL (hr/sem)	**175**		

Module Level	UGII	**Semester of Delivery**	3
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Sabeh Jassim	**e-mail**	Sabeh jassim@uomisan.edu.iq
Module Leader's Acad. Title	professor	**Module Leader's Qualification**	PhD
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of principles of thermodynamics. 2. To understand some thermodynamic processes like isobaric, adiabatic, isothermal processes. 3. This course deals with the basic concept of thermodynamics laws. 4. This is explaining the phase change processes of pure substance. 5. To understand the first law of thermodynamics and solving some problems about it. 6. To understand how working some devices like heat engines, refrigerator and heat pump.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how the heat converting to work by heat engine. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic thermodynamics principle. 4. Discuss that a process cannot occur unless it satisfies both the first and the second laws of thermodynamics. 5. Describe first and second laws of thermodynamics. 6. Define pure substance. 7. Identify the law of work for every process. 8. Discuss the operations of heat engine. 9. Discuss the intensive and extensive properties. 10. Explain the second law of thermodynamics. 11. Identify the function of state and the function of path.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – thermodynamic principles 1. SI units, systems and controlled volumes, intensive and extensive properties, thermodynamic coordinates, thermodynamic processes, heat and work, zeroth law of thermodynamics, temperature scales, triple point of water, kinds of thermometers. [14 hrs] 2. Kinetic theory of gases- hypotheses of kinetic theory of gases, ideal gas: Boyl,s law , Charles law , Avogadro's law , Jule,s law, the equation of state of ideal gases , solving some examples for ideal gases , Vander Waals equation of state . [10 hrs]

	3. Partial Differential relation – Condition of relation of state, Equation of state for some pure substance. [6 hrs] 4. Properties of pure substance: Phase of pure substance, phase – change processes of pure substance, saturation pressure and saturation temperature, properties diagrams for phase – change processes: The T-V diagram, the P-V diagram and the P-T diagram, extending the diagrams to include the solid phase, Application of Clapeyron equation. [14 hrs] 5. First law of thermodynamic – First law for closed system with closed cycle , first 66 law for closed system with opened cycle, first law for opened system , first law for isolated system , Results of the first law , Enthalpy (H), Joule – Thomson experiment , Heat capacity (specific heat) , Difference between Cp , Cv (T , V independent variables) , Difference between Cp , Cv (T , V independent variables) , Difference between Cp and Cv (T , P independent variable) ,Inverse adiabatic processes of an ideal gas , Work done throw inverse adiabatic process (ideal gas) . [18 hrs] 6. The second law of thermodynamics, thermal energy reservoirs, Heat Engines, refrigerators and heat pumps, The Second Law of Thermodynamics: (Clausius Statement), Carnot cycle. [10 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 type 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	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thermal Physics, Ralph Baierlein , 2005 .	Yes
Recommended Texts	Concept of Thermal physics, Stephan J. Blundell and Kathrine M. Blundell, University of Oxford, UK 2006.	No
Websites	https://sv.20file.org/up1/464_0.pdf	

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	:. تعيين الحرارة النوعية لمادة رديئة التوصيل للحرارة
Week 2	: تحديد الحرارة الكامنة لانصهار الجليد
Week 3	:. تحويل الطاقة الكهربائية الى طاقة حرارية بإستخدام الفولطميتر والامبر(مكافئ جول)
Week 4	:. تعيين الحرارة النوعية لجسم صلب
Week 5	:. قياس التمدد الطولي للمواد الصلبة كداالة لدرجة الحرارة
Week 6	: تحقيق قانون ستيفان بولتزمان
Week 7	:. أيجاد معامل التمدد الحجمي للسوائل

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 Information

معلومات المادة الدراسية					
Module Title	**Mechanics and Properties of Matter I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY1101**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	Department of Physics		**College**	College of Science	
Module Leader	Dheyaa Badr Habash		**e-mail**	Dheyaa.alameri@uomisan.edu.iq	
Module Leader's Acad. Title	Assistant 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	01/06/2023		**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 Aims أهداف المادة الدراسية	1. Understanding the concepts and theories of basic physics of materials. 2. Ability to employ the mathematical concepts in solving mathematical physics problems. 3. Identifying the appropriate concepts to analyze and solve problems in mathematical physics. 4. Specific concepts will help students to demonstrate and apply critical thinking towards some applications in the lab.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate knowledge and understanding of Physical laws and principles, and their application to diverse areas of physics. 2. Identify relevant principles and laws when dealing with problems, and to make approximations necessary to obtain solutions. 3. Solve problems in physics using appropriate mathematical tools. 4. Use mathematical techniques and analysis to model physical behavior. 5. Present and interpret information graphically. 6. Make use of appropriate texts, or other learning resources as part of managing their own learning in diverse areas of physics.
Indicative Contents المحتويات الإرشادية	Review and Terminology [6 hrs.] ▪ Position and displacement ▪ Average velocity and average speed ▪ Instantaneous velocity and speed ▪ Acceleration Vectors [18 hrs.] ▪ Vectors and scales ▪ Adding vectors geometrically ▪ Components of vectors ▪ Unit vectors ▪ Adding vectors by components ▪ Vectors and the law of physics ▪ Multiplying vectors Motion in One, Two, and Three Dimensions [30 hrs.] ▪ Position and displacement ▪ Average velocity ▪ Average acceleration and instantaneous acceleration ▪ Projectile motion ▪ Uniform circular motion ▪ Relative motion in one dimension ▪ Relative motion in two dimensions Force and Motion [36 hrs.] ▪ Newtonian mechanics ▪ Newton's first law ▪ Force ▪ Mass ▪ Newton's second law ▪ Newton's third law ▪ Friction

	▪ The drag force and terminal speed ▪ Uniform circular motion

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The strategy that will be adopted in delivering this module is lectures form for the delivery of theory and explanation of methods, illustrated with examples, and for giving general feedback on marked work. This method is appropriate to allow students to develop a wide range of skills, from understanding basic concepts and facts to higher-level thinking. In addition, solving problems in the class will be used to help develop the students' abilities at applying the theory to solving problems. Through the semester, assignments will be given to students to allow them to develop their problem-solving techniques, practice the methods learnt in the module, assess their progress, and to receive feedback. On the other hand, examinations will enable students to reliably demonstrate their own knowledge, understanding, and application of learning outcomes. Besides, students will demonstrate what they learn in the laboratory, which provide an opportunity to test and analyze diverse laws of physics experimentally.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4, 10	LO #1, 2, 3, 4, 5
	Assignments	1	10% (10)	6	LO # 1, 2, 3, 4
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	12	LO # 1 – 6
	Midterm Exam	2 hrs.	10% (10)	7	LO # 1 – 6

Summative assessment	**Final Exam**	2 hrs.	50% (50)	16	LO # 1 – 6
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Position and displacement Average velocity and average speed Instantaneous velocity and speed Acceleration
Week 2	Vectors and scalers Adding vectors geometrically
Week 3	Components of vectors Unit vectors Adding vectors by components
Week 4	Vectors and the law of physics Multiplying vectors
Week 5	Position and displacement Average velocity
Week 6	Average acceleration instantaneous acceleration
Week 7	Midterm Exam
Week 8	Projectile motion Uniform circular motion
Week 9	Relative motion in one dimension Relative motion in two dimensions
Week 10	Newtonian mechanics Newton's first law
Week 11	Force Mass
Week 12	Newton's second law Newton's third law

Week 13	Friction
Week 14	The drag force and terminal speed
Week 15	Uniform circular motion

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Simple pendulum
Week 2	Lab 2: Hook's law
Week 3	Lab 3: Newton's second law
Week 4	Lab 4: Moment of inertia of a flywheel

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	University Physics with Modern Physics. 2nd Ed. 2014, by Wolfgang Bauer and Gary D. Westfall.	No
Recommended Texts	Fundamental of Physics, 8th edition 2008. By Halliday, Resnick, and Walker.	No
Websites	https://www.coursera.org/courses?query=classical%20mechanics	

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

Module Information
معلومات المادة الدراسية

Module Title	**Electricity**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY1102**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		

Module Level	UGI	**Semester of Delivery**	1
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Dr. Mundher Al-Shakban	**e-mail**	Mundher.al-shakban@uomisan.edu.iq
Module Leader's Acad. Title	Ass. 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	01/06/2023	**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 Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of electric field theories through the application of techniques. 2. To understand voltage, current and potential from a given circuit. 3. This course deals with the basic concept of electrical theories. 4. This is the basic subject for all electrical and electronic circuits.

	5. To understand Kirchhoff's current and voltage Laws problems. 6. provide an in-depth knowledge of the modern theory and practice of electric systems; 7. Undertake related analysis and design calculations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The students who succeeded in this course; 1. Describe the fundamental principles of Coulomb's law, electrostatic field, 2. Express the basics of waves and phasors, 3. Describe the electric flux 4. Describe the problems with steady electric currents, 5. Analyze the problems dealing with electric force and electric field. 6. Explain the fundamentals of electric potential, 7. Identify the denotation and significance of capacitance
Indicative Contents المحتويات الإرشادية	The Electricity course is a deepening of the material that students have obtained in the basic physics lecture and as a prelude to a higher level. The expected competency is to have insight, and master the knowledge of electricity and apply it in everyday life. The materials discussed include electrostatics, special techniques determining potential, electrostatic field, statistical magnetic field, and electrodynamics. Indicative content includes the following. 1-Charge and the Electric field 1-1 Electric charge 1-2 Coulomb law 1-3 Charge is conserved 1-4 Electric field 1-5 A point charge in an electric field 1-6 A dipole in an electric field. 2-Gauss's law 2-1 Flux of the electric field 2-2 Gauss's law 2-3 Gauss's law and Coulomb law 2-4 An insulated conductor 3-Electric Potential 3-1 Electric potential Potential and the electric field 3-2 3-3 A group of point charges 3-4 potential due to a dipole 3-5 Electric potential energy 3-6 An insulated conductor. 4-Capacitors and dielectrics 4-1 Capacitance 4-2 Calculating Capacitance 4-3 Energy storage in an electric field 4-4 parallel plate capacitor with dielectric 4-5 dielectrics and atomic view.

	5-Current and Resistance 5-1 Current and current density Ohm's law-A microscopic view 5-2 5-3 Electromotive force 5-4 calculating the current 5-5 potential difference 5-6 Multi loop circuits 5-7 RC-circuits

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 type 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	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Charge and the Electric field
Week 2	Coulomb law . Charge is conserved
Week 3	Electric field , A point charge in an electric field, A dipole in an electric field.
Week 4	Flux of the electric field , Gauss's law
Week 5	Gauss's law and Coulomb law , An insulated conductor
Week 6	Electric potential, Potential and the electric field
Week 7	**Mid-term Exam**
Week 8	A group of point charges , potential due to a dipole
Week 9	Electric potential energy, An insulated conductor.
Week 10	Capacitance, Calculating Capacitance
Week 11	Energy storage in an electric field, parallel plate capacitor with dielectric, dielectrics and atomic view.
Week 12	Current and current density, Ohm's law-A microscopic view
Week 13	Electromotive force , calculating the current
Week 14	potential difference, Multi loop circuits
Week 15	RC-circuits
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: introduce students to some of the equipment they will use in the lab.
Week 2	Lab 2: Ohm's Law
Week 3	Lab 3: Achieving the discharge of a charged capacitor and calculating its time constant
Week 4	Lab 4: Find the internal resistance of the voltmeter
Week 5	Lab 5: Connecting the resistors in series and fulfilling Kirchhoff's voltage law
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Halliday ,Resnick and Walker, Fundamentals of physics 8th Edition ,John Wiley and Sons,Inc. (2008).	No
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	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 Information
معلومات المادة الدراسية

Module Title	**Mathematics I**	**Module Delivery**	
Module Type	**B**	☒ **Theory**	
Module Code	**PHY1103**	☒ **Lecture**	
ECTS Credits	**5**	☐ **Lab**	
SWL (hr/sem)	١٢٥	☒ **Tutorial**	
		☐ **Practical**	
		☐ **Seminar**	

Module Level	UGI	**Semester of Delivery**	1
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Dr. Satar Mozan	**e-mail**	@uomisan.edu.iq
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	11/08/2024	**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 Aims أهداف المادة الدراسية	1. This course deals with the basic scalar or dot product, vector or cross product, triple scalar product and triple vector product 2. To describe types of functions 3. To understand exponential functions and logarithmic functions 4. To distinguish partial derivatives and implicit derivation 5. To solve trigonometric functions inverse and trigonometric functions 6. To application chain rule
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize scalar or dot product, vector or cross product 2. Recognize Type of function. 3. Discuss the derivative of special functions 4. Summarize what is meant by a basic Implicit derivation 5. understand trigonometric functions 6. know Exponential functions 7. Define logarithmic functions 8. Identify the basic trigonometric, exponential and logarithmic functions and their applications. 9. Discuss the derivative of a function in more than two variables 10. employment chain rule
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Fundamentals vector, functions, limits and continuity, Derivation, chain rule, Implicit derivation and Derivative of special functions and Trigonometric functions [14 hrs] inverse trigonometric functions, Exponential functions, Logarithmic functions Partial Derivatives [14 hrs] Revision problem classes [3hrs] Part B – application Scalar or Dot Product, Vector or Cross Product, Triple Scalar Product and Triple Vector Product [13 hrs] Partial Derivatives and derivative of a function in two variables The derivative of a function in more than two variables. [13 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, using concepts in math vocabulary, meaningful and frequent homework to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	8, 12	LO #1, 2,3 , 4 5,6,7,and 8
	Assignments	2	10% (10)	2, 12	LO # 9, 10, 11 and 12
	Projects / Lab.	0	0% (10)	Continuous	All
	Report	2	20% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction Vectors And The Geometry Of Space
Week 2	Scalar Or Dot Product , Vector Or Cross Product , Triple Scalar Product And Triple Vector Product
Week 3	Functions, Types Of Functions (And Its Statement)
Week 4	The Limits And Continuity
Week 5	Derivation
Week 6	Derivative Of Special Functions
Week 7	Midterm Exam

Week 8	Implicit Derivation
Week 9	Chain Rule
Week 10	Trigonometric Functions
Week 11	Inverse Trigonometric Functions
Week 12	Exponential Functions And Logarithmic Functions
Week 13	Partial Derivatives
Week 14	Derivative Of A Function In Two Variables
Week 15	The Derivative Of A Function In More Than Two Variables
Week 16	**Preparatory Week Before The Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus and analytic Geometry by Thomas	Yes
Recommended Texts	University Calculus with Analytic Geometry	No
Websites	https://www.wolframalpha.com/	

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 Information
معلومات المادة الدراسية

Module Title	**Arabic Language**	**Module Delivery**	
Module Type	**Support**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**UNI1102**		
ECTS Credits	٢		
SWL (hr/sem)	٥٠		

Module Level	1	**Semester of Delivery**	1
Administering Department	Department of physics	**College**	College of science
Module Leader	Muhhamed Raheen	**e-mail**	E-mail: Mohhamed.Raheem@uomisan.edu.iq
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	١١/0٨/202٤	**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 Aims أهداف المادة الدراسية	1. القراءة من دون لحن 2. الحد من الاخطاء الاملائية 3. الحد من الاخطاء النحوية 4. الاطلاع على تاريخ اللغة العربية 5. تعريف الطلبة بمزايا وخصائص لغة القران الكريم
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. تعلم القراءة من دون لحن 2. تجاوز الاخطاء الاملائية 3. معرفة تاريخ العربية 4. تعلم قواعد اللغة العربية 5. معرفة الطلبة بمزايا اللغة
Indicative Contents المحتويات الإرشادية	- نشأة اللغة العربية، اهمية اللغة العربية، خصائص العربية (8 ساعات) - العدد والمعدود، كتابة الهمزة وانواعها، الفرق بين التاء والهاء والتاء المبسوطة والتاء المربوطة في الكتابة (8 ساعات) - الف الممدودة والمقصورة، المفعول المطلق، المفعول فيه (8 ساعات) - علامات الترقيم واثرها في فهم النص، الاخطاء الشائعة في اللغة العربية (5 ساعات) - موقف الاسلام من الشعر والشعراء، الخطابة وانواعها (6 ساعات) - ان واخواتها، كان واخواتها (6 ساعات)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	ويتم ذلك من خلال إلقاء المحاضرات وتمارين الحل ، بالإضافة إلى عقد حلقات النقاش وإجراء المناظرات والمساجلات الشعرية ، واداء بعض المهام بصورة مقالات وخطابات باللغة العربية.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	نشأة اللغة العربية
Week 2	اهمية اللغة العربية
Week 3	خصائص العربية
Week 4	العدد والمعدود
Week 5	كتابة الهمزة وانواعها
Week 6	الفرق بين التاء والهاء والتاء المبسوطة والتاء المربوطة في الكتابة
Week 7	الف الممدودة والمقصورة
Week 8	المفعول المطلق
Week 9	المفعول فيه
Week 10	علامات الترقيم واثرها في فهم النص
Week 11	الاخطاء الشائعة في اللغة العربية
Week 12	موقف الاسلام من الشعر والشعراء
Week 13	الخطابة وانواعها
Week 14	ان واخواتها
Week 15	كان واخواتها

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الفية ابن مالك و البيان والتبيين	No

Recommended Texts		
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 Information
معلومات المادة الدراسية

Module Title	**Human Rights and democracy**	**Module Delivery**
Module Type	**B**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**UNI1101**	
ECTS Credits	**4**	
SWL (hr/sem)	**100**	

Module Level	1	**Semester of Delivery**	1
Administering Department	Department of physics	**College**	College of science
Module Leader	Zahraa Fahad	**e-mail**	E-mail: Zahraa.Fahad @uomisan.edu.iq
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	Ms.c.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail

Scientific Committee Approval Date	01/06/2023	**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 Aims أهداف المادة الدراسية	6. تثقيف الطلبة بحقوقهم الشرعية والقانونية 7. تثقيف الطلبة بحرياتهم وحقوقهم الدستورية 8. تعريف الطلبة بانواع الحقوق 9. تعريف الطلبة بالتشريعات الدولية لحماية حقوق الانسان
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	6. تعلم الطلبة بحقوقهم الشرعية والقانونية 7. تعلم الطلبة بحقوقهم الدستورية 8. تعلم الطلبة انواع الحقوق 9. تعرف الطلبة على التشريعات الدولية لحماية حقوق الانسان
Indicative Contents المحتويات الإرشادية	- معني الحق وتطور مفهومه، الاساس الشرعي للحقوق الانسان...الحقوق في الديانة اليهودية، حقوق الانسان في الديانة المسيحية، حقوق الانسان في الديانة الاسلامية (9 ساعة) - الاساس الدستوري لحقوق الانسان في العراق، الدسنور العثماني، دستور 1925. 1958.1963، دستور 1968.1970.2004 (10 ساعة) - خصاص الديمقراطية، الديمقراطية والنقد . الديمقراطية وفصل السلطات . الديمقراطية والانتخابات (5 ساعات) - الحقوق والحريات الشخصية . الحق في الحياة . الحق في السكن . الحق في الاقامة والتنقل . الحق في حرمة المراسلات، الحقوق والحريات السياسية . حق الانتخاب. حق الترشيح. حق تاسيس الاحزاب (6 ساعات) - الديمقراطية والاحزاب الديمقراطية والنقابات الديمقراطية ، الحقوق والحريات الثقافية والاقتصادية، الحقوق والحريات في الصحيفة السجادية (11 ساعة)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	

	ويتم ذلك من خلال إلقاء المحاضرات وتمارين الحل ، بالإضافة إلى عقد حلقات النقاش وإجراء المناظرات والمساجلات ، واداء بعض المهام بصورة مقالات وخطابات.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

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

Learning and Teaching Resources

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	معني الحق وتطور مفهومه
Week 2	الاساس الشرعي للحقوق الانسان...الحقوق في الديانة اليهودية
Week 3	حقوق الانسان في الديانة المسيحية
Week 4	حقوق الانسان في الديانة الاسلامية
Week 5	الاساس الدستوري لحقوق الانسان في العراق
Week 6	الدسنور العثماني
Week 7	دستور 1925. 1958.1963
Week 8	دستور 1968.1970.2004
Week 9	خصاص الديمقراطية
Week 10	الديمقراطية والنقد . الديمقراطية وفصل السلطات . الديمقراطية والانتخابات
Week 11	الحقوق والحريات الشخصية . الحق في الحياة . الحق في السكن . الحق في الاقامة والتنقل . الحق في حرمة المراسلات
Week 12	الحقوق والحريات السياسية . حق الانتخاب. حق الترشيح. حق تاسيس الاحزاب
Week 13	الديمقراطية والاحزاب الديمقراطية والنقابات الديمقراطية
Week 14	الحقوق والحريات الثقافية والاقتصادية
Week 15	الحقوق والحريات في الصحيفة السجادية

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	معنى الحق وتطور مفهومه بين النظرية والتطبيق . . د. علي الشكري. الدستور العراقي لسنة ٢٠٠٥	No
Recommended Texts	الديمقراطية والمجتمع المدني . حيدر ناظم. الديمقراطية التوافقية . محمد نبيل	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

Module Information
معلومات المادة الدراسية

Module Title	**Computer programing II**	**Module Delivery**	
Module Type	**B**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**SCI1202**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	2	**Semester of Delivery**	2 semester 2024-2025
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Ahmed khalaf Zager	**e-mail**	ahmedkhalafzager@uomisn.edu.iq
Module Leader's Acad. Title	Assist. Prof .Dr	**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	01/06/2023	**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 Aims أهداف المادة الدراسية	١. فهم وبيان أهمية الإلمام بالحاسوب. ٢. تطوير مفاهيم تصميم البرمجيات وتقنيات برمجة الحاسوب. ٣. تحديد وشرح ماهية الحواسيب وكيفية عملها، بما في ذلك مكوناتها المادية ومواصفاتها وأنواعها. ٤. فهم النظام الثنائي واستخدامه. فهم برمجيات النظام والتطبيقات مع أمثلة. فهم القضايا الرئيسية لاتصالات البيانات وشبكات الحاسوب. ٥. وصف تأثير الحواسيب على مجتمعنا.

	لدراسة لغتي Excel وVBA كأدوات عملية لتطبيق البرمجيات.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١ .القدرة على تصميم البرامج، وتحويل المواصفات المكتوبة إلى تصميم برمجي إجرائي. ٢ .القدرة على تنفيذ البرامج بلغات برمجة Excel و.VBA القدرة على اختبار حلول البرامج للمشاكل العملية وفقًا للمواصفات المستهدفة.
Indicative Contents المحتويات الإرشادية	يتضمن المحتوى الإرشادي ما يلي: 1.تحديد المتطلبات: تحديد مكونات الحاسوب والبرمجيات، وخوارزمية تصميم البرنامج، ومخطط انسيابي. 2.التطوير: تنفيذ البرنامج باستخدام الحاسوب لحل المشكلات عن طريق كتابة مصدر الكود. 3.الاختبار: اختبار البرنامج والبرمجيات لدمج دراسة "ووكي." 4.الصيانة: لتحسين التعليم وإصلاح الأخطاء.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	•تحسين تركيز الطلاب ليكونوا مستعدين وراغبين وقادرين على التعلم. •ابدأ الحصة بدقيقة تأمل. •أدرج الحركة. •خذ فترات راحة حسية. •طوّر مهارات معرفية أساسية. • أنشئ فصلًا دراسيًا بعقلية النمو.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
	Chapter one
Week 1	Introduction of computer
Week 2	Concept of hardware and software
Week 3	Data and information
Week 4	Input and output device
Week 5	Peripheries of CPU
Week 6	Computer component
Week 7	Personal computer
Week 8	Computer ports
Week 9	Computer system and graphic user interface
Week 10	Operating system
Week 11	Basic of common operating system
Week 12	Word processing
Week 13	Spread sheet
Week 14	Presentation software
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Word proceeding
Week 2	Excel sheet
Week 3	Power point
Week 4	Cm security
Week 5	Trouble shooting computer solve

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	None	Yes
Recommended Texts		No
Websites	https://trumpexcel.com/vba-msgbox/ https://www.automateexcel.com/vba/list-all-sheets-in-workbook/ https://www.geeksforgeeks.org/add-two-numbers-represented-by-stacks/ https://stackoverflow.com/questions/34776110/excel-function-to-convert-english-names-to-arabic https://www.geeksforgeeks.org/difference-between-hardware-and-software/ https://www.edrawsoft.com/explain-algorithm-flowchart.html https://learn.microsoft.com/en-us/dotnet/visual-basic/programming-guide/language-features/control-flow/loop-structures	

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

Module Information
معلومات المادة الدراسية

Module Title	**General Astronomy**	**Module Delivery**	
Module Type	**B**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**PHY1207**		
ECTS Credits	**3**		
SWL (hr/sem)	**75**		

Module Level	1	**Semester of Delivery**	1
Administering Department	Department of physics	**College**	College of science
Module Leader	Murtadha Mohammed	**e-mail**	E-mail: **enana@uomisan.edu.iq**
Module Leader's Acad. Title	Lecturer	**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	01/06/2023	**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 Aims أهداف المادة الدراسية	1. To teach students about astronomy 2. To teach students about natural phenomena 3. To Study of solar and lunar eclipses 4. To understand about Kepler's laws 5. To teach students about(constellations) 6. To Study of the spherical geometry
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. define Layers of the sun's atmosphere and its surface phenomena 2. define outer layers of the atmosphere 3. discuss The sun's inner layers 4. define Orbital and axial movements of the moon 5. define lunar months 6. discuss The phases of the moon during its synodic cycle 7. define the spherical geometry 8. show the horizontal (alt-azimuth) system 9. Studying the four astronomical seasons 10. Determination of astronomical time systems 11. define tide and flow
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Study of Kepler's three laws, spherical geometry, planetarium and astronomical coordinate systems [14 hours] Study everything related to the stellar constellations, which include the constellation of Orion, the constellation of the Great Bear, the constellation of the Lesser Bear [14 hours] Knowledge of the solar system, the layers of the sun's atmosphere, its surface phenomena, the inner layers, the radiation layer, and others [14 hours]

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	15% (15)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	0	0% (0)	/	/
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - The modern nomenclature of astronomy and Newton's three laws
Week 2	Define the elements of spherical geometry
Week 3	Celestial sphere , zenith, nadir , horizon circle and others
Week 4	Study of astronomical coordinate systems
Week 5	The solar system
Week 6	Layers of the sun's atmosphere and its surface phenomena
Week 7	The phenomena of the solar eclipse and the lunar eclipse

Week 8	Tide and flow
Week 9	The planets car continued the solar system
Week 10	Dwarf planets
Week 11	Solar energy and solar secondary
Week 12	The physical properties of the moon
Week 13	Moon movements , spin motion , orbital motion
Week 14	Moon cycles , sidereal period , synodic period
Week 15	Moon phases

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	A Textbook of General Astronomy: for Colleges and Scientific Schools, Charles A. Young, 2013	No
Recommended Texts	Introduction to Astronomy From Darkness to Blazing Glory, Jeffrey Wright Scott, 2010	No
Websites	https://www.gtc.ox.ac.uk/news-and-events/events-series/astronomy-for-all-lectures/	

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 Information
معلومات المادة الدراسية

Module Title	**Mechanics and Properties of Matter II**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY1204**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		

Module Level	UGI	**Semester of Delivery**	2
Administering Department	Department of Physics	**College**	College of Science
Module Leader	Dheyaa Badr Habash	**e-mail**	Dheyaa.alameri@uomisan.edu.iq
Module Leader's Acad. Title	Assistant 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	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Mechanics and Properties of Matter	**Semester**	1
Co-requisites module	None	**Semester**	

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

Module Aims أهداف المادة الدراسية	5. Understanding the concepts and theories of basic physics of materials. 6. Ability to employ the mathematical concepts in solving mathematical physics problems. 7. Identifying the appropriate concepts to analyze and solve problems in mathematical physics.

	8. Specific concepts will help students to demonstrate and apply critical thinking towards some applications in the lab.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7. Demonstrate knowledge and understanding of Physical laws and principles, and their application to diverse areas of physics. 8. Identify relevant principles and laws when dealing with problems, and to make approximations necessary to obtain solutions. 9. Solve problems in physics using appropriate mathematical tools. 10. Use mathematical techniques and analysis to model physical behavior. 11. Present and interpret information graphically. 12. Understanding the Pascal's principle and its daily applications. 13. Understanding Archimede's principle with some real applications. 14. Understanding the equation of continuity for fluids and Bernoulli equation. 15. Capability to interpret the oscillation motion as real applications exist in our life. 16. Understanding the wave behaviors, including traveling and interference.
Indicative Contents المحتويات الإرشادية	Elasticity [9 hrs.] ▪ Stress and strain Fluids at rest [33 hrs.] ▪ Pressure ▪ Pressure of fluid in a uniform density ▪ Pressure in fluid in various densities ▪ Pascal law ▪ Archimede's principle ▪ Surface tension ▪ Capillary ▪ Atmospheric pressure and gauge pressure ▪ Buoyancy ▪ The equation of continuity ▪ The Bernoulli's equation Oscillation Motion [15 hrs.] ▪ Simple harmonic motion (S.H.M.) ▪ Energy in S.H.M. ▪ Damped H.M. ▪ Forced vibration. ▪ Two-body oscillation Waves [9 hrs.] ▪ Traveling waves ▪ Interference waves ▪ Standing waves

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The strategy that will be adopted in delivering this module is lectures form for the delivery of theory and explanation of methods, illustrated with examples, and for giving general feedback on marked work. This method is appropriate to allow students to develop a wide range of skills, from understanding basic concepts and facts to higher-level thinking. In addition, solving problems in the class will be used to help develop the students' abilities at applying the theory to solving problems. Through the semester, assignments will be given to students to allow them to develop their problem-solving techniques, practice the methods learnt in the module, assess their progress, and to receive feedback. On the other hand, examinations will enable students to reliably demonstrate their own knowledge, understanding, and application of learning outcomes. Besides, students will demonstrate what they learn in the laboratory, which provide an opportunity to test and analyze diverse laws of physics experimentally.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4, 10	LO #1 - 3, and 4 - 7
	Assignments	1	10% (10)	6	LO # 1 - 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	12	LO # 1 – 10
Summative assessment	**Midterm Exam**	2 hrs.	10% (10)	7	LO # 1 – 10

	Final Exam	2 hrs.	50% (50)	16	LO # 1 – 10
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stress and strain
Week 2	Pressure Pressure of fluid in a uniform density
Week 3	Pressure in fluid in various densities
Week 4	Pascal law
Week 5	Archimede's principle
Week 6	Surface tension Capillary
Week 7	Midterm Exam
Week 8	Atmospheric pressure and gauge pressure Buoyancy
Week 9	The equation of continuity The Bernoulli's equation
Week 10	Simple harmonic motion (S.H.M.) Energy in S.H.M.
Week 11	Damped H.M. Forced vibration
Week 12	Two-body oscillation
Week 13	Traveling waves
Week 14	Interference waves
Week 15	Standing waves

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Surface tension measurement
Week 2	Lab 2: viscosity of liquids
Week 3	Lab 3: measurement of liquid density using different methods
Week 4	Lab 4: The force table

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	University Physics with Modern Physics. 2nd Ed. 2014, by Wolfgang Bauer and Gary D. Westfall.	No
Recommended Texts	Fundamental of Physics, 8th edition 2008. By Halliday, Resnick, and Walker.	No
Websites	https://www.coursera.org/courses?query=classical%20mechanics	

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 Information
معلومات المادة الدراسية

Module Title	**English Language I**	**Module Delivery**	
Module Type	**Support or related learning activity**	**Theory** **☒ Lecture** **Lab** **☐ Tutorial** **☐ Practical** **☐ Seminar**	
Module Code	**UNI 1103**		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	1	**Semester of Delivery**	1

Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	***Murtadha Mohammed***	**e-mail**	E-mail: **enana@uomisan.edu.iq**
Module Leader's Acad. Title	***Assis. Lecturer***	**Module Leader's Qualification**	Ms. C.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**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 Aims أهداف المادة الدراسية	1. *New Headway Beginner, this course aim that both Teachers and students can rely.* 2. *An authoritative integrated syllabus.* 3. *Motivating topics.* 4. *Clearly focused tasks combine with a real understanding of what works in the classroom.* 5. *It all makes for effective teaching and effective learning.*
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. *Full-length foundation course for absolute beginners or near beginners lacking in confidence.* 2. *Grammar syllabus introducing past, present, and future time.* 3. *Vocabulary syllabus focusing on key, high-frequency items, avoiding unnecessary overload.* 4. *Manageable communicative activities putting language into context.* 5. *Staged step-by-step approach building on students' skills and confidence.* 6. *Clear, fresh design with plenty of photos and illustration.*
Indicative Contents المحتويات الإرشادية	- - *Reading books in the specialist, to overcome of good writing in English Language.*

	- *Listening a lot for the English content such as Movies, repots, and news, to overcome of good speaking in English Language*

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 type 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	100	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	411		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	*Introduction – general view*
Week 2	*Your world*
Week 3	*Personal information*
Week 4	*Family and friends*
Week 5	*It's my life*
Week 6	*Every day and places I like*
Week 7	**Mid-term Exam**
Week 8	*Where I live?*
Week 9	*Happy birthday!*
Week 10	*We had a good time*
Week 11	*We can do it!*
Week 12	*Thank you very much!*
Week 13	*Here and now*
Week 14	*It's time to go!*
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	New Headway Beginner-students Book-Liz & John Soars- OXFORD. WWW.OUP.COM/elt/headway	Yes
Websites	WWW.OUP.COM/elt/headway	

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 Information

معلومات المادة الدراسية

Module Title	**Magnetism**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY1205**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Dr. Mundher Al-Shakban	**e-mail**	Mundher.al-shakban@uomisan.edu.iq
Module Leader's Acad. Title	Ass. 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	01/06/2023	**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 Aims أهداف المادة الدراسية	1. To help students to understand the basic properties and applications of the magnetic field and the mathematics necessary to achieve this understanding. 2. To introduce and then develop the transferable, practical and computational skills that are required by practising physicist, through laboratory bench work, computing and communication exercises. 3. To develop problem solving skills and understanding of magnetic field theories through the application of techniques. 4. This course deals with the basic concept of magnetic theories. 5. This is the basic subject for all magnetic and electronic circuits. 6. provide an in-depth knowledge of the modern theory and practice of magnetic systems; 7. Undertake related analysis and design calculations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the theoretical and experimental background of magnetism, and will appreciate their general physical significance and applications. 2. Use of mathematics (including calculus) in solving problems. 3. Perform practical work and keep accurate accounts of it, including professionally maintained records of purpose, methodology, and results. Communicate the process and results of practical work in formal, written presentations. Enter, manipulate, and present data with the aid of computer tools. 4. Describe the fundamental principles of, electrostatic field, 5. Express the basics of waves and phasors, 6. Describe the magnetic flux 7. Describe the problems with steady magnetism. 8. Analyze the problems dealing with magnetic force and magnetic field.
Indicative Contents المحتويات الإرشادية	The Magnetism course is a deepening of the material that students have obtained in the basic physics lecture and as a prelude to a higher level. The expected competency is to have insight, and master the knowledge of magnetism and apply it in everyday life. The materials discussed include electrostatics, special techniques determining potential, electrostatic field, statistical magnetic field, and electrodynamics. Indicative content includes the following. 1- The magnetic field 1-1 The definition of B 1-2 Magnetic force and current 1-3 Torque on a current loop 1-4 The Hall effect 1-5 Circulating charge

	1-6 Cyclotron and synchrotrons. 2-Amperes' law 2-1 Lines of B 2-2 Two parallel conductor 2-3 B of a Solenoid 2-4 The Biot-Savart law 3-Faraday's law of induction 3-1 Faraday's experiments 3-2 Faraday's law of induction 3-3 Lenz's law 3-4 Time varying magnetic fields 3-5 Inductance and relative motion 4- Inductance 4-1 Inductance 4-2 Calculation of inductance 4-3 Energy and the magnetic field 4-4 Energy density and the magnetic field 4-5 Mutual inductances.

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 type 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	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	18
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The magnetic field, The definition of B, Magnetic force and current
Week 2	Torque on a current loop
Week 3	The Hall effect
Week 4	Circulating charge, Cyclotron and synchrotrons.
Week 5	Amperes' law, Lines of B
Week 6	Two parallel conductor, B of a Solenoid
Week 7	**Mid-term Exam**
Week 8	The Biot-Savart law
Week 9	Faraday's law of induction Faraday's experiments
Week 10	Lenz's law
Week 11	Time varying magnetic fields Inductance and relative motion
Week 12	Inductance Calculation of inductance
Week 13	Energy and the magnetic field
Week 14	Energy density and the magnetic field
Week 15	Mutual inductances.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered

Week 1	Lab 1: introduce students to some of the equipment they will use in the lab.
Week 2	Lab 2: 1. Studying the characteristics of the electric resonance circuit in the case of a coil, a capacitor.
Week 3	Lab 3: Studying the properties of the electric resonance circuit in the case of a coil, a capacitor.
Week 4	Lab 4: 3. Finding the capacitive reactance of a capacitance in the presence of an alternating voltage source
Week 5	Lab 5. Finding the self-inductance coefficient of an induction coil in an alternating current circuit containing an induction coil and resistance
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Halliday ,Resnick and Walker, Fundamentals of physics 8th Edition ,John Wiley and Sons,Inc. (2008).	No
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	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 Information

معلومات المادة الدراسية

Module Title	**Mathematics II**	**Module Delivery**
Module Type	**B**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial**
Module Code	**PHY1206**	
ECTS Credits	**5**	

SWL (hr/sem)	**125**	☐ **Practical** ☐ **Seminar**	
Module Level	UGI	**Semester of Delivery**	2
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Dr. Satar Mozan	**e-mail**	@uomisan.edu.iq
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	11/08/2024	**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 Aims أهداف المادة الدراسية	1. This course deals with the basic Integration 2. To describe Properties of Integration 3. To understand special functions 4. To distinguish Integration of Trigonometric and inverse trigonometric functions 5. To solve Integration Exponential and Logarithmic functions 6. To application Some Techniques of Integration
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Acknowledge Types of Integration and Properties of Integration 2. Recognize Type of special functions. 3. Discuss Trigonometric and inverse trigonometric functions 4. Summarize what is meant by a more than two variables 5. Understand Hyperbolic functions 6. know reciprocal of hyperbolic functions 7. Define logarithmic functions 8. Identify Some Techniques of Integration and their applications. 9. Discuss of Rational Functions by Partial Fractions 10. Employment Integration by Parts
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Fundamentals Types of Integration, Properties of Integration, Integration of special functions and Trigonometric functions Integration inverse trigonometric functions Exponential and Logarithmic functions [14 hrs] Integration of function in two variables, Integration of a function in more than two variables Hyperbolic functions, The reciprocal of hyperbolic functions and Integration by Parts [14 hrs] Part B – application Integration of hyperbolic functions and he reciprocal of hyperbolic functions, Integration by Parts, Integration of Rational Functions by Partial Fractions [14 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy for teaching this module will be to motivate students to participate in solving the exercises by utilizing math concepts and assignments to urge students to solve to the assignments while developing their ability to think critically.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction – Integration
Week 2	Types of Integration
Week 3	Properties of Integration
Week 4	Integration of special functions
Week 5	Integration of Trigonometric functions
Week 6	Integration inverse trigonometric functions
Week 7	Integration Exponential and Logarithmic functions
Week 8	Midterm Exam
Week 9	Integration of function in two variables
Week 10	Integration of a function in more than two variables
Week 11	Hyperbolic functions
Week 12	The reciprocal of hyperbolic functions
Week 13	Some Techniques of Integration
Week 14	Integration by Parts
Week 15	Integration of Rational Functions by Partial Fractions
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Calculus and analytic Geometry by Thomas	Yes
Recommended Texts	University Calculus with Analytic Geometry	No
Websites	https://www.wolframalpha.com/	

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.

Second Level

Module Information معلومات المادة الدراسية					
Module Title	**Analog Electronics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY2108**				
ECTS Credits	**7**				
SWL (hr/sem)	١٧٥				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Bachelor's degree in Physics (First cycle)		**College**	College of science	
Module Leader	Mayada jassim		**e-mail**	mayadajassim@uomisan.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ms.c	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	11/08/2024		**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 Aims أهداف المادة الدراسية	1. 1. To develop problem solving skills and understanding of analog theory through the application of techniques. 2. 2. To understand semiconductors, and principle of its works 3. 3. To learn about the working principle of the crystal diode and the calculations related to it. 4. 4. To understand about the diode applications. 5. 5. To learn about the working principle of the transistor and the calculations related to it. 6. 6. To learn about the transistor, JFET, MOS and MOSFT applications 7. 7. To obtain introduction to the world of digital electronics
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize difference between semiconductors, insulators and metals. 2. Determine the types of positive and negative junctions. 3. Summarize a basic of crystal diode circuits. 4. Discuss the applications of crystal diode circuits. 5. Summarize a basic of Zener diode circuits. 6. Compare between crystal and Zener diode. 7. Summarize a basic of PNP and NPN circuits. 8. Discuss the operations of transistors types. 9. Discuss the various common connection of transistor. 10. Summarize a basic of JEFT circuits. 11. Summarize a basic of MOSFET circuits. 12. Summarize a convert analog signal to digital signal.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Semiconductors circuits – Insulator, metal, band theory of electronics, PN- junction crystal diode circuit elements, characterization of forward- inverse connect, applications of its, rectifier, clippers circuits. [20 hrs] • Zener diode – principle work of Zener diode. characterization of forward- inverse connect. Voltage regulator circuit. LED diode – principle work of LED diode. characterization of forward-inverse connect. LED application. [10hrs] • PNP, NPN Junction, Fundamentals of PNP – NPN junction, Bipolar transistor, principle of operating, Base-Emitter-Common connection of transistor, applications of bipolar transistor, rectifier, clippers circuits. Amplifiers [. [20 hrs] • Junction Field Effect transistor, construction and classification, principle of operating, Gate-Drain-Source connection, applications of JFET. [5 hrs] • Metal Oxide Semiconductor Field Effect Transistor, construction and classification, principle of operating, Gate-Drain-Source connection, applications of MOSFET. [10 hrs] • Analog-to-digital conversion circuits (ADC). [5 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 type 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	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – semiconductors Difference between Circuit Theory and Field Theory
Week 2	Principle of crystal diode.
Week 3	Study of crystal diode applications: rectifier, clippers circuits diode
Week 4	Study of crystal diode applications: clampers voltage double circuits diode
Week 5	Principle of Zener diode and its applications.
Week 6	Principle of light emit diode and laser diode .
Week 7	Mid-term Exam

Week 8	Introduction to the PNP and NPN junctions .
Week 9	Principle of Bipolar Junction Transistors (BJT), Study of transistor hybrid parameters.
Week 10	Design and principle working of Bipolar Junction Transistor Amplifier (CE,CC,CB)
Week 11	Bipolar Junction Transistors (BJT): Transistor Models, Bipolar Transistor Biasing, Common Emitter Amplifier (CE), Common Collector Amplifier (CC) ,Common Base Amplifier (CB)
Week 12	Junction Field Effect Transistors (JFET): construction and classification. and applications
Week 13	Study of MOS and MOSFET, construction and classification.
Week 14	Applications of MOS and MOSFET.
Week 15	Introduction to principle of Analog-to-digital conversion (ADC)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	الخصائص الاستاتيكية للثنائي البلوري
Week 2	دايود زينر
Week 3	دوائر التوحيد
Week 4	الربط التوازي للدايود
Week 5	دراسة خصائص الترانزستور ذو ربط القاعدة المشتركة

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Fundamentals of Electronics Book 1: Electronic Devices and Circuit Applications, Thomas F. Schubert ،Ernest M. Kim, Morgan & Claypool Publishers.	Yes
Recommended Texts	Electronics (fundamentals and Applications) D. Chattopadhyay, New Age International, 2006	No
Websites	https://www.tutorialspoint.com/basic_electronics/basic_electronics_mosfet.htm	

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 Information
معلومات المادة الدراسية

Module Title	**Analytical Mechanics I**	**Module Delivery**	
Module Type	**Core**	☐ **Theory** ☐ **Lecture** ☐ **Tutorial**	
Module Code	**PHY2109**		
ECTS Credits	5		
SWL (hr/sem)	**125**		
Module Level	UGII	**Semester of Delivery**	3
Administering Department	Physics	**College**	College of science
Module Leader	Mohammed Jawad Kadhim	**e-mail**	mohammed.jawad@uomisan.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	MSc
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	٢٠٢٤-٨-١١	**Version Number**	١

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mechanics (PHY1101)	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	7. The module aims to provide a detailed introduction to the analytical foundations of Classical mechanics. 8. This module introduces general concepts and methods for the description and analysis of the motion and dynamics of particles, systems of particles and fields. 9. To study, understand and analysis vectors, dynamics of a particle general motion, moving reference system, central forces, collisions of bodies and other concepts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate an ability to use mathematical techniques and analysis to model physical behavior involving mechanics. 2. Demonstrate an ability to identify relevant principles and laws when dealing with problems, and to make approximations necessary to obtain solutions. 3. The student should list the coordinates, transformations, the generated function and their applications. 4. Understand and analysis Newton's laws of motion, linear momentum and motion of a Particle. 5. The student should distinguish between the equations of the general motion of the particle. 6. The student should apply transfers in solving problems. 7. The student will be able to communicate in writing and orally through exams, assignments and solving problems on the board. 8. Understand and analysis dynamics of a particle in a rotating coordinate System, effects of the earth's rotation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Vector calculus, velocity and acceleration in plane polar coordinates, cylindrical and Spherical Coordinates, Newton's laws of motion, linear momentum, motion of a particle, rectilinear motion, the concepts of kinetic and potential energy, harmonic motion, dynamics of a particle in a rotating coordinate system and dynamics of a system of particles.

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 solving the problems and deriving the equations, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, discussion and by asking some questions to stimulate the student's creative thinking.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

		Time /Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	3, 11	LO # 3, 4, 6 and 8
	Assignments	2	10% (10)	5, 12	LO # 1, 2 and 5
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Derivative of a vector, Position vector of a Particle, Velocity Vector, Acceleration Vector, Vector Integration, Relative Velocity

Week 2	Derivatives of Products of Vectors, Tangential and Normal Components of Acceleration, Velocity and Acceleration in Plane polar coordinates, Velocity and Acceleration in Cylindrical and Spherical Coordinates.
Week 3	Newton's laws of motion, Newton's First Law. Inertial Reference Systems, Mass and Force. Newton's Second and Third Laws, Linear Momentum, Motion of a Particle, Rectilinear Motion.
Week 4	The Force as a Function of Position Only. The concepts of Kinetic and Potential Energy, The Force as a Function of Velocity Only, The Force as a Function Time Only, Vertical Motion in a resisting Medium Terminal Velocity.
Week 5	Variation of Gravity with Height Energy Considerations in Harmonic Motion, Forced Harmonic Motion, Resonance, Motion Under a Non-sinusoidal Periodic Driving Force
Week 6	The Work Principle, Conservation Force and Force Fields, Potential Energy Function, Condition for the Existence of a Potential Function, The Del Operator, Forces of The Separable Type, Motion of a projectile in a Uniform Gravitation Field.
Week 7	**Mid-term Exam**
Week 8	The Harmonic Oscillator in Two and Three Dimensions, Motion of Charged Particles in Electric and Magnetic Fields, Constrained Motion of a Particle, The Energy Equation for Smooth Constraints.
Week 9	More Accurate Solution of the Simple Pendulum Problem and the Nonlinear Oscillator, Exact Solution of the Simple Pendulum by Means of Elliptic Integrals, The Isochronous Problem, The Spherical Pendulum.
Week 10	Translation of the Coordinate System, Inertial Forces, General Motion of the Coordinates System
Week 11	Dynamics of a Particle in a Rotating Coordinate System, Effects of the Earth's Rotation, Foucault Pendulum.
Week 12	The Law of Gravity, Gravitational Force between a Uniform Sphere and a Particle, Potential Energy in a Gravitational Field. Gravitational Potential, Potential Energy in a general Central Field, Angular Momentum, The Law of Areas. Kepler's Laws of Planetary Motion, Orbit of a particle in a Central – force Field.
Week 13	Energy Equation of the Orbit, Orbits in an Inverse – square Field, Orbital Energies in the Inverse – square Field, Periodic Time of Orbital Motion, Motion in an Inverse – square

	Repulsive Field . Scattering of Atomic Particle, Motion in a Nearly Circular Orbit. Stability, Apsides & Apsidal Angles for Nearly Circular Orbits.
Week 14	Center of Mass and linear Momentum, Angular Momentum of a System, Kinetic Energy of a System of a Particles, Motion of Two Interacting Bodies. The Reduced Mass.
Week 15	Collisions,Oblique Collisions and Scattering . Comparison of Laboratory and C-M Coordinates, Impulse, Motion of Body with Variable Mass. Rocket Motion.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Analytical Mechanics, by Grant R. Fowles.	No
Recommended Texts	Analytical Mechanics , by NIVALDO A. LEMOS , (2018, Cambridge university press)	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 Information
معلومات المادة الدراسية

Module Title	**Computer Science I**	**Module Delivery**	
Module Type	**B**		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**PHY21010**		
ECTS Credits	٤		
SWL (hr/sem)	١٠٠		

Module Level	1	**Semester of Delivery**	3 semester 2022-2023
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Ahmed khalaf Zager	**e-mail**	ahmedkhalafzager@uomisn.edu.iq
Module Leader's Acad. Title	Assist. Prof .Dr	**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	١١/0٨/202٤	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims أهداف المادة الدراسية	MATLAB is a high-performance programming language used to perform technical calculations. With calculation and display operations within an easy-to-programming environment, it also does not require a great professionalism. This language enables you to solve many technical problems mathematically, especially those expressed by matrices. Which requires a lot of effort to be programmed in other programming languages such as C and F 1. Dealing with variables 2. Dealing with Matrix operations 3. functions 4. Make graphics 5. Building interactive programs

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	9. Knowledge and understanding 10. The student interacts smoothly with the MATLAB program 11. uses it to do engineering and scientific calculations 12. The student was able to draw laboratory diagrams and designs to successfully complete a specific application. 13. B2 - Developing performance skills using MATLAB.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 14. Define the requirement : Computer hardware and program define hardware and software algorithm ,flowchart to design the program 15. Development: implementation the software using computer to solve problems by writing code source. 16. Testing : test the software and program to integrate the woke study 17. Maintenance : to enhancement education and fix error 18. Evaluation education to disposal

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	• Improve students focus so they're ready, willing and able to learn. • Begin class with a mindful minute • Incorporate movement. • Take sensory breaks. • Build foundational cognitive skills. • Create a growth mindset classroom

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Security and network
Week 2	Type of network
Week 3	Understand network threat
Week 4	E-commerce
Week 5	Eclectic bang service include online bank
Week 6	ATM and debit card service
Week 7	Computer trouble shooting
Week 8	Identify the hardware and software problem
Week 9	Basic trouble shooting tool and techniques for diagnose and resolving
Week 10	Introduction of Artificial intelligence
Week 11	Ai in our daily life
Week 12	Application of IA
Week 13	AI and society
Week 14	Ethics challenge in AI
Week 15	The future of AI
Week 16	examm

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to MATLAB
Week 2	Lab2: Cantilever Beam Analysis
Week 3	Lab3: Generating Plots
Week 4	Lab4: Digital Signal Processing. Image Enhancement
Week 5	Lab5: Polynomials in MATLAB
Week 6	Lab6: Fourier series representations of signals
Week 7	Lab 7: data communication in mathlab

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	None	Yes
Recommended Texts		No
Websites	https://trumpexcel.com/vba-msgbox/ https://www.automateexcel.com/vba/list-all-sheets-in-workbook/ https://www.geeksforgeeks.org/add-two-numbers-represented-by-stacks/ https://stackoverflow.com/questions/34776110/excel-function-to-convert-english-names-to-arabic https://www.geeksforgeeks.org/difference-between-hardware-and-software/ https://www.edrawsoft.com/explain-algorithm-flowchart.html https://learn.microsoft.com/en-us/dotnet/visual-basic/programming-guide/language-features/control-flow/loop-structures	

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
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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 Information
معلومات المادة الدراسية

Module Title	**English Language II**	**Module Delivery**	
Module Type	**S**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**UNI2104**		
ECTS Credits	٢		
SWL (hr/sem)	٥٠		

Module Level	UGII	**Semester of Delivery**	3
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	***Murtadha Mohammed***	**e-mail**	**enana@uomisan.edu.iq**
Module Leader's Acad. Title	***Assis. Lecturer***	**Module Leader's Qualification**	Ms. C.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	١١/06٨/2024	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	UNI1103	**Semester**	2
Co-requisites module	None	**Semester**	

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

Module Aims
أهداف المادة الدراسية

6. *New Headway Beginner, this course aim that both Teachers and students can rely.*
7. *An authoritative integrated syllabus.*
8. *Motivating topics.*
9. *Clearly focused tasks combine with a real understanding of what works in the classroom.*
10. *It all makes for effective teaching and effective learning.*

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***7.*** *Full-length foundation course for absolute beginners or near beginners lacking in confidence.* ***8.*** *Grammar syllabus introducing past, present, and future time.* ***9.*** *Vocabulary syllabus focusing on key, high-frequency items, avoiding unnecessary overload.* ***10.*** *Manageable communicative activities putting language into context.* ***11.*** *Staged step-by-step approach building on students' skills and confidence.* **12.** *Clear, fresh design with plenty of photos and illustration.*
Indicative Contents المحتويات الإرشادية	- - *Reading books in the specialist, to overcome of good writing in English Language.* - *Listening a lot for the English content such as Movies, repots, and news, to overcome of good speaking in English Language*

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 type 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	٣٣	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	٢
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	١٧	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	٢
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	٥٠		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	4,7, 11	LO #1,3, 5,6,9 and 10
	Assignments	2	10% (10)	3, 12	LO # 2,4, 7and 11
	Projects / Lab.	0	0% (10)	Continuous	All
	Report	1	15% (15)	13	LO # 5 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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 Information
معلومات المادة الدراسية

Module Title	**Mathematics III**	**Module Delivery**	
Module Type	**B**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY21011**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	UGII	**Semester of Delivery**	3
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Dr. Sattar Mozan	**e-mail**	@uomisan.edu.iq
Module Leader's Acad. Title	Ass. 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	١١/0٨/2024	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	PHY1103, PHY1206	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To develop students' skills to learn about ordinary differential equations 2. To understand the types of ordinary differential equations 3. To develop student skills to form ordinary differential equations 4. To students acquire the skill of solving ordinary differential equations 5. To student's ordinary differential equations of the second order or higher 6. To students ordinary differential equations are of the first order, but of higher degrees
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn the symbols of ordinary differential equations 2. Identify the order and degree of the ordinary differential equation 3. Explanation of the methods to solving the ordinary differential equation 4. method of separating variables 5. Solve homogeneous equations 6. Solve differential equations with linear coefficients 7. Solving none-xact differential equations 8. Solving exact differential equations 9. Solving Linear equation 10. Solving Bernoulli's' equation 11. Solving Ordinary differential equations of the second order or higher 12. Solving Ordinary differential equations are of the first order, but of higher degrees. 13. Solving simultaneous differential equations 14. Understand the Laplace transforms 15. Learn the Bessel's and Legendre's equations
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Learn the symbols of ordinary differential equations, Identify the order and degree of the ordinary differential equation, Explanation of the methods to solving the ordinary differential equation, method of separating variables Solve homogeneous equations, solve differential equations with linear coefficients, solving non-exact differential equations, solving exact differential equations, Solving Linear equation, Solving Bernoulli's' equation **[20 h]** • Solving Ordinary differential equations of the second order or higher ,Solving Ordinary differential equations are of the first order, but of higher degrees, Solving simultaneous differential equations **[10 h]** • Laplace transforms, Bessel's and Legendre's equations **[13 h]**

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 type 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	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	4,7, 11	LO #1,3, 5,6,9 and 10
	Assignments	2	10% (10)	3, 12	LO # 2,4, 7and 11
	Projects / Lab.	0	0% (10)	Continuous	All
	Report	1	15% (15)	13	LO # 5 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Learn the symbols of ordinary differential equations
Week 2	Identify the order and degree of the ordinary differential equation
Week 3	Explanation of the methods to solving the ordinary differential equation
Week 4	method of separating variables
Week 5	Solve homogeneous equations
Week 6	Solve differential equations with linear coefficients
Week 7	Solving nonexact differential equations
Week 8	Mid-term Exam
Week 9	Solving exact differential equations
Week 10	Solving Linear equation
Week 11	Solving Bernollis' equation
Week 12	Solving Ordinary differential equations of the second order or higher
Week 13	Solving Ordinary differential equations are of the first order, but of higher degrees and Solving simultaneous differential equations
Week 14	Laplace transforms
Week 15	Bessel's and Legendre's equations
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Differential Equation .H.B.(Henry Bayard) Phillips 1951	No
Recommended Texts	calculus Thomas 11th edition, calculus Thomas 14th edition	Yes
Websites	https://archive.org/details/2005-sgk-differential-equations-demystified-a-self-teaching-guide/page/n91/mode/2up	

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 Information
معلومات المادة الدراسية

Module Title	**Modern Physics**	**Module Delivery**	
Module Type	Core		☒ **Theory**
Module Code	PHY22012		☐ **Lecture**
ECTS Credits	**6**		☒ **Lab**
SWL (hr/sem)	**150**		☒ **Tutorial**
			☐ **Practical**
			☐ **Seminar**

Module Level	UGII	**Semester of Delivery**	2
Administering Department	3	**College**	8
Module Leader	Ahmad Hashim Abood	**e-mail**	prof.dr.ahmad@uomisan.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Non	**e-mail**	E-mail
Peer Reviewer Name	Non	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Non	**Semester**	
Co-requisites module	Non	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	❖ .To provide students with information about the special theory of relativity. ❖ .To provide students with basic information about the atom, its componen, an atomic phenomena such as conduction and insulation. ❖ .To provide students with basic information about radiation. ❖ .To provide students with information about methods of heat transfer. ❖ .To provide students with the basic principles of blackbody radiation. ❖ .To provide students with the basic principles of quantum mechanics. ❖ .To provide students with the basic principles of atomic models. ❖ .To provide students with basic information about atomic structure, bonding, an spectra. ❖ .To provide students with information about the medical uses of x-rays.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student understands the difference between motion in classical and relativistic mechanics. ❖ The student lists Einstein's postulates of special relativity. ❖ The student reviews the basic principles of motion. ❖ Compare relativistic mass and relativistic kinetic energy. ❖ Solve problems related to time dilation and length contraction. ❖ Classify materials according to their conductivity based on atomic structure. ❖ State the difference between conductors and insulators. ❖ Establish a relationship for the atomic compactness coefficient of disordered crystals. ❖ Compare atomic spectra. ❖ Compare atomic models. ❖ Determine the difference between blackbody radiation and the Wien and Rayleigh-Jeans relationships. ❖ Solve problems related to radiation and atomic transitions. ❖ Use Compton scattering relationships. ❖ .١٣Classify electromagnetic waves according to their frequency and wavelength.
Indicative Contents المحتويات الإرشادية	**Theory of Relativity: Einstein's Postulates, Michelson-Morley Experiment, Galileo Transformations, Lontz Transformations, Reference Axes, Synchronism, Time Dilation, Length Contraction, Relativistic Mass and Energy**

	Electricity from an Atomic Perspective: Atoms, Atomic Components, Valence Electrons, Conductors, Insulators, Electricity and Light, Electric Discharge, Thomson's Experiment, Millikan's Experiment, Isotopes, Mass Spectrometry, Isotope Mass **Radiation from an Atomic Perspective: Waves vs. Particles, Light and Electricity, Electrokinetics, Thermal Radiation, Emission, Absorption, and Radiation, Blackbody Radiation, Laws of Radiation, Photoelectric Effect** **Atomic Models: Historical Development of the Atomic Concept, Hydrogen Spectrum, Hydrogen Spectral Lines, Hydrogen Chains, Emission and Absorption Spectra, Bohr Model, Binding Energy, Ionization Energy, Multi-Electron Atoms, Quantum Numbers, and Electron Activity** **Crystal Structure: Introduction, Atomic Bonds, Unit Cell, Miller Coefficients, Structure Crystallography, Atomic Array** **X-rays: Discovery, X-ray production, nature of X-rays, X-ray diffraction, X-ray production mechanisms, energy levels, X-ray spectrum, Compton effect, uses of X-rays**

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	❖ -١Using live lectures through the presentation method ❖ -٢Including educational videos related to the subject in some lectures ❖ -٣Using flashcards to illustrate some experiments not available in the lab ❖ -٤Using small group methods for some subjects ❖ -٥Providing reports on some theories and principles

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	**10(10%)**	3,10	1,2,3,6,8,9,11
	Assignments	2	**10(10%)**	5,12	3,10
	Projects / Lab.		**10(10%)**		
	Report	2	**10(10%)**		7,12
Summative assessment	**Midterm Exam**	1	**10(20%)**	8	1-8
	Final Exam	1	**50(60%)**	16	1-14
Total assessment			100(100%)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The Special Theory of Relativity
Week 2	The Special Theory of Relativity
Week 3	Electricity from an Atomic Perspective
Week 4	Electricity from an Atomic Perspective
Week 5	Radiation from an Atomic Perspective
Week 6	Radiation from an Atomic Perspective
Week 7	Radiation from an Atomic Perspective
Week 8	Midterm Exam
Week 9	Atomic Models
Week 10	Atomic Models
Week 11	Atomic Models, Crystal Structure
Week 12	Crystal Structure
Week 13	Crystal Structure
Week 14	X-Rays
Week 15	X-Rays
Week 16	End-Term Exam

Week 11	○ تشتت الموجات وفقدان الطاقة
Week 12	٢. **الانعكاس والانكسار(Reflection and Refraction)**
Week 13	○ القوانين الأساسية للانعكاس والانكسار
Week 14	○ الزاوية الحرجة والانعكاس الكلي الداخلي
Week 15	٣. **الحيود والتداخل(Diffraction and Interference)**
Week 16	○ مبدأ التراكب

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electronics Book 1: Electronic Devices and Circuit Applications, Thomas F. Schubert ،Ernest M. Kim, Morgan & Claypool Publishers.	Yes
Recommended Texts	Electronics (fundamentals and Applications) D. Chattopadhyay, New Age International, 2006	No
Websites	https://www.tutorialspoint.com/basic_electronics/basic_electronics_mosfet.htm	

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 Information

معلومات المادة الدراسية

Module Title	***Digital Electronics***	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PHY2108**		
ECTS Credits	**7**		
SWL (hr/sem)	١٧٥		

Module Level	UGx11 UGII	**Semester of Delivery**	3
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Mayada jassim	**e-mail**	mayadajassim@uomisan.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ms.c
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	11/08/2024	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Information

معلومات المادة الدراسية

Module Title	**Sound and Wave Motion**	**Module Delivery**	
Module Type	Core	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PHY226		
ECTS Credits	٤		
SWL (hr/sem)	١٠٠		

Module Level	UGx11 UGII 2	**Semester of Delivery**	٢
Administering Department	Bachelor's degree in Physics (First cycle)	**College**	College of science
Module Leader	Hussain sadon	**e-mail**	husinsadon@uomisan.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ms.c
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	11/08/2024	**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

Module Aims أهداف المادة الدراسية	١. *Understand the fundamental principles of wave motion in its various forms (transverse, longitudinal, mechanical, and electromagnetic).* ٢. *Analyze key wave properties such as speed, frequency, wavelength, and amplitude.* ٣. *Explain phenomena like interference, diffraction, reflection, and refraction of waves.*

	٤. *Apply wave concepts to understand sound propagation in different media.* ٥. *Distinguish the relationship between sound and mechanical waves in terms of generation, propagation, and detection.* ٦.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	*resonance.* ١. *Apply wave motion principles to sound phenomena in solid, liquid, and gaseous media.* ٢. *Perform basic laboratory experiments to investigate wave and sound properties and interpret the results scientifically.* ٣. *Use mathematical and physical skills to solve quantitative problems related to waves and sound*
Indicative Contents المحتويات الإرشادية	• **مقدمة في الحركة الموجية (Introduction to Wave Motion)** • **الخصائص العامة للموجات (General Properties of Waves)** الطول الموجي، التردد، السعة، السرعة العلاقة بين السرعة، التردد، والطول الموجي تمثيل الموجات رياضيًا • **انتقال الموجات في الأوساط المختلفة (Wave Propagation)** الموجات في الأوساط الصلبة، السائلة، والغازية قانون سنل للانكسار • **انعكاس وانكسار الموجات (Reflection and Refraction of Waves)** تطبيقات في الصوت والضوء الزوايا الحرجة والانعكاس الكلي • **الحيود والتداخل (Diffraction and Interference)** مبدأ التراكب التداخل البناء والهدام تجربة الشق المزدوج (Young's Experiment) • **الرنين والتوافقيات (Resonance and Harmonic)**

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	• **محاضرات التفاعلية (Interactive Lectures):** • تقديم المفاهيم النظرية بأسلوب مبسط مع أمثلة من الحياة اليومية. • استخدام الوسائط المتعددة (الرسوم المتحركة، المحاكاة) لتوضيح الظواهر الموجية. • **العروض التوضيحية العملية (Demonstrations):** • **الأنشطة المخبرية (Laboratory Activities):** • **التعلم القائم على حل المشكلات (Problem-Based Learning):** •

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Summative assessment	**Final Exam**	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	٤. **مقدمة في الموجات(Introduction to Waves)**
Week 2	○ تعريف الموجة وأنواعها
Week 3	○ الفرق بين الموجات المستعرضة والطولية
Week 4	○ الموجات الميكانيكية والكهرومغناطيسية
Week 5	٥. **خصائص الموجات(Wave Properties)**
Week 6	○ الطول الموجي، التردد، السعة، السرعة
Week 7	○ العلاقة الرياضية بين الخصائص
Week 8	○ التمثيل البياني للموجات
Week 9	٦. **انتقال الموجات(Wave Propagation)**
Week 10	○ انتقال الموجات في الأوساط المختلفة (صلبة، سائلة، غازية)
Week 11	○ تشتت الموجات وفقدان الطاقة
Week 12	٧. **الانعكاس والانكسار(Reflection and Refraction)**
Week 13	○ القوانين الأساسية للانعكاس والانكسار
Week 14	○ الزاوية الحرجة والانعكاس الكلي الداخلي
Week 15	٨. **الحيود والتداخل(Diffraction and Interference)**
Week 16	○ مبدأ التراكب

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electronics Book 1: Electronic Devices and Circuit Applications, Thomas F. Schubert ،Ernest M. Kim, Morgan & Claypool Publishers.	Yes
Recommended Texts	Electronics (fundamentals and Applications) D. Chattopadhyay, New Age International, 2006	No
Websites	https://www.tutorialspoint.com/basic_electronics/basic_electronics_mosfet.htm	

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.