استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

الجامعة : المثنى
الكلية/ المعهد: كلية العلوم
القسم العلمي : الفيزياء
اسم البرنامج الأكاديمي : بكالوريوس
اسم الشهادة النهائية: بكالوريوس في علوم الفيزياء
النظام الدراسي:فصلي(كورسات)
تاريخ ملء الملف : 2024-2023

التوقيع :
اسم المعاون العلمي: ا.م. ميثم عباس مكي
التاريخ : 24 / 6 /2024

التوقيع :
اسم رئيس القسم : أ.م.د. موفق فاضل جدوع
التاريخ : 14 / 6 /2024

دقق الملف من قبل
شعبة ضمان الجودة والأداء الجامعي
د.صالح عبيد لزام
التاريخ : 24 / 6 \ 2024
التوقيع

مصادقة السيد العميد

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Mechanics I**		**Module Delivery**	
Module Type	C		☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**Phys 1101**			
ECTS Credits	6			
SWL (hr/sem)	**150**			
Module Level	1	**Semester of Delivery**		1
Administering Department	Type Dept. Code	**College**	Colleg of science	
Module Leader	Alaa Jassim Mohammed	**e-mail**	alaa.mohammed@mu.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	10/06/2023	**Version Number**	1.0	

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

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

Module Aims أهداف المادة الدراسية	1. Comprehend the fundamentals of stress/strain analysis and apply them with confidence to the calculation of loads and deformations in simple structures 2. Recognize the relationships between commonly used material properties, and recall their value for typical materials used in mechanical engineering structures. 3. Analyses and examine a physical problem . 4. Develop free-body diagrams which form the basis of many formulations in mechanics, to separate more complex loaded structures into combinations of elemental sections 5. Critically evaluate and judge the validity of a method of analysis in a solid mechanics problem in terms of its assumptions and simplifications 6. develop an understanding of the fundamentals of engineering mechanics. 7. introduce the wide range of materials used in engineering and their fundamental, physical properties 8. develop problem solving skills in engineering mechanics through the application of concepts in statics and dynamics to real world problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamental principles of mechanics: Students should be able to comprehend the basic principles of mechanics, such as Newton's laws of motion, conservation of momentum, and concepts related to forces, motion, and equilibrium. 2. Apply mathematical tools to solve mechanics problems: Students should be able to use mathematical techniques, such as algebra, trigonometry, calculus, and vector analysis, to solve problems related to mechanics. This includes analyzing motion, calculating forces, determining accelerations, and predicting the outcomes of mechanical systems. 3. Analyze and interpret physical systems: Students should develop the ability to analyze and interpret the behavior of physical systems in various scenarios. They should be able to identify and describe the forces acting on objects, analyze motion graphs, and apply appropriate mathematical models to predict the behavior of systems. 4. Apply principles to real-world situations: Students should be able to apply the principles and concepts of mechanics to real-world situations. This involves identifying and analyzing mechanical systems in practical contexts, such as engineering applications, vehicle dynamics, structural analysis, or fluid mechanics. 5. Develop problem-solving skills: Students should enhance their problem-solving skills by applying the principles of mechanics to solve complex problems. This includes breaking down complex problems

	into smaller components, applying appropriate mathematical models, and critically evaluating solutions for accuracy and feasibility.
	6. Demonstrate experimental and analytical skills: Students should be able to design and conduct experiments related to mechanics, analyze experimental data, and draw conclusions based on their findings. This may involve using laboratory equipment, collecting and interpreting data, and applying statistical analysis methods.
	7. Enhance critical thinking and analytical reasoning: Students should develop critical thinking skills to analyze and evaluate different approaches to problem-solving in mechanics. They should be able to assess the validity of arguments, make informed decisions, and apply logical reasoning to formulate solutions.
	8. Communicate effectively: Students should be able to communicate their understanding of mechanics concepts, principles, and problem-solving techniques effectively. This includes writing clear and concise reports, explaining complex ideas in a coherent manner, and presenting findings or solutions orally.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A **1.** Kinematics: The study of motion without considering the causes of motion. Topics include displacement, velocity, acceleration, and their relationships.8hr **2.** Dynamics: The study of the causes of motion and the forces that affect it. Topics include Newton's laws of motion, force, mass, inertia, and equilibrium.8hr **3.** Forces: The concept of force and its various types, such as gravitational force, normal force, frictional force, tension, and elastic force. 7hr **4.** Newton's Laws of Motion: The three fundamental laws that govern the motion of objects. They describe the relationship between forces, mass, and acceleration. 7hr **5.** Momentum and Impulse: The concepts of momentum and impulse, which describe the motion of objects in terms of their mass and velocity. 7hr Part B **1.** Work, Energy, and Power: The relationship between work, energy, and power, and their applications in mechanical systems. Topics include potential energy, kinetic energy, conservation of energy, and power calculations. 10hr **2**. Circular Motion: The study of objects in circular motion and the forces acting on them. Topics include centripetal force, centrifugal force, and rotational motion.10hr **3**. Gravitation: The study of the force of gravity and its effects on objects. Topics include universal gravitation, orbital motion, and satellite motion.9hr **4.** Oscillations: The study of periodic motion, including simple harmonic motion. Topics include oscillating systems, pendulums, and resonance.8hr

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			
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	5
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**	3	10% (10)	4, 9,12	LO #1, 2, 3,7,10 and 11
	Assignments	3	10% (10)	5, 10, 13	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	14	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to mechanisms: basic concepts, system of particles, fluid mechanics, statistical mechanics, heat and thermodynamics.
Week 2	Vectors
Week 3	Position, velocity and acceleration analysis of linkages
Week 4	Static and dynamic force analysis of mechanisms
Week 5	translational kinematics and dynamics work and energy
Week 6	system of particles, rotational kinematics and dynamics
Week 7	Mid-term Exam .
Week 8	equilibrium, gravitation oscillations, waves.
Week 9	Newton's laws, momentum and angular momentum methods
Week 10	Work and energy
Week 11	Dynamics of rigid bodies
Week 12	kinematics
Week 13	Euler's Laws
Week 14	angular momentum
Week 15	Work and energy methods for rigid bodies
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: أيجاد التعجيل الارضي بأستخدام بندول بسيط
Week 2	Lab 2: تحقيق قانون هوك وحساب قيمة التعجيل الارضي باستخدام نابض محلزن
Week 3	Lab 3: معامل الاحتكاك الشروعي والانزلاقي لقطعة منزلقة على لوح معدني
Week 4	Lab 4: تعيين عزم القصور الذاتي لعجلة محورية
Week 5	Lab 5: قوانين نيوتن في الحركة

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	1. "Classical Mechanics" John R. Taylor (2005) 2. "Introduction to Classical Mechanics: With Problems and Solutions" by David Morin (2008) 3. "Classical Mechanics: The Theoretical Minimum" by Leonard Susskind & George Hrabovsky (2014)	Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

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

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	**Electricity**	**Module Delivery**
Module Type	C	☒Theory
Module Code	**Phys 1102**	☒Lecture
ECTS Credits	**6**	☒Lab
		☐Tutorial
SWL (hr/sem)	**150**	☐Practical
		☐Seminar

Module Level	1	**Semester of Delivery**	1
Administering Department	Phys.Dept	**College**	College of Science
Module Leader	Ahmed Almurshedi	**e-mail**	fhahmed2@mu.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	010/06/2023	**Version Number**	1.0

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

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

Module Aims أهداف المادة الدراسية	1. To differentiate between conductors, insulators and semiconductor. 2. To understand the concept of electric charge. 3. To use Coulomb's law to solve problems about electric force electric field and electric potential. 4. To understand the meaning of dipole moments. 5. Use Gauss' law to different types of charge distributions in space. 6. Explain the physical basis of Ohm's law and use Ohm's law in solving problem. 7. To understand types of Kirshoff's current and voltage Laws and using it in the electric circuits. 8. To understand different types of capacitor and its application in the circuits. 9. To know concepts such as Electric Current, Current density, Resistance, Resistivity, Series and parallel combination of resistance. 10. To develop problem solving problem skills related to the electric force, electric field and electric potentials.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Learn the nature of electric charge, and how we know that electric charge is conserved. 2- Recognize how objects become electrically charged and how to use Coulomb's law to calculate the electric force between charges. 3- The distinction between electric force and electric field. 4- Learn how to calculate the electric field due to a collection of charges. 5- What is meant by electric flux, and how to calculate it. 6- How to use Gauss's law to calculate the electric field due to a symmetric charge distribution. 7- How to calculate the electric potential energy of a collection of charges. 8- How to use equipotential surfaces to visualize how the electric potential varies in space. 9- How to use electric potential to calculate the electric field. 10- The nature of capacitors, and how to calculate a quantity that measures their ability to store charge. 11- The meaning of electric current, and how charges are move in a conductor. 12- What is meant by the resistance, resistivity and conductivity of a substance.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Electric force</u> Electric Charge - Properties of electric charges, Conductors, Insulators and Semiconductor, Types of Charging and Coulomb's Low. [15 hrs]

	Electric Field - Electric Field of point charges, Charge Density, Electric Field due to charged Rod, The Electric Field of a Uniform Ring of Charge, The Electric Field of a Uniformly Charged Disk. [10 hrs]
	Electric Flux – The flux Examples Flux through a Cube, Electric flux through a disk, Gauss's Law and its application to find the electric field, charged spherical shell, infinite line charge, non-conductor infinite plane. [10 hrs]
	Electric Potential - Electric Potential of a Point Charge, Electric Potential Due to a Spherical Shell, Electric Potential of a Uniformly Charged Sphere, Energy Relation in an electric field. [10 hrs]
	Part B – Electric Circuit Capacitors - Capacitors and Insulators, Parallel plate capacitor, cylindrical capacitor, spherical Capacitor. [10 hrs]
	Electric Current - Current density, Resistance, Resistivity, Series and parallel combination of resistance, Ohm's law, solving Problems. [10 hrs]
	Kirshoff's Low - Kirshoff's current and voltage Laws and using it in the electric circuits. [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			
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	5
Total SWL (h/sem)	150		

			الحمل الدراسي الكلي للطالب خلال الفصل

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Electric Charge - Properties of electric charges, Conductors, Insulators and Semiconductor, Types of Charging,
Week 2	Electric force, Coulomb's Low
Week 3	Electric Field of point charges, Charge Density, Electric Field due to charged Rod.
Week 4	The Electric Field of a Uniform Ring of Charge, The Electric Field of a Uniformly Charged Disk
Week 5	Electric Flux, The flux Examples Flux through a Cube, Electric flux through a disk
Week 6	Gauss's Law and its application to find the electric field, charged spherical shell, infinite line charge, non-conductor infinite plane
Week 7	Electrical potential, Electric Potential of a Point Charge, Electric Potential Due to a Spherical Shell.
Week 8	Electric Potential of a Uniformly Charged Sphere, Energy Relation in an electric field.
Week 9	Energy stored in charged system
Week 10	Capacitors - Capacitors and Insulators, Parallel plate capacitor, cylindrical capacitor, spherical Capacitor.
Week 11	Polarization
Week 12	Dielectric and Isolator Material

Week 13	Ohm's law Electric Current, AC currents, Current density
Week 14	Resistance, Resistivity, Series and parallel combination of resistance, Ohm's law
Week 15	Kirshoff's voltage and current law
Week 16	**Preparatory week before the final Exam**

	Delivery Plan (Weekly Lab. Syllabus)
	المنهاج الاسبوعي للمختبر
	Material Covered
Week 1	Lab 1: Ohm's law investigation (تحقيق قانون اوم)
Week 2	Lab 2: Electrical resonance (الرنين الكهربائي)
Week 3	Lab 3: Kirchhoff's laws for complex circuit analysis (قانونا كيرشوف لتحليل الدوائر المعقدة)
Week 4	Lab 4: The internal resistance of the voltmeter (المقاومة الداخلية للفولتميتر)
Week 5	Lab 5: The maximum power transfer theorem (القدره العظمى للمولد)
Week 6	Lab 6: Capacitive Reactance (حساب الرادة السعوية)
Week 7	Lab 7:

	Learning and Teaching Resources	
	مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	- Fundamentals of Physics, Halliday & Resnicle, John Wiley, 2011 9th edition. - University Physics by Francis and others.	No
Recommended Texts	- الفيزياء العامة (ميكانيك – كهربائية ومغناطيسية) أ.د. فؤاد شاكر د. علي خلف - الكهربائية والمغناطيسية إبراهيم ناصر واخرون	Yes
Websites	https://openstax.org/books/physics/pages/18-3-electric-field	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	**Mathematics I**	**Module Delivery**
Module Type	**B**	☒Theory
Module Code	**COS 1101**	☒Lecture
ECTS Credits	**6**	☒Lab
SWL (hr/sem)	**150**	☐Tutorial ☐Practical ☐Seminar

Module Level	1	Semester of Delivery	1
Administering Department	Physics. Dept.	**College**	College of Science
Module Leader	Mousa Makey Khrajan	**e-mail**	E-mail; mmkrady@mu.edu.iq
Module Leader's Acad. Title	**Assist.Prof.**	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	10/06/2023	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Teach students the most important basic concepts, principles . laws. And scientific theories of the limits and continuous . The students has the scientific skills that enable him to perform their professional and business functions and others.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To understand the applications of differentiations such as area and volume. 2. Enabling the student to obtain and understanding of modern and advanced scientific topics in this area. 3. Linking theoretical concepts with applied material through applied examples.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part 1: Basics of functions (types of functions) with graph; Limits (definition with examples); continuity. 20 hr Part 2: Derivatives (definition with examples) ; Rules of derivatives; Chain rule with examples ; Implicit Differentiation ; Higher Order Derivatives. 20 hr Part 3; Differentiation Differentiation of Exponential and Logarithmic functions ; on of Trigonometric functions. 20 hr
Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	1. Giving students specialized theoretical and practical scientific skills , skills of thinking and analysis in both the theoretical and practical aspects. 2. Enable students to obtain theoretical experiences and develop learning skills in this area.

Student Workload (SWL)			
الحمل الدراسي للطالب			
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	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	3	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	3	10% (10)	2, 8, 12	LO # 3, 4, 6 and 11
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	6	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction
Week 2	Basics of functions (types of functions)
Week 3	Graph of functions
Week 4	Limits (definition with examples)
Week 5	Limits (theorems)
Week 6	Derivatives (definition with examples)
Week 7	Rules of derivatives
Week 8	Chain rule with examples
Week 9	Implicit Differentiation
Week 10	Higher Order Derivatives (Exampels)
Week 11	Differentiation of Exponential and Logarithmic functions
Week 12	Differentiation of Trigonometric functions and basic identities
Week 13	The Hyperbolic Functions
Week 14	The inverse of trigonometric and Hyperbolic Functions
Week 15	Increasing and decreasing functions and elementary curve sketching
Week 16	Increasing and decreasing functions and elementary curve sketching(examples)

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Calculus and Analytics Geometry; Thomas and Finney , ADDISON – WESLEY PUBLISHING COMP.	Yes
Recommended Texts	Calculus ; STANLEY I .GROSSMAN; ACADEMIC 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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	**Astrophysics**	**Module Delivery**
Module Type	C	☒**Theory**
Module Code	**Phys1103**	☒**Lecture**
ECTS Credits	5	☐**Lab**
		☐**Tutorial**
SWL (hr/sem)	**125**	☐**Practical**
		☐**Seminar**

Module Level	1	**Semester of Delivery**	1
Administering Department	Physics. Dept	**College**	College of Science
Module Leader	Majed Kamil Qetheth	**e-mail**	Majed_kamil@mu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	10/06/2023	**Version Number**	1.0

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

	Module Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدراسية	1. Learn the basics of astronomy and study the laws that govern this science. 2 . Learn about astronomical phenomena and explain them physically, as well as the terminology of this science. 3 . Identifying the physical properties of the nearby celestial bodies and identifying the laws that govern them in the sky. 4. Learn how to monitor different astronomical phenomena and try to interpret them in a correct scientific way through the laws that govern astronomy and space physics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Enabling students to obtain knowledge and understanding of the principles, scientific foundations and theories of astrophysics. 2 . Enabling students to obtain an understanding of modern and advanced scientific topics in this section. 3 . Enabling the student to identify the nature of celestial bodies, including stars and interstellar matter that contain gases and cosmic dust, as well as planets, meteorites, meteors and comets, as well as identifying galaxies that represent the basic structure of the universe, and trying to explain all the phenomena that these bodies go through. 4. Introducing the student to how to deal with the events that take place in celestial bodies, determining their dimensions and speeds, as well as dealing with their various phenomena..
Indicative Contents المحتويات الإرشادية	Chapter One: Planetarium Kepler's Laws, the first, second and third laws, astronomical terminology for the planetarium, coordinate systems of the planetarium, horizon system, equator system, zodiacal system, galactic system, astronomical seasons, astronomical units of measurement.[10 hrs] Chapter Two: The Solar System The sun, the physical properties of the sun, the layers of the sun, the surface phenomena of the sun, the moon, the physical properties of the moon.[5 hrs] Chapter Three: Planets Bode rule, small asteroids, the origin of the solar system, hypotheses to explain the origin of the solar system.[5 hrs] Chapter four: The physical properties of stars The star, the magnitudes of the stars, the luminosity of the stars, the relationship of the energy received from the star with its bolometric magnitude, Hertz-Spring-Russell diagram, the life cycle of stars, white dwarfs, neutron stars, black stars.[10 hrs] Chapter Five: Stellar Systems and Variables Binary stars, measuring the mass of two stars in terms of the mass of the sun, types of binary stars, variable stars.[10 hrs] Chapter Six: The Galaxy

	Our Milky Way galaxy, galaxy motion, galactic mass calculator, nebulae. [5 hrs]
	Chapter Seven: Galaxies
	Types of galaxies, clusters of galaxies, active galaxies. [5 hrs]
	Chapter Eight: Quasars (quasi-stars)
	Expansion of the universe and redshift, theories of the emergence of the universe, Aristotle's cosmology, Olbers' paradox, Einstein-de Sitter's cosmology, the big bang theory, steady state theory, the future of the universe, life in the universe. [10 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1. Giving students specialized, theoretical and practical scientific skills. 2. Giving students the skills of thinking and analysis in both the theoretical and practical aspects. 3. Enable students to obtain theoretical experiences and develop learning skills in astrophysics. 4. Training students on the skills of arithmetic operations for calculating some astronomical and physical coefficients and parameters of astrophysics.

Student Workload (SWL)
الحمل الدراسي للطالب

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	
	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, Kepler's laws, Astronomic terms.
Week 2	Planetarium (Celestial Sphere): Planetarium coordinate systems.
Week 3	Stellar asteroids ,Zodiac and zodiacal circle.
Week 4	Astronomic units.
Week 5	Our solar system: Sun, the surface phenomena of the sun, the moon.
Week 6	Planets: physical properties of planets, meteors, meteorites and comets.
Week 7	Eclipses and eclipses, Bode's low.
Week 8	The physical properties of the stars: the Stellar Magnitude, Stellar luminosity.
Week 9	Hertz Sprank-Russell diagram.
Week 10	Neutron stars, Black holes.
Week 11	Stellar systems and variables stars, Star Clusters, Nebulae.
Week 12	Galaxies: Milky way, types of galaxies.
Week 13	Galaxy mass, Quasi stellar.
Week 14	The Expansion of the Universe.
Week 15	Theories of the beginning of the universe
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- Fundamental Astronomy 5thed, H.Karttunen et al, Springer, 2006	No
Recommended Texts	2- Astronomy - Principles and Practice 4th ed, A.Roy, D Clarke , Springer ,2000	No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

<table>
<tr><td colspan="4" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td>Computer Science I</td><td colspan="2">Module Delivery</td></tr>
<tr><td>Module Type</td><td>B</td><td colspan="2" rowspan="4">☒Theory
☒Lecture
☒Lab
☐Tutorial
☐Practical
☐Seminar</td></tr>
<tr><td>Module Code</td><td>UOM 1104</td></tr>
<tr><td>ECTS Credits</td><td>4</td></tr>
<tr><td>SWL (hr/sem)</td><td>100</td></tr>
<tr><td>Module Level</td><td>1</td><td>Semester of Delivery</td><td>1</td></tr>
<tr><td>Administering Department</td><td>Physics . Dep.</td><td>College</td><td>College of science</td></tr>
<tr><td>Module Leader</td><td>Nawrass N. Ameen</td><td>e-mail</td><td>Nawrass@mu.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Assistant professor</td><td>Module Leader's Qualification</td><td>Ph.D.</td></tr>
<tr><td>Module Tutor</td><td>Name (if available)</td><td>e-mail</td><td>E-mail</td></tr>
<tr><td>Peer Reviewer Name</td><td>Name</td><td>e-mail</td><td>E-mail</td></tr>
<tr><td>Scientific Committee Approval Date</td><td>10/06/2023</td><td>Version Number</td><td>1.0</td></tr>
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<table>
<tr><td colspan="4" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td></td><td>Semester</td><td></td></tr>
<tr><td>Co-requisites module</td><td></td><td>Semester</td><td></td></tr>
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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 computer science through the application of software. 2. To understand the purpose of using Microsoft word. 3. This course deals with the basic concept of Microsoft word. 4. To differentiate between the orders. 5. To perform steps of preparing project.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how the computer device works. 2. List the various terms associated with computers. 3. Summarize what is meant by a Bit and Byte. 4. Describe RAM and ROM. 5. Define Hardware and software.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** Computer science, software and hardware **UNIT – I** Introduction to Computers Computer system: characteristics and capabilities. Computer Hardware and Software: Block Diagram of a Computer, Different Data Processing: Data, Data Processing System, Storing Data, Processing Data. Types of Computers: Analogue, Digital, Hybrid, General and Special Purpose Computers. Generation of Computers. Computer Systems: Micros, Minis & Main-frames. Limitations of Micro Computer. [9 hrs] **UNIT –II** Computer Peripherals Introduction to Input Devices: Categorizing Input Hardware, Keyboard, Direct Entry — Card Readers, Scanning Devices — O.M.R., Character Readers, Thumb Scanner, MICR, Smart Cards, Voice Input Devices, Pointing Devices — Mouse, Light Pen, Touch Screen. Computer Output: Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche (COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies, Projectors, Speakers. [9 hrs] **UNIT – III** Basic Components & Storage Central Processing Unit: The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory (ROM). Storage Devices: Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods — Sequential, Direct & Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations, Direct access Storage and Microcomputers – Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM. [9 hrs] **UNIT – IV** Computer Software & Languages

	System Software: System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems. Boot Loader, Diagnostic Programs, BIOS, Utility Programs.
	Application Software: Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages. Computer Languages: Definition, Generations of computer languages, Types of Languages, Language Processors: Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs, Algorithm & flowchart. [9 hrs]
	UNIT – V Introduction to MS DOS & Windows
	Introduction to DOS: History and versions of DOS. Fundamentals of DOS: Physical Structure of the Disk, Compatibility of drives, Disks & DOS versions, Preparing Disks for use, Device Names. Getting Started with DOS: Booting Process (DOS, Windows, Unix), System Files and Command.com, Internal DOS Files & Directories, Elementary External DOS Commands, Additional Commands.
	Microsoft Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel—display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows [5 hrs]
	RL, RC and RLC circuits - Frequency response of RLC circuits, simple filter and band-pass circuits, resonance and Q-factor, use of Bode plots, use of differential equations and their solutions. Time response (natural and step responses). Introduction to second order circuits.
	Revision problem classes [4 hrs]

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			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	52	**Unstructured SWL (h/w)**	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	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab Syllabus)

المنهاج الاسبوعي المختبر

	Material Covered
Week 1	UNIT – I Introduction to Computers
Week 2	How computer works
Week 3	computers contents
Week 4	UNIT – II Computer Peripherals
Week 5	Computer Output
Week 6	UNIT – III Basic Components & Storage
Week 7	Storage Devices
Week 8	UNIT – IV Computer Software & Languages
Week 9	Application Software: Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages.
Week 10	Application Software: Computer Languages: Definition, Generations of computer languages, Types of Languages, Language Processors: Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs
Week 11	UNIT – V Introduction to MS DOS & Windows
Week 12	Microsoft Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders.

Week 13	Microsoft Windows: Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar
Week 14	Microsoft Windows: Running applications, exploring computer, managing files and folders, copying and moving files and folders.
Week 15	Microsoft Windows: Control panel—display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	أسس الحاسب الالي	Yes
Recommended Texts	كتاب علم الحاسوب، 2010	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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	اللغة العربية العامة	**Module Delivery**
Module Type	B	☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar
Module Code	UoB12345	
ECTS Credits	3	
SWL (hr/sem)	75	

Module Level	1	**Semester of Delivery**	1
Administering Department	Physics. Dept.	**College**	College of science
Module Leader	Ali Jawad Obada	**e-mail**	ali.jawad.sci@edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	10/06/2023	**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. إعانة الطلاب على التعبير الصحيح، وضبط الأساليب وتفهم القرآن الكريم والوقوف على أسراره . 2. تعويد الطلاب على دقة الملاحظة والتمييز بين الخطأ والصواب فيما يسمعون ويقرؤون مما يساعدهم على فهم معاني الجمل والأساليب . 3. تمرين الطلاب على دقة التفكير والبحث العقلي الدقيق . 4. إكساب الطلاب قدرات نحوية تمكنهم من تقويم ألسنتهم عند القراءة . 5. تنمية الثروة اللغوية للطلاب وتزويدهم بكثير من الألفاظ والتراكيب بفضل ما يعرض عليهم من أمثلة وأساليب . 6. مساعدة الطلاب على فهم التراكيب المعقدة والأساليب الغامضة والتعرف على أسباب تعقيدها أو غموضها .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات تعلم اللغة العربية العامة: 1. التعرف إلى مستويات نظام اللغة العربية. 2. معرفة القواعد النحوية والصرفية. 3. وصف المناهج النقدية والظواهر الأدبية. 4. التعريف بأبرز المصنفات اللغوية والأدبية
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	• **استراتيجية** الحوار... • إستراتيجية السرد القصصي... • التدريس باستخدام التكنولوجيا... • إستراتيجية إعداد المشاريع... • **استراتيجية** تبادل الأدوار

Student Workload (SWL)
الحمل الدراسي للطالب

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	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	
	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
Week 2	قضايا قرآنية
Week 3	الاخطاء الشائعة
Week 4	عصور الأدب العربي
Week 5	الخط والإملاء
Week 6	امتحان شهر اول
Week 7	همزة الوصل والقطع
Week 8	الظاء والضاد
Week 9	تحليل نص شعري حديث
Week 10	قواعد كتابة الهمزة وسط الكلمة
Week 11	الألف المقصورة والممدودة
Week 12	امتحان شهر ثاني
Week 13	البلاغة العربية وعلومها
Week 14	علامات الترقيم
Week 15	مناقشة تقارير الطلبة
Week 16	الامتحان النهائي

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	الوجيز في قواعد الاملاء والانشاء /د.عبد الله أنس الطباع	Yes
Recommended Texts	جامع الدروس العربية/ مصطفى الغلاييني	No
Websites	الموسوعة الحرة ويكيبيديا	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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معلومات المادة الدراسية</td></tr>
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<td>Module Delivery</td>
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<td>Administering Department</td>
<td>Phy. Dep</td>
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<td>College of Science</td>
</tr>
<tr>
<td>Module Leader</td>
<td>Alaa Jassim Mohammed</td>
<td>e-mail</td>
<td>alaa.mohammed@mu.edu.iq</td>
</tr>
<tr>
<td>Module Leader's Acad. Title</td>
<td>Professor</td>
<td>Module Leader's Qualification</td>
<td>Ph.D.</td>
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<tr>
<td>Module Tutor</td>
<td>Name (if available)</td>
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العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr>
<td>Prerequisite module</td>
<td align="center">Phys 1101</td>
<td>Semester</td>
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Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- Study of Fluid Behavior: Fluid mechanics aims to understand the behavior of fluids, including liquids and gases, under various conditions. It investigates how fluids flow, how they interact with their surroundings, and the forces that act on them. 2- Conservation Laws: Fluid mechanics aims to establish and apply fundamental principles, such as mass, momentum, and energy conservation, to fluid systems. These laws help in analyzing and predicting fluid flow patterns, pressure distributions, and other related phenomena. 3- Engineering Applications: One of the primary aims of fluid mechanics is to provide a foundation for engineering applications. It helps in designing and analyzing fluid-based systems, such as pumps, turbines, aircraft wings, pipes, and hydraulic systems, to ensure optimal performance, efficiency, and safety. 4- Fluid Dynamics: Fluid mechanics aims to explore the dynamics of fluid flow, including aspects like turbulence, laminar flow, boundary layers, and flow separation. Understanding these phenomena is crucial for various fields, including aerospace, automotive, civil, and environmental engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the fundamental concepts: Students should develop a solid understanding of the basic principles and concepts of fluid mechanics, including properties of fluids, fluid statics, and fluid dynamics. 2. Applying conservation laws: Students should be able to apply the principles of conservation of mass, momentum, and energy to fluid systems, and analyze and solve problems involving flow rates, forces, and energy transfers. 3. Analyzing fluid behavior: Students should learn how to analyze the behavior of fluids under different conditions, such as steady and unsteady flows, laminar and turbulent flows, and compressible and incompressible flows. 4. Calculating fluid forces: Students should be able to calculate fluid forces on submerged surfaces and understand the concepts of pressure distribution, buoyancy, and drag forces. 5. Solving flow problems: Students should develop problem-solving skills to analyze and solve fluid flow problems, including pipe flow, open channel flow, and flow through nozzles, diffusers, and pumps. 6. Understanding flow measurement techniques: Students should learn about various techniques used to measure flow rates, such as orifice meters, venture meters, and flow visualization methods. 7. Applying dimensional analysis: Students should understand the principles of dimensional analysis and be able to use it to develop dimensionless groups and perform similarity analysis.

	8. Analyzing flow in pipes and channels: Students should learn about the characteristics of flow in pipes and channels, including friction losses, flow regimes, and hydraulic design considerations. 9. Studying boundary layer theory: Students should gain an understanding of boundary layer theory, including laminar and turbulent boundary layers, boundary layer separation, and the effects of boundary layers on flow over surfaces. 10. Real-world applications: Students should explore the practical applications of fluid mechanics in various fields, such as civil engineering, mechanical engineering, aerospace engineering, and environmental science.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part A** **1- Introduction to Fluid Mechanics:**Definition and properties of fluids Fluid statics and pressure Fluid forces and buoyancy. 12 hr **2- Fluid Kinematics:** Description of fluid motion Eulerian and Lagrangian approaches Streamlines, streak lines, and path linesVelocity and acceleration fields. 12 hr **3- Fluid Dynamics:** Conservation laws (mass, momentum, and energy) Control volume analysis and Reynolds transport theorem Navies-Stokes equations and their simplifications Boundary layer theory and flow regimes.13 hr **Part B** **1- Fluid Flow:** Steady and unsteady flow ,Incompressible and compressible flow , Laminar and turbulent flow ,Viscous and in viscid flow.10 hr **2- Flow Measurements:** Pressure measurement techniques, Flow rate measurement (e.g., flow meters) , Velocity measurement (e.g., Pitot tubes, hot-wire anemometers). 10 hr **3- Pipe Flow:** Flow in pipes and ducts, Conservation equations for pipe flow ,Friction losses and head loss calculations ,Pipe networks and system analysis.10 hr **4- Open Channel Flow:** Flow in open channels (e.g., rivers, canals) ,Manning's equation and uniform flow, Gradually varied and rapidly varied flow, Channel controls and hydraulic structures. 7 hr

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

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	5
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	3	10% (10)	5, 10, 12	LO #1, 2, 10 , 11 and 12
	Assignments	3	10% (10)	2, 9, 11	LO # 3, 4, 6 , 7, 11
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 12
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-8
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to fluid mechanics: Definition and scope, continuum hypothesis, classification of fluids Fluid properties: Density, viscosity,

Week 2	surface tension, compressibility Pressure and fluid statics: Pascal's law, hydrostatic pressure, manometers
Week 3	Fluid kinematics: Eulerian and Lagrangian descriptions, streamline, pathline, streakline, acceleration of fluid particles.
Week 4	Conservation laws: Mass conservation (continuity equation) Bernoulli's equation: Derivation and applications.
Week 5	Fluid dynamics: Euler's equation of motion, control volume analysis
Week 6	Conservation laws: Momentum conservation (Navier-Stokes equations).
Week 7	Mid-term Exam .
Week 8	Simplifications of the Navier-Stokes equations: In viscid flow, viscous flow, steady flow, and unsteady flow.
Week 9	Flow measurements: Flow rate measurement techniques (orifice, venturi, pitot tubes, etc.)
Week 10	Internal flow: Laminar and turbulent flow in pipes, pipe friction and losses
Week 11	Pipe networks: Series and parallel pipes, pipe sizing, pump selection
Week 12	Flow in open channels: Classification of open channels, energy principles, specific energy, critical flow, gradually varied flow
Week 13	Channel design and hydraulic structures: Channel cross-sections, slope, uniform flow, and non-uniform flow
Week 14	Compressible flow: Isentropic flow, Mach number, normal shock waves, oblique shock waves, expansion waves
Week 15	Applications of fluid mechanics: Aircraft aerodynamics, hydraulics, turbomachinery, environmental flows
Week 16	**Preparatory week before the final Exam**

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Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

</div>

	Material Covered
Week 1	Lab 1: قوانين نيوتن في الحركة
Week 2	Lab 2: قياس كثافة سائل بأستخدام انبوبة اختبار مثقلة
Week 3	Lab 3: أيجاد الشد السطحي للماء بأستخدام الانابيب الشعرية

Week 4	Lab 4: البندول المركب
Week 5	Lab 5:ايجاد معامل اللي و ثابت الصلادة لقضيب او سلك منتظم باستخدام معامل اللي
Week 6	Lab 6: معامل المرونة
Week 7	Lab 7: حساب سرعة الصوت

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Fluid Mechanics" by Pijush K. Kundu, Ira M. Cohen, and David R. Dowling (2015). 2- "Computational Fluid Dynamics: Principles and Applications" by Jiri Blazek (2015). 3- "Introduction to Fluid Mechanics" by Yasuki Nakayama (2019)	Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Magnetism**	**Module Delivery**	
Module Type	C	☒Theory	
Module Code	Phys 1215	☒Lecture	
ECTS Credits	6	☒Lab	
SWL (hr/sem)	150	☐Tutorial ☐Practical ☐Seminar	
Module Level	1	**Semester of Delivery**	2
Administering Department	Physics. Dept.	**College**	College of science
Module Leader	Ahmed Almurshedi	**e-mail**	fhahmed2@mu.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	10/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Phys 1102	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To understand the nature of magnetism and magnet. 2. To differentiate between electric field and magnetic field. 3. To understand the magnetic field and its different examples. 4. To understand the behavior of the motion of charged particle in uniform and nonuniform magnetic field. 5. To develop problem solving skills related to magnetism. 6. Application of Gauss' law for magnetism. 7. Study of Amperes law, lenz law and Maxwell equations. 8. To study the type of transformer and its applications. 9. To understand the inductance, self and mutual inductance. 10. To study the type of transformer and its applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The properties of magnets, and how magnets interact with each other. 2. The nature of the force that a moving charged particle experiences in a magnetic field. 3. How magnetic field lines are different from electric field lines. 4. How to analyze the motion of a charged particle in a magnetic field. 5. Some practical applications of magnetic fields in physics. 6. How to analyze magnetic forces on current-carrying conductors. 7. How current loops behave when placed in a magnetic field. 8. How to describe the magnetic field produced by an element of a 9. current-carrying conductor. 10. How to use Ampere's law to calculate the magnetic field of symmetric current distributions. 11. How Faraday's law relates the induced emf in a loop to the change in magnetic flux through the loop. 12. How to calculate the emf induced in a conductor moving through a magnetic field.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Magnetic Force, Magnetic field and Source of Magnetic Field Introduction to Magnetism – Magnetic force, Magnetic field, Motion of a charged particle in a uniform magnetic field, Motion of a charged particle in a nonuniform magnetic field [10 hrs]

	Magnetic Field – Magnetic force on an electric current, Magnetic field produced by a closed current, Magnetic field of a rectilinear current (Biot-Savart Law), Magnetic field of a circular current, Magnetic field of moving charge. [10 hrs] Amperes Law - Amperes Law for the magnetic field, Examples on Amperes Law, Magnetic Flux, Magnetic field strength, Magnetization, Magnetic susceptibility. [10 hrs] Faraday's Law - Faraday's Law, Lenz's Law, Faraday Henry Law. [5 hrs] Inductance - Self Inductance, Mutual Inductance, Inductance of a solenoid in terms of its geometry, Magnetic energy Stored by an inductor, Magnetic Energy Density Inside a Current Carrying Solenoid. [10 hrs] Revision and solving problems [5 hrs] Part B – Circuits DC circuits - A series combination of an inductor and a resistor connected to a dc source, A Charged capacitor connected to an inductor, Energy of an LC Circuit, Transformers. [10 hrs] AC circuits - Alternating Current Circuits, A Resistor Connected to an ac Source, A Capacitor Connected to an ac Source, An Inductor Connected to an ac Source, Series Combination of a Resistor, an Inductor and a Capacitor Connected to an ac Source, Resonant Frequency. [15 hrs]

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

Student Workload (SWL)
الحمل الدراسي للطالب

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	5
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**	3	10% (10)	3, 5, 10	LO #1, 2, 10 and 11
	Assignments	3	10% (10)	2, 9, 12	LO # 3, 4, 6 , 7 and 10
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-8
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Magnetism, Magnet, Magnetic materials, magnetic field of earth
Week 2	Magnetic field, Magnetic force, Lorentz force
Week 3	Motion of a charged particle in a uniform magnetic field
Week 4	Motion of a charged particle in a nonuniform magnetic field
Week 5	Magnetic force on an electric current
Week 6	Magnetic field produced by a closed current
Week 7	Magnetic field of a rectilinear current (Biot-Savart Law)
Week 8	Magnetic field of a circular current, Magnetic field of moving charge
Week 9	Amperes Law for the magnetic field, Examples on Amperes Law
Week 10	Magnetic Flux, Magnetization, Magnetic susceptibility

Week 11	Faraday's Law, Lenz's Law, Faraday Henry Law
Week 12	Inductance, Self Inductance, Mutual Inductance
Week 13	DC circuit, A series combination of an inductor and a resistor connected to a dc source, A Charged capacitor connected to an inductor, Energy of an LC Circuit, Transformers
Week 14	AC circuit, Alternating Current Circuits, A Resistor Connected to an ac Source, A Capacitor Connected to an ac Source
Week 15	AC circuit, An Inductor Connected to an ac Source, Series Combination of a Resistor, an Inductor and a Capacitor Connected to an ac Source, Resonant Frequency
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Nonlinear relation between voltage and current (الشذوذ عن قانون اوم)
Week 2	Lab 2: Charge and discharge Capacitance an calculation of time constant (شحن وتفريغ متسعة وحساب ثابت الزمن لها)
Week 3	Lab 3: Wheatstone Bridge (قنطرة ونتستون)
Week 4	Lab 4: Measuring the inductive impedance of coil in AC circuits (قياس الممانعة الحثية للملف في الدوائر المتناوبة)
Week 5	Lab 5: Inductive Reactance (الرادة الحثية)
Week 6	Lab 6: The internal resistance of Ammeter (المقاومة الداخلية للاميتر)
Week 7	Lab 7:

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1-Fundamentals of Physics, Halliday & Resnicle, John Wiley, 2011 9th edition. 2-University Physics by Francis and others.	No
Recommended Texts	1. الفيزياء العامة (ميكانيك ـ كهربائية ومغناطيسية) ـ أ.م.د. فؤاد شاكر د. علي خلف 2. الكهربائية والمغناطيسية ـ إبراهيم ناصر واخرون	Yes
Websites	http://hyperphysics.phy-astr.gsu.edu/hbase/magnetic/magfie.html

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	**Mathematics II**		**Module Delivery**	
Module Type	B		☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**COS 1212**		^^	
ECTS Credits	**6**		^^	
SWL (hr/sem)	**150**		^^	
Module Level	1	**Semester of Delivery**	2	
Administering Department	Type Dept. Code	**College**	Type College Code	
Module Leader	Mousa Makey Khrajan	**e-mail**	E-mail; mmkrady@mu.edu.iq	
Module Leader's Acad. Title	**Assist.Prof.**	**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)	**e-mail**	E-mail	
Peer Reviewer Name	Name	**e-mail**	E-mail	
Scientific Committee Approval Date	10/06/2023	**Version Number**	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	COS 1101	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Teach students the most important basic concepts, principles . laws. And scientific theories of the Integrals . The students has the scientific skills that enable him to solve more problems in application. integration
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To understand the applications of differentiations such as area and volume. 2. Enabling the student to obtain and understanding of modern and advanced scientific topics in this area. 3. Linking theoretical concepts wi Improper integrals first kind th applied material through applied examples.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part 1: The definite and indefinite integral ; The fundamental theorem of calculus ; integration by substitution ; 10 hrs Part 2: Integration of Trigonometric functions ; The integration of Hyperbolic Functions; The integration of inverse trigonometric and Hyperbolic Functions ; The integration of Exponential and Logarithmic functions: 15 hrs Part 3 : (Techniques of application) Integration by part ; Integration by Partial Fractions(Linear factors)s ; Integration by Partial Fractions (Quadratic factors) ; Other substitution by Trigonometric function. 15 hrs Part 4 : Improper integral Improper integrals first kind ; Improper integrals second kind. 10 hrs Part 5 : Application of integral Work , Power, and Energy. 10 hrs

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Giving students specialized theoretical and practical scientific skills , skills of thinking and analysis in both the theoretical and practical aspects. 2. Enable students to obtain theoretical experiences and develop learning skills in this area.

Student Workload (SWL)			
Student Workload (SWL) الحمل الدراسي للطالب			
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	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	3	10% (10)	3, 5, 10	LO #1, 2, 10 and 11
	Assignments	3	10% (10)	2, 8, 13	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	9	LO # 1-9
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The definite integral
Week 2	The indefinite integral / The Fundamental Theorem of Calculus
Week 3	Integration by substitution
Week 4	The area between two curves with examples
Week 5	Work , Power, and Energy
Week 6	Integration of Trigonometric functions
Week 7	The integration of Hyperbolic Functions
Week 8	The integration of inverse trigonometric and Hyperbolic Functions
Week 9	The integration of Exponential and Logarithmic functions

Week 10	Techniques of application (By Parts)
Week 11	Integrals of Certain Trigonometric functions
Week 12	Integration by Partial Fractions(Linear factors)
Week 13	Integration by Partial Fractions (Quadratic factors)
Week 14	Other substitution by Trigonometric function
Week 15	Improper integrals first kind
Week 16	Improper integrals second kind

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus and Analytics Geometry; Thomas and Finney , ADDISON – WESLEY PUBLISHING COMP.	Yes
Recommended Texts	Calculus ; STANLEY I .GROSSMAN; ACADEMIC 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
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	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX – Fail**	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	General chemistry	**Module Delivery**	
Module Type	B	☒Theory	
Module Code	COS 1203	☒Lecture	
ECTS Credits	**5**	☒Lab	
SWL (hr/sem)	125	☐Tutorial ☐Practical ☐Seminar	
Module Level	1	**Semester of Delivery**	2
Administering Department	Physics Dept	**College**	College of Science
Module Leader	Asstabraq Mohsin Yasir	**e-mail**	Asstabraq@mu.edu.iq
Module Leader's Acad. Title	Lecture	**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	09/06/2023	**Version Number**	1.0

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

	Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1 - The student learns different Ways of Expressing Concentrations. 2 - The student learns methods of volumetric analysis and applications. 3 - The student should recognize the electronic distribution of atoms and periodic properties of elements in the periodic table. 4 - The student should learn about the different theories of the atomic Construction. 5. The student should identify the different types of chemical bonds. 6- The student learns the laws of gases and the different applications of these laws. 7 - The student learns the Nernst equation, measuring the cell potential, writing the cell and its symbol.	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The study includes an introduction to analytical chemistry and types of chemical analysis. The study also includes the structure of the atom and the periodic table of the elements - the electronic distribution of elements, the general properties of the periodic table, some periodic properties of the elements atoms: ionization energy, The general equation of gases - Boyle's law, real gas and ideal gas, electrical chemistry (oxidation and reduction, Niernst equation), galvanic cell, measuring the cell potential, writing the cell and its symbol.	
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. General introduction - its types, a historical overview , The Nature of Analytical Chemistry, The Role of Analytical Chemistry ,Quantitative Analytical Methods , Typical Quantitative Analysis, compare qualitative and quantitative analyses. Solutions and their classification according to the volume, quantity, and composition of solute particles, the behavior of Brønsted-Lowry acids and bases ,Apply an understanding of pH and pOH to characterize aqueous solutions and determine ion concentrations , equilibrium calculations for Brønsted-Lowry acid-base systems Some of the periodic properties of atoms of elements: Ionic energy, Electron Affinity, electronegativity and Chemical bonds and their types. Electrochemistry (oxidation and reduction , Nernst equation) galvanic cell, measuring the cell potential, writing the cell and its symbol.	

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 Analytical chemistry 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

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	125		

Module Evaluation
تقييم المادة الدراسية

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

	Delivery Plan (Weekly Syllabus)
	المنهاج الاسبوعي النظري
	Material Covered
Week 1	Introduction to Analytical Chemistry, Different Methods of Chemical Analysis
Week 2	Different ways of Expressing Concentrations of solutions: Formality, Mollality, Molarity
Week 3	Different ways of Expressing Concentrations of solutions: Normality, percentages, Mole Fraction
Week 4	Quantitative volumetric analysis-General principle of volumetric titration
Week 5	Type of reaction in volumetric analysis , acid- base indicator
Week 6	1. Periodic table of elements - electronic distribution of elements 2. General properties of the periodic table
Week 7	Some of the periodic properties of atoms of elements: Ionic energy, Electron Affinity, electronegativity
Week 8	Chemical bonds and their types
Week 9	The four Quantum numbers
Week 10	Theories of Atomic construction
Week 11	The general equation for gases - Boyle's law
Week 12	Charles's law
Week 13	Avogadro's Law, real gas and ideal gas
Week 14	Electrochemistry (oxidation and reduction , Nernst equation)
Week 15	galvanic cell, measuring the cell potential, writing the cell and its symbol.
Week 16	Preparatory week before the final Exam.

	Delivery Plan (Weekly Lab. Syllabus)
	المنهاج الاسبوعي للمختبر
	Material Covered
Week 1	General laboratory guidelines, and techniques for dealing with glassware and chemicals
Week 2	Preparation of standard solution of sodium carbonate
Week 3	Preparation of standard solution of hydrochloric acid
Week 4	Preparation and standardization of 0.1 N HCl solution
Week 5	Preparation of approximatly 0.1 N NaOH solution and standardization of it with standard solution of hydrochloric acid
Week 6	Preparation and standardization of approximate 0.1 N acetic acid Solution with standard solution of sodium hydroxide
Week 7	Determination the percentage of acetic acid in vinegar

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- D. A. Skoog and D. M. west ;*"fundamentals of Analytical chemistry"*, 4th Ed. ,Saunders college publishing company, **(1982).** 2-Fallah Hassan, *"The prinsible of thermodynamic"*, 2th Ed., Bairut,**(2012).** **3-** M. N. AL-Zakoom *;" Introduction in Analytical Chemistry and Physical Chemistry ",* University of Basrah , **(1977) .**	No
Recommended Texts	Muhi alddin AL-bakoosh *; "Fundamentals of General chemistry",* 2th Ed., Tripoli, **(2003).**	Yes
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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معلومات المادة الدراسية</td></tr>
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<td>**Module Leader**</td>
<td>Samar abdullah</td>
<td>**e-mail**</td>
<td>samar.abdullah@mu.edu.iq</td>
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العلاقة مع المواد الدراسية الأخرى</td></tr>
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Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1– تعريف الطالب بالديمقراطية وحقوق الانسان والاسس الصحيحة لهما من اجل تشكيل وعي مناسب لهذا النظام السياسي المتطور** **2– دراسة مفهوم الديمقراطية وحقوق الانسان من خلال معرفة اسسها واشكالها وعناصرها ومقوماتها مع دراسة اهم التجارب الديمقراطية في دول العالم**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-ان يكون الطالب ملما بمعرفة اسس النظام الديمقراطي - 2- أن يكون يمتلك الثقافة الجيدة للتمييز بين انواع الديمقراطيات 3- أن يمتلك معلومات جيدة حول الية الانتخابات في الدول الديمقراطية - 4- ان يكون الطالب على اطلاع بحقوق الانسان وحرياته الاساسية
Indicative Contents المحتويات الإرشادية	
Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	ب –الأهداف المهاراتية الخاصة بالمادة 1 ب- تقارير حول النظام الديمقراطية 2ب- مناقشات اثناء المحاضرة حول النظام الديمقراطي ب – 3- شرح اهم حقوق الانسان التي ينبغي ان يتمتع بها

Student Workload (SWL)			
الحمل الدراسي للطالب			
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	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	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	مفهوم حقوق الانسان تعريف الحق
Week 2	حقوق الانسان في الاديان والشرائع السماوية حقوق الانسان في الاسلام
Week 3	الاعتراف الدولي بحقوق الانسان
Week 4	نشوء المنظمات غير الحكومية ودورها في ميادين حقوق الانسان اللجنة الدولية للصليب الاحمر منظمة العفو الدولية منظمة مراقبة حقوق الانسان المنظمة العربية لحقوق الانسان
Week 5	ديمقراطية الاحزاب – التداول السلمي والشرعي للسلطة
Week 6	المساواة السياسية – احترام مبدأ الاغلبية وجود دولة القان
Week 7	انماط الديمقراطية – الديمقراطية المباشرة – الديمقراطية شبه المباشرة
Week 8	الديمقراطية النيابية – الديمقراطية التشاركية – الديمقراطية الليبرالية
Week 9	الديمقراطية التوافقية – ديمقراطية الاغلبية ديمقراطية الكثرة

Week 10	الديمقراطية التفويضية – الديمقراطية الاجتماعية الديمقراطية الصناعية – الديمقراطية التداولية
Week 11	فصل السلطات – السلطة التنفيذية
Week 12	السلطة التشريعية – السلطة القضائية
Week 13	—— النظام الحزبي
Week 14	الديمقراطية في العراق – النظام الحزبي في العهد الملكي
Week 15	تطور الحياة النيابية – الملك
Week 16	—— تأسيس الجمهورية وتوالي الانقلابات

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب الديمقراطية مفاهيم وتجارب للدكتور حسن لطيف الزبيدي والاستاذ نعمة محمد العبادي	Yes
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**English Language I**		**Module Delivery**	
Module Type	B		☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	UOM1202			
ECTS Credits	3:00			
SWL (hr/sem)	75			
Module Level	1	**Semester of Delivery**		2
Administering Department	Type Dept. Code	**College**	College of Science	
Module Leader	Rasha A. Hussein	**e-mail**	rasha.lasereng@mu.edu.iq	
Module Leader's Acad. Title	Assist 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	010/06/2023	**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To provide material for the students to learn pronunciation of the English sounds, to learn to read, write, and to know the fundamentals of English grammar and vocabulary; 2. To develop the students' reading skills to enable them to skim an adapted text for main idea, to scan an adapted text for specific information. 3. To develop the students' writing skills to enable them to respond to input applying information to a specified task, to select, to summarize information in essays. 4. To develop the students' listening skills to enable them to understand and apply specific information from the input. 5. To develop the students' speaking skills to enable them to use general and professional language.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: 1. Distinguish between description and prescription in English grammar. 2. analyze and label sentence constituents accurately 3. parse any sentence 4. understand the role of grammar in effective communication 5. Develop a sound grasp of the nature and terminology of English grammar viewed as constituent structure. Students will gain skills in applying this descriptive framework to any text in English and understand the effect of grammar choices on style. 6. Develop students' ability to write, speak and communicate visually in appropriate English for the context.
Indicative Contents المحتويات الإرشادية	*Indicative content includes the following.* **Unit 1: Hello!** am/ are/ is, my/your · This is … How are you? • Good morning! What's this in English? • Plurals . 4hr **Unit 2: Your world** Countries • *he/she/ they, his/her* • Where's he from? *fantastic/ awful/ beautiful.* 4hr **Unit 3: All about you** Jobs • *am/are/ is* • Negatives and questions • Personal information • Social expressions (1). 4hr **Unit 4: Family and friends** *our/their* • Possessive 's • The family • *has/have.* 4hr **Unit 5: The way I live** Sports/ Food/ Drinks • *Present Simple - l/you/ we/they* • *a/ an* Languages and nationalities. 4hr

	Unit 6: Every day
	The time • Present Simple-he/she · *always/sometimes/never* Words that go together • 4hr
	Unit 7: My favorites
	Question words •*me/him/us/them* • *this/that* Adjectives • *Can I...*? 4hr
	Unit 8: Where I live
	Rooms and furniture • *There is/ are* • Prepositions • Directions . 4hr
	Unit 9: Times past
	Saying years • *was/were born* • Past Simple - irregular verbs • *have/do/go* • When's your birthday? 4hr
	Unit 10: We had a great time
	Past Simple - regular and irregular • Questions and negatives • Sport and leisure • Going sightseeing. 4hr
	Unit 11: I can do that!
	can/can't · Adverbs • Adjective + noun • Everyday problems. 4hr
	Unit 12: Please and thank you
	I'd like - *some/any* • In a restaurant • Signs all around. 4hr
	Reading Comprehension
	Reading paragraphs
	Listening . 4hr

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	The course is delivered face-to-face via one lecture each week. The lectures will provide a combination of lecture-style content and opportunities to participate in discussions and problem-solving tasks.

Student Workload (SWL)			
الحمل الدراسي للطالب			
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**	3	10% (10)	3, 7, 10	LO #1, 2,5, 9 and 11
	Assignments	3	10% (10)	2, 6,12	LO # 3, 4, 6 and 13
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 ,9 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Unit one
Week 2	Unit Two
Week 3	Unit Three
Week 4	Unit Four
Week 5	Unit Five
Week 6	Unit Six
Week 7	**Mid-term Exam**
Week 8	Unit Seven
Week 9	Unit Eight
Week 10	Unit Nine
Week 11	Unit Ten
Week 12	Unit Eleven
Week 13	Unit Twelve
Week 14	Listening 1
Week 15	Reading Comprehension
Week 16	**Preparatory week before the final Exam**

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	New Headway English Course- Pre-intermediate By: John and Liza. Oxford, 2007	Yes
Recommended Texts		No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	**التقدير**	**Marks (%)**	**Definition**
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