MODULE DESCRIPTION FORM

Module Information

Module Title	Engineering Mechanics-Statics		Module Delivery	
Module Type	C		☒ Theory	
Module Code	SEE101		☒ Lecture	
			☐ Lab	
ECTS Credits	7		☒ Tutorial	
SWL (hr/sem)	175		☐ Practical	
			☐ Seminar	
Module Level	UGI	Semester of Delivery		1
Administering Department	SEE	College		COE
Module Leader	Sufyan A. Mohammed	e-mail		Sufyan.a.mohammed@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification		M.E.
Module Tutor		e-mail		
Peer Reviewer Name	None	e-mail		
Scientific Committee Approval Date	10/09/2024	Version Number		1.0

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes, and Indicative Contents

Module Aims	1. To develop the capacity of first-level students to predict the effects of forces, moments, and couples on bodies.
	2. To develop problem-solving skills and an understanding of forces analysis by applying the equilibrium principle.
	3. To understand and draw the free body diagram to analyze forces.
	4. Analysis forces and finding their resultant forces for two- and three-dimensional systems.

	5. Applying the equilibrium principle to simple trusses and frames.
	6. Understand the friction phenomena and the friction force in machine parts.
	7. To understand the centroid and center of gravity for an area and a rigid body.
Module Learning Outcomes	1. The course offers basic knowledge of the physical and mathematical principles of mechanics.
	2. Analyze and calculate resultant forces that are applied to bodies in equilibrium conditions.
	3. Recognize forces, free body diagram approach to solve problems.
	4. Explain the essential steps of drawing free-body diagrams for different mechanical structures.
	5. Discuss the effect of reaction and normal forces on bodies.
	6. Describe the approaches to finding resultant forces analytically and graphically.
	7. Identify the vector operations for normal forces and resultant moments, and couples.
	8. Analyze equilibrium systems that include frictional forces.
	9. Locate the centroid of composite bodies and calculate the moment of inertia for a given body and axes.
Indicative Contents	Indicative content includes the following. Part A - General Principles **Basic Quantities, including**: - Fundamental Concepts of Length, Time, Mass, and Force. - The applied force is entirely characterized by its magnitude, direction, and point of application. [10 hrs] **Modeling of mechanical systems** - Newton's Three Laws of Motion. - Behaviors of particle and rigid body under applying load. - The Free-Body Diagram. [15 hrs] **Force Vectors** - Defintion of scalar and vector. - Scalars and Vectors operation - Force Vector Directed Along a Line [10 hrs] Part B – Principle of Equilibrium and Force System Resultants - Free-Body Diagrams - Equilibrium of a particle - Condition for the equilibrium. - Categories of the equilibrium - Distributed loadings. [35 hrs] **Force System Resultants** - Moment of a force— Scalar Formulation - Moment of a force—Vector Formulation - Principle of transmissibility and equivalent system.

	- Simplification of a force and couple system [10 hrs]
	- Two- and Three-Force Members. [25 hrs]
	Structural Analysis
	- Simple Trusses.
	- The Method of Joints.
	- Zero-Force Members.
	- The Method of Sections.
	- Frames and Machines. [15 hrs]
	Part C– Principle of Centriod and Moment of Inertia.
	- Center of gravity, the center of mass and centroid of a body
	- Centriod of composite area.
	- Definition of moments of inertia for areas, the radius of gyration
	- Moment of inertia of composite area. [40 hrs]
	Part D– Principle of Friction.
	- Types of Friction
	- Characteristics of Dry Friction.
	- Flexible Belts. [25 hrs]

Learning and Teaching Strategies

Strategies	This course aims to develop the capacity of first-year students to predict the effects of forces, moments, couples, and the distributed loads that are applied to bodies. Thus, the primary strategy of this curse is to encourage students' participation in discussions and to solve the exercises. Also, refining and expanding their critical thinking skills to analyze and study the effect of applied forces on bodies. This strategy is achieved through classes, interactive tutorials, and by considering real applications that are interesting to the students.

Student Workload (SWL)

Structured SWL (h/sem)	93	Structured SWL (h/w)	6
Unstructured SWL (h/sem)	82	Unstructured SWL (h/w)	5
Total SWL (h/sem)		175	

Module Evaluation					
		Time/No	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	18% (18)	4, 8,13	LO # 2, 5 ,7,8 and 9
	Assignments	3	12% (12)	3, 6,12	LO # 2,3, 4, 6 ,7,and 9
	Projects / Lab.		0% (0)		
	Report		0% (0)		
Summative assessment	Midterm Exam	1 hr	20% (20)	10	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to statics + Vector operations (addition, product)
Week 2	Cartesian force and position vectors.
Week 3	Force system in 2D
Week 4	Addition of a system of coplanar Forces
Week 5	Moment, couples, and resultant of forces (1)
Week 6	Moment, couples, and resultant of forces (2)
Week 7	Equations and conditions of Equilibrium
Week 8	System Isolation and the Free-Body Diagram (FBD)
Week 9	Trusses: Method of Joints + Method of Sections
Week 10	Frames and Machines
Week 11	Center of Gravity and Centroid
Week 12	Moment of Inertia
Week 13	Moments of Inertia for Composite Areas
Week 14	Theory of Dry Friction.
Week 15	Applications of Friction in Machines
Week 16	The final Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Meriam, James L., and L. Glenn Kraige, "Engineering mechanics: statics", John Wiley & Sons, 2012.	Yes
Recommended Texts	Daniel W. Baker,and William Haynes, "Engineering Statics Open and Interactive", October, 2024.	No
Websites		

Grading Scheme				
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 is required, but credit awarded
	F – Fail	راسب	(0-44)	A 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 align="center">Mathematics I</td><td colspan="2">Module Delivery</td></tr>
<tr><td>Module Type</td><td align="center">B</td><td colspan="2" rowspan="4">☒ Theory
☐ Lecture
☐ Lab
☒ Tutorial
☐ Practical
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<tr><td>Module Code</td><td align="center">SEE102</td></tr>
<tr><td>ECTS Credits</td><td align="center">6</td></tr>
<tr><td>SWL (hr/sem)</td><td align="center">150</td></tr>
<tr><td>Module Level</td><td align="center">UGI</td><td>Semester of Delivery</td><td align="center">1</td></tr>
<tr><td>Administering Department</td><td align="center">SEE</td><td>College</td><td align="center">COE</td></tr>
<tr><td>Module Leader</td><td>Younis Najim</td><td>e-mail</td><td>mahalyounis@uomosul.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Lecturer</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>10/09/2024</td><td>Version Number</td><td>1.0</td></tr>
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<tr><td colspan="3" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>None</td><td>Semester</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</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
	Students will be able to:
	1. Write clear mathematical arguments including effective use of physical equations.
	2. Develop a solid understanding of the fundamental principles of physics, including:
	   a. a firm conceptual grasp of the central principles of physics,
	   b. an ability to work with the concepts mathematically, and
	   c. a functional understanding of how these ideas play out in the real world.
	3. Use graphs and diagrams to convey results.
	4. Decide on strategies to be used and assumptions that need to be made.
	5. Use both algebraic and geometric approaches in problem-solving.
	6. Develop a flexible and creative problem-solving ability.
	7. Develop an integrated understanding of the unity of mathematics.
	8. Translate physical descriptions into mathematical equations, and conversely, explain the physical meaning of mathematical results.
	9. Examine intermediate results or other quantities that could be used to ensure a solution is physically reasonable.
	10. Develop their ability to communicate ideas of science.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand Algebraic, Non - Algebraic functions and its inverse. 2. Explain the limits, Continuity, Derivation of equations. 3. Understand the fundamentals of Application of derivation. 4. Understand the Vectors, Vectors product, Line and plane equation, Curvature, Tangent and normal vectors. 5. Explain the application and determination of Matrices. 6. Simultaneous linear algebraic equations, Cramer method, Matrix inversion method.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Function and graph, including:** [10 hrs] - Domain and Range, algebraic function, and trigonometric function. - Equation of straight line (examples and solved problems). **Limits:** [10 hrs] - Limit of algebraic function. - Limit of trigonometric function, rules of limit and examples. **Derivative:** [20 hrs] - Definition of derivative. - Differentiation of algebraic function. - Differentiation of trigonometric function. - Examples and solves problems. **Applications of Derivative:** [20 hrs] - Related rate, maximum and minimum theory. - Solved Problem. **Inverse Trigonometric Function:** [15 hrs] - Graph of inverse trigonometric function. - Derivative of inverse trigonometric function. - Solved problems.

	Chain rule and parametric equation: [10 hrs] - Algebraic, trigonometric, and inverse function. **Vectors:** [20 hrs] - Principles, vectors in two dimensions, vector in space, properties of vectors (dot and cross), and application on vectors. **Matrices:** [20 hrs] - Properties, types, multiplications, inverse matrix application.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
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, 8 and 10
	Assignments	4	10% (10)	2,6,10, 12	LO # 3, 4, 6 and 7
	Projects		0% (0)		
	Report	1	5% (5)	9	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1hr	15% (15)	8	LO # 1-6
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Domain and Range, algebraic function, and trigonometric function.
Week 2	Equation of straight line (examples and solved problems).
Week 3	Limit of algebraic function.
Week 4	Limit of trigonometric function, rules of limit and examples.
Week 5	Definition of derivative, Differentiation of algebraic function.
Week 6	Differentiation of trigonometric function.
Week 7	Examples and solves problems.
Week 8	Related rate, maximum and minimum theory.
Week 9	Solved problems.
Week 10	Graph of inverse trigonometric function, Derivative of inverse trigonometric function. Solved problems
Week 11	Algebraic, trigonometric, and inverse function.
Week 12	Principles, vectors in two dimensions, vector in space, properties of vectors (dot and cross), and application on vectors.
Week 13	Solved Problems.
Week 14	Properties, types, multiplications, inverse matrix application.
Week 15	Solved Problems.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: There are no laboratory experiments.
Week 2	Lab 2: There are no laboratory experiments.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus and Analytic Geometry by George B. Thomas, any edition.	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.
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MODULE DESCRIPTION FORM

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<td align="center">SEE</td>
<td>College</td>
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<tr>
<td>Module Leader</td>
<td>Maan Hussein Abbas</td>
<td>e-mail</td>
<td>maanhussein1991@uomosul.edu.iq</td>
</tr>
<tr>
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<td>Assistant Lecturer</td>
<td>Module Leader's Qualification</td>
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<td>08/13/2024</td>
<td>Version Number</td>
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<td>Co-requisites module</td>
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<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	Students will be able to: 1. Grasp the fundamental principles of electric circuits, including Ohm's Law, Kirchhoff's laws, and the behavior of circuit components like resistors, capacitors, and inductors. 2. Study the function and operation of various electronic components and their roles within circuits. 3. Lear techniques to analyze and solve simple circuits, using methods such as series and parallel combinations, node and mesh analysis. 4. Gain skills in designing and building simple circuits for specific applications, including the ability to select appropriate components and configurations for desired outcomes. 5. Use both algebraic and geometric approaches in problem-solving. 6. Develop a flexible and creative problem-solving ability. 7. Develop an experience in constructing, measuring, and troubleshooting circuits using circuit simulation software.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. An ability to distinguish, identify, define, formulate, and solve electric circuits problems by applying circuit analysis techniques such as Ohm's Law, Kirchhoff's Voltage and Current Laws, and network theorems (Thevenin, Norton, etc.) to solve circuit problems, science, and mathematics. 2. An ability to produce simple electric designs that meet desired needs within certain constraints by applying theoretical principles and practical skills. 3. Use circuit simulation software to analyze and carry out proper measurements and tests with quality assurance, interpret results, and utilize engineering judgment to make inferences.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Introduction to electric circuits:** [10 hrs.] - Explaining the Standard international units and introduction to basic components circuits - Introduce the Electrical Sources - Introduction to circuit diagrams and symbols **Basic Circuit Analysis Techniques** [15 hrs.] - Resistance and Ohm 's law and Clarifying Resistors connections types and its equivalent. - Definition of Kirchhoff's two laws. - Apply Kirchhoff's first Law and determine the current entering and leaving - a circuit junction. **Electrical circuits analysis:** [26 hrs.] - Using Nodal analysis. - Using Mech analysis. - Apply Thevenin & Norten theories. - Calculate current, potential difference and resistance in a parallel and series circuit for the whole circuit, and for individual components. **AC circuits:** [25 hrs.] - Introduce the Alternative current. - Explain Phase angle and pharos diagrams for alternating quantities. - Complex numbers and polar representation - Power, power factor, power triangle and p.f. correction.

Three phase circuits: [19 hrs.] - Explain the concept of the three-phase circuit. - Explain Phase relationships in three phase systems - Phase vectors - Three phase circuits and Delta –star and star –delta transformation with examples. **Practical:** [30 hrs.] - Practical ability to design and install simple electrical circuits for electrical installation including relays and timers etc. as listed in the practical weekly plan.	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.13
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	20% (20)	5, 11	LO # 1
	Assignments	1	5% (5)	10	LO # 1
	Practical	1	10% (10)	15	LO # 2 and 3
	Report	1	5% (5)	12	LO# 2
Summative assessment	**Midterm Exam**	1hr	10% (10)	8	LO # 1 and 2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Standard international units and introduction to basic components circuits Electrical Sources, Current source and Energy laws.
Week 2	Ohm 's law, Resistor in series and parallel and equivalent with examples.
Week 3	Kirchhoff's current law with examples.
Week 4	Kirchhoff's voltage law with examples.
Week 5	Loop analysis with examples. superposition with examples.
Week 6	Nodal analysis with examples
Week 7	Thevenin's theorem with examples.
Week 8	Norten's theorem with examples.
Week 9	DC circuit analysis examples.
Week 10	Alternating current circuits (Introduction definition) alternating and r.m.s. quantities.
Week 11	Phase angle and pharos diagrams for alternating quantities.
Week 12	Complex numbers and polar representation.
Week 13	Power, power factor and Power triangle.
Week 14	Three phase circuits and Delta –star and star –delta transformation with examples.
Week 15	AC circuit analysis examples.

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي العملي

	Material Covered
Week 1	Introduction to basic elements of electrical installations.
Week 2	Components and Symbols used in Electrical Circuits.
Week 3	Electrical Safety.
Week 4	One lamp circuit installation.
Week 5	Two Lamp circuit installation.
Week 6	Introduction to industrial installations.
Week 7	Contactor circuit-assembling and disassembling.
Week 8	Contactor circuit of automatic changer.
Week 9	Contactor circuit of home load supplied by many supplied sources at the same time.
Week 10	Measuring Instruments.
Week 11	Timer introduction and application Timer circuit connection.
Week 12	Timer- relay circuits application to control contactor operation.
Week 13	Timer with two contactors circuit.
Week 14	Students submission of their project by the end of the semester.
Week 15	Project's discussion and assessment.

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
Material Covered	
Week 1	Lab 1: There are no laboratory experiments.
Week 2	Lab 2: There are no laboratory experiments.

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	➢ **A Text book of electric technology B.L.Theraja.**	NO
Recommended Texts	➢ **Engineering circuit analysis William H.Hayt.**	No
Websites		

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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Physics**		**Module Delivery**	
Module Type	**Base**		☐ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**SEE104**			
ECTS Credits	**4**			
SWL (hr/sem)	100			
Module Level	1	**Semester of Delivery**		1
Administering Department	SEE	**College**	ENG	
Module Leader	Dr. Ahmed Fouad Mahmood	**e-mail**	ahmedfalneama@uomosul.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	10/09/2024	**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
	Students will be able to:
	1. Write clear physical and mathematical arguments including effective use of physical equations.
	2. Develop a solid understanding of the fundamental principles of physics, including:
	    a. a firm conceptual grasp of the central principles of physics,
	    b. an ability to work with the concepts mathematically, and
	    c. a functional understanding of how these ideas play out in the real world.
	3. Use graphs and diagrams to convey results.
	4. Decide on strategies to be used and assumptions that need to be made.
	5. Use both algebraic and geometric approaches in problem-solving.
	6. Develop a flexible and creative problem-solving ability.
	7. Develop an integrated understanding of the unity of physics.
	8. Translate physical descriptions into mathematical equations, and conversely, explain the physical meaning of mathematical results.
	9. Examine intermediate results or other quantities that could be used to ensure a solution is physically reasonable.
	10. Develop their ability to communicate ideas of science.
	11. Identify what they don't understand, and ask specific questions in order to gain understanding.
	12. Develop an expertise in experimental methodologies.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand and apply the fundamentals of vector calculus. 2. State, explain, and apply Newton's three laws of motion. 3. Understand fundamentals of dynamics, work and energy, and gravitation and central force motion. 4. Understand and apply the basic idea of work-energy theorem to physical systems. 5. Apply the principle of conservation of mechanical energy to solve simple problems in mechanics. 6. Calculate the pressure and density of fluid at different depth. 7. Explain the Hydrostatic Pressure. 8. Explain Pascal's principle and the operation of a hydraulic lift. 9. Define and describe the buoyant forces and Archimedes's principle, furthermore, weighing an object immersed in a fluid. 10. Derive the equation of continuity for fluids. 11. Use Bernoulli's equation to calculate flow speed and pressure of a moving fluid for simple situations. 12. List the various terms associated with electrical circuits. 13. Identify the basic circuit elements and their applications. 14. Discuss the reaction and involvement of atoms in electric circuits. 15. Describe Bohr model of an atom. 16. Describe electrical power, charge, and current. 17. Define Ohm's law. 18. Understand the principles of semiconductor diode and transistor. 19. Illustrate the basic principles of rectifiers and DC power supplies. 20. Explain the conduction, convection and radiation heat transfer. 21. Define the bias and its effect on the depletion region. 22. Define the barrier potential and its effects.

	Indicative content includes the following.
Indicative Contents المحتويات الإرشادية	**Part A – Mechanics Principles** **Basic Quantities, including:** [5 hrs] - State SI units, and write the units and their abbreviations correctly. - Determine whether a physical quantity is a vector or a scalar. - Distinguish between kinematic and kinetic energy. - Define, calculate, and distinguish between distance and displacement, average and instantaneous speed and velocity, and average and instantaneous acceleration. **Newton's three laws and it is applications:** [5 hrs] - State, explain, and apply Newton's three laws of motion. - Differentiate between static and kinetic friction, and solve friction problems. - State and apply Hooke's law for ideal springs. **Work, energy and power:** [10 hrs] - Define work, and calculate the work done by a constant force in one and two dimensions. - State the work–energy theorem, and use it to solve problems. - Apply the principle of conservation of mechanical energy to solve simple problems in mechanics. - Calculate both kinetic and potential energy. - Calculate the power. **Momentum and impulse:** [5 hrs] - Define linear momentum, and calculate and compare momenta of various objects. - Express Newton's laws in terms of rates of change of linear momentum. - Define and calculate impulse. **The simple harmonic motion:** [4 hrs] - State, explain, and apply the simple harmonic motion. **Universal gravitational force:** [6 hrs] - Solve problems using Newton's law of universal gravitation and calculate the gravitation for different locations (i.e. Earth, Moon, Sun and etc.). **Fluid Mechanics:** [20 hrs] - Calculate the pressure and density of fluid at different depth; - Explain the Hydrostatic Pressure; - Explain Pascal's principle and the operation of a hydraulic lift; - Define and describe the buoyant forces and Archimedes's principle, furthermore, weighing an object immersed in a fluid; - Derive the equation of continuity for fluids; - Use Bernoulli's equation to calculate flow speed and pressure of a moving fluid for simple situations. **Heat transfer:** [10 hrs] - Define and describe the flow of heat through a material by direct molecular contact (conduction). - Define and describe the transfer of heat by the movement or flow of molecules - liquid or gas (convection). - Define and describe the transfer of heat by electromagnetic waves through a gas or vacuum (Radiation). **Part B – Electrical Principles** **Atomic and its structure:** [10 hrs]

	- Define and describe the Bohr model of an atom. - Define electron, proton, neutron and nucleus. - Explain electron shells and orbits. - Explain and calculate the energy levels. - Define valence electron, free electron and ions. **Semiconductors materials:** [5 hrs] - Explain insulators, conductors, and semiconductors and how they differ. - Define valence band and conduction band, and compare between the semiconductor atom and the conductor atom. **Diodes and Transistors:** [8 hrs] - Explain the electrical symbols for a diode and diode applications. - Define the bias and its effect on the depletion region. - Define the barrier potential and its effects. - Explain the electrical symbol of a transistor, and describe the basic transistor operation. **Current and Voltage:** [5 hrs] - Understanding the fundamental concepts of current and voltage. - Explain the electrical circuit elements and its objects. **Ohm's law and Kirchhoff's law:** [7 hrs] - Define Ohm's law, and calculate power and energy - Analyze the electric circuits in both parallel and series connections. - Define Kirchhoff's law, and analysis the electrical circuits using Kirchhoff's law.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

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	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
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)	4, 9, 12	LO #1, 2, 10 and 11
	Assignments	4	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.		0% (0)		
	Report	1	5% (5)	9	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1hr	15% (15)	8	LO # 1-4
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to physics; Standards of length, mass and time; Scalar and Vector quantities; Kinematics; Position, Displacement and Distance; Speed, Velocity and Acceleration.
Week 2	Forces and motion; Mass and gravity force; Newton's three laws of motion.
Week 3	Spring forces and Hooke's law; Friction forces; Uniform circular motion; Work.
Week 4	Kinetic and Potential Energy; The work-kinetic energy theorem; Conservation of total mechanical energy; Power.
Week 5	Linear momentum; Momentum and kinetic energy; Rate of change of linear momentum and Newton's laws; Law of conservation of linear momentum; Impulse.
Week 6	Simple Harmonic Motion; Universal gravitation; Newton's law of universal gravitation; Free-fall acceleration and the gravitational force; and Solve problems using Newton's law of universal gravitation and calculate the gravitation for different locations.
Week 7	Fluid mechanics; Pressure and density of fluid at different depth; Hydrostatic pressure; Pascal's principle and the operation of a hydraulic lift.
Week 8	Buoyant forces and Archimedes's principle; the equation of continuity for fluids; and the Bernoulli's equation.
Week 9	Heat Transfer (Conduction, Convection, and Radiation).
Week 10	Atoms Structure; Atomic Energy Level; and Materials Used in Electronics.
Week 11	Conduction in Metals, Semiconductors, and Insulators; Intrinsic and Extrinsic Semiconductors; N-Type and P-Type Semiconductor; The PN Junction.
Week 12	Diodes and Transistors.
Week 13	Current and Voltage; electrical circuit; and Ohm's Law.
Week 14	Power and Energy; Parallel and Series Networks.
Week 15	Kirchhoff's Law.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: There are no laboratory experiments.
Week 2	Lab 2: There are no laboratory experiments.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	➢ **Physics for scientists and engineers: An interactive approach**. Robert Hawkes, Javed Iqbal, Firas Mansour, Marina Milner-Bolotin and Peter Williams. 2nd edition, 2019. ➢ **Fundamentals of Physics**. David Halliday, Robert Resnick and Jearl Walker. 10th Edition, 2014. ➢ **Engineering Mechanics: Dynamics - Volume 2**. J.L. Meriam, L.G. Kraige and J. N. Bolton. 8th edition, 2015.	Yes
Recommended Texts	➢ **Electronic Devices**. Thomas L. Floyd. 9th Edition, 2012. ➢ **Physics for Scientists and Engineers with modern physics**. Raymond A. Serway and John W. Jewett. 9th edition, 2014.	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 is required, but credit is given.
	F – Fail	راسب	(0-44)	A significant amount of work is 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

Module Information

Module Title	**Engineering Mechanics-Statics**	**Module Delivery**	
Module Type	**B**	☒ Theory	
Module Code	**SEE105**	☒ Lecture ☐ Lab	
ECTS Credits	**5**	☒ Tutorial	
SWL (hr/sem)	**125**	☐ Practical ☐ Seminar	

Module Level	UGI	**Semester of Delivery**	1
Administering Department	SEE	**College**	COE
Module Leader	Younis Najim	**e-mail**	mahalyounis@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name	None	**e-mail**	
Scientific Committee Approval Date	10/09/2024	**Version Number**	1.0

Relation with other Modules

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

Module Aims, Learning Outcomes, and Indicative Contents

Module Aims	1. Understand the fundamentals of energy sources, technologies, and their impact on the environment. 2. Analyze the global energy landscape, including fossil fuels, renewable energy sources, and emerging technologies.

	3. Explore the concept of sustainability and its application to energy systems, considering economic, social, and environmental dimensions.
	4. Evaluate the environmental and social implications of various energy production and consumption patterns.
	5. Examine policy and regulatory frameworks related to energy and sustainability at local, national, and international levels.
	6. Identify and assess innovative solutions for transitioning to a more sustainable energy future.
Module Learning Outcomes	1. Introduction to Energy and Sustainability
	2. Energy Sources and Their Environmental Impact
	3. Renewable Energy Technologies
	4. Energy Efficiency and Conservation
	5. Energy Transition Strategies
	6. Climate Change and Sustainability
	7. Social and Economic Aspects of Energy Sustainability
	8. Sustainable Energy Policies and Regulations
	9. Energy and Sustainable Development Goals
	10. Case Studies in Energy and Sustainability

Indicative Contents	Indicative content includes the following.
	
	1. Motivation and Introduction
	  – Overview of Sustainable Energy Engineering.
	  – Sustainability and Development
	  – Key Issues in Sustainable Energy
	  – Course Objectives and Outcomes
	2. Climate Change
	  – Climate Change Science
	  – Impacts of Climate Change.
	  – Energy's Role in Climate Change
	  – International Climate Agreements
	3. Energy Demand
	  – Global and Regional Energy Demands
	  – Factors Influencing Energy Demand
	  – Energy Efficiency
	  – Future Projections
	4. Industrial Emissions
	  – Types of Industrial Emissions
	  – Impacts of Emissions
	  – Mitigation Strategies
	5. Transport Emissions
	  – Transport Sector Emissions
	  – Impact on Climate and Air Quality
	  – Sustainable Transport Solutions
	6. Fundamentals of Energy (Two sessions)
	  – Basic Concepts of Energy
	  – Energy Measurement

- Energy Systems
- Thermodynamics Basics

7. Conservation of Energy
- Energy Conservation Principles: Why and how energy conservation is critical.
- Methods of Conservation: Energy-saving technologies and lifestyle choices.
- Economic and Environmental Benefits

8. Energy Transfer and Conversion
- Energy Conversion Processes
- Efficiency of Conversion
- Real-World Applications

9. Energy Sources
- Renewable vs. Non-renewable Sources
- Current Global Energy Mix
- Emerging Energy Sources

10. Solar Energy
- Principles of Solar Power
- Solar Technologies
- Applications and Case Studies
- Advantages and Challenges

11. Wind Energy
- Wind Power Basics
- Types of Wind Turbines
- Economic and Environmental Considerations
- Future of Wind Energy

12. Hydraulic Energy
- Hydropower Basics
- Types of Hydropower Plants
- Environmental Impacts and Mitigation:
- Global and Regional Examples

13. Alternate Mitigation Strategies
- CCS, BECCS, Geoengineering
- Sustainable Land Use: Carbon sequestration.
- Policy & Behavior: Incentives and regulations.

14. Net Zero Emission
- Net Zero Pathways: Sector decarbonization.
- Renewables & Circularity: Emission cuts through clean energy.
- Global Commitments: Policies for net-zero goals.

Learning and Teaching Strategies

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

Student Workload (SWL)

Structured SWL (h/sem)	63	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	62	Unstructured SWL (h/w)	4.13
Total SWL (h/sem)		125	

Module Evaluation

		Time/No	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	4, 8,13	LO # 2, 5 ,7,8 and 9
	Assignments	3	15% (15)	2, 6,12	LO # 2,3, 4, 6 ,7,and 9
	Projects / Lab.		0% (0)		
	Report		0% (0)		
Summative assessment	Midterm Exam	1 hr	20% (20)	9	LO # 1-5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Motivation and Introduction
Week 2	Climate Change
Week 3	Energy Demand
Week 4	Industrial Emissions
Week 5	Transport Emissions

Week 6	Fundamental of Energy
Week 7	Fundamental of Energy
Week 8	Conservation of Energy
Week 9	Energy Transfer and Conversion
Week 10	Energy Sources
Week 11	Solar Energy
Week 12	Wind Energy
Week 13	Hydraulic Energy
Week 14	Alternate Mitigation Strategies
Week 15	Net Zero Emission
Week 16	**The final Exam**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Andrews, John, Nicholas Alfred Jelley, and Nick Jelley. Energy science: principles, technologies, and impacts. Oxford university press, 2022.	Yes
Recommended Texts	Emissions Gap Report 2022: The Closing Window — Climate crisis calls for rapid transformation of societies. United Nations Environment Programme, 2022.	No
Websites		

Grading Scheme				
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 is required, but credit awarded
	F – Fail	راسب	(0-44)	A 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

Module Information			
Module Title	**Engineering Mechanics Dynamics**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MEE151**		
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	Bakr Noori Alhasan	**e-mail**	bakralhasan@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSc.
Module Tutor	Sufyan Abdulhakeem Mohammed	**e-mail**	sufyan.a.mohammed@uomosul.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	1/01/2025	**Version Number**	1.0

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes, and Indicative Contents	
Module Aims	1. To present the basic principles of dynamics and help develope proficiency in applying these principles to formulate and solve dynamics problems. 2. To acquire skills in mathematics and physics to solve practical problems of Dynamics.

	3. To Apply a general analysis approach to solve kinematics problems of particles.
	4. To define and calculate the linear and angular velocities and accelerations for systems of 2D rigid bodies in translation, rotation about a fixed axis, and general plane motion.
	5. To solve 2D kinetics problems using force-acceleration, work-energy, and impulse-momentum methods for particles and rigid bodies.
	6. To calculate the mass moment of inertia for solids and composite bodies.
Module Learning Outcomes	After completion of the course, the student should be able to: 1. Describe and calculate the motion (position, velocity, acceleration) for particles and rigid bodies in plane motion. 2. Apply free-body diagrams and solve Newton's 2nd law for plane problems. 3. Understand the concepts of work, kinetic energy, potential energy relations, as well as linear and angular impulse and momentum in particles and rigid bodies. 4. Use different approaches to solve dynamic problems of particles in plane motion. 5. Apply linear and rotational relations for rigid bodies to determine the motions kinematically. The configuration of the system and relative motion are used as well. 6. Analyzing forces to describe the motion of rigid bodies using Newton's 2nd law directly or indirectly using work, energy, impulse, and momentum. 7. Explain and calculate the moment of inertia for rigid bodies.
Indicative Contents	Indicative content includes the following. **Part A – Particles** **Introduction to Dynamics:** [5 hrs] - State the history of dynamics, definitions of kinematics, kinetics, particles and rigid bodies, applications of dynamics, Newton's law, and the main concepts used in dynamics. **Kinematic of particles/Rectilinear Motion:** [7 hrs] - State, explain, and apply displacement, velocity, and acceleration relations. - Using these relations to solve problems in graphical approach and analytical integrations. **Kinematic of particles /Plane Curvilinear Motion** [20 hrs] - State the differential equations in vector analysis for plane motion. - Apply the differential equations in vector forms and analysis in rectangular coordinates. - Apply the equations developed in rectangular coordinates for projectile motion. - Applying normal and tangential coordinates and polar coordinates. - Apply the kinematic analysis to the relative motion of particles. **Kinetic of Particles/Direct application of Newton's second law:** [14 hrs] - State Newton's 2nd law and the equation of motion.

- Using the equation of motion to determine the motion of particles with a free body diagram in rectilinear motion.
- Apply the equation of motion and free body diagram to solve problems in the curvilinear motion of particles: Rectangular coordinates, normal and tangential coordinates, and polar coordinates.

Kinetic of Particles/Work energy [8 hrs]
- State the work energy equation as an indirect application of Newton's Second Law.
- State the three sources of work as work associated with constant external forces, work associated with spring forces, and associated with gravity.
- Clarification the energy side of the equation as a change in kinetic energy.

Kinetic of Particles/Work Potential energy [8 hrs]
- State, explain, and apply the potential energy concept, including the elastic and gravitational energy in the equation.

Kinetic of Particles/Impulse and momentum [17 hrs]
- Solve problems using Newton's law in terms of linear momentum when time is in concern rather than displacement.
- State and apply the equation of linear impulse linear momentum equation

Kinematics of rigid bodies [40 hrs]
- Explain the relations between the angular displacement, velocity, and angular acceleration for rotated bodies.
- Derive the equations relating the angular motion with the linear motion and solve problems.
- Calculations the motions of different links by relative velocity approach.
- Relative acceleration approach is used to calculate linear or angular movements of bodies.

Kinetics of rigid bodies: [40 hrs]
- Direct Application of Newton's second law: The equation of motion is applied directly to determine the motions or forces for bodies using formulas derived according to the category of rigid body motion i.e., translation, fixed axis rotation, and general plane motion.
- The work-energy approach is used for rigid body motion by considering the body's linear and angular movement.
- For rigid body motion the impulse and momentum principles is used.

Mass moment of inertia [20 hrs]
- For rotated rigid bodies, the mass moment of inertia is calculated about an axis through the mass center or a parallel axis. The calculation includes determining the mass moment of inertia for composite bodies.

Learning and Teaching Strategies	
Strategies	The primary strategy for delivering this module is to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials.

Student Workload (SWL)

Structured SWL (h/sem)	78	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	72	Unstructured SWL (h/w)	5
Total SWL (h/sem)		150	

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	24% (24)	3, 8, 12	LO #1 and 2
	Assignments	3	8% (8)	2,7, 11	LO # 1 and 2
	Projects / Lab.		0% (0)		
	Report	1	8% (8)	13	LO # 7
Summative assessment	Midterm Exam	1hr	10% (10)	10	LO # 1 and 2
	Final Exam	3hr	50% (50)	16	LO # 1 and 2
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Dynamics. Kinematics of Particles: Rectilinear motion.
Week 2	Kinematics of Particles: Plane curvilinear motion (1).
Week 3	Kinematics of Particles: Plane curvilinear motion (2).
Week 4	relative motion.
Week 5	Kinetics of particles: Direct applications of Newton's 2nd law.
Week 6	Kinetics of particles: Work and energy.
Week 7	Kinetics of particles: Impulse and Momentum.
Week 10	Kinematics of Rigid Bodies, Rotation, Relative velocity
Week 11	Kinematics of Rigid Bodies: Relative acceleration.
Week 12	Kinetics of Rigid Bodies: Direct applications of Newton's 2nd law (1).
Week 13	Kinetics of Rigid Bodies: Direct applications of Newton's 2nd law (2).
Week 14	Kinetics of Rigid Bodies: Work and Energy.
Week 16	**Final exam**

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1: There are no laboratory experiments.
Week 2	Lab 2: There are no laboratory experiments.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	➢ **Engineering Mechanics: Dynamics - Volume 2**. J.L. Meriam, L.G. Kraige and J. N. Bolton. 8th edition, 2015.	No
Recommended Texts	➢ **Engineering Mechanics' Dynamics",** R. C. Hibbeler	No
Websites		

Grading Scheme

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 is required, but credit is given.
	F – Fail	راسب	(0-44)	A significant amount of work is 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	SEE152		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	2
Administering Department	SEE	College	COE
Module Leader	Dr. Omar Ahmad Jasim	e-mail	omar.ahmed.j@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Rehab Nashwan Sadoon	e-mail	Rehab.alshamaa@uomosul.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		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
	Students will be able to:
	1. Write clear mathematical arguments including effective use of physical equations.
	2. Develop a solid understanding of the fundamental principles of physics, including:
	    a. a firm conceptual grasp of the central principles of physics,
	    b. an ability to work with the concepts mathematically, and
	    c. a functional understanding of how these ideas play out in the real world.
	3. Use graphs and diagrams to convey results.
	4. Decide on strategies to be used and assumptions that need to be made.
	5. Use both algebraic and geometric approaches in problem-solving.
	6. Develop a flexible and creative problem-solving ability.
	7. Develop an integrated understanding of the unity of mathematics.
	8. Translate physical descriptions into mathematical equations, and conversely, explain the physical meaning of mathematical results.
	9. Examine intermediate results or other quantities that could be used to ensure a solution is physically reasonable.
	10. Develop their ability to communicate ideas of science.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand and apply definite and indefinite integrals, including substitution techniques and the Fundamental Theorem of Calculus. 2. Explain integrals to solve problems involving areas, volumes, arc lengths, surface areas, work, and centers of mass. 3. Understand the fundamentals of the application of integrals. 4. Analyze and differentiate inverse, logarithmic, exponential, and hyperbolic functions; apply L'Hôpital's Rule and solve separable differential equations. 5. Perform integration using methods such as integration by parts, trigonometric substitution, partial fractions, and numerical approaches; evaluate improper integrals. 6. Solve differential equations using analytical and numerical methods, interpret slope fields, and model real-world applications. 7. Analyze systems of differential equations and interpret phase planes for dynamic systems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Integral Calculus:** [15 hrs] - Sigma notation to represent finite sums. - Areas under curves using finite sums and Riemann sums. - Limits for finite sums in preparation for definite integrals. - Definite integral as a limit of finite sums. - Evaluate integrals and understand the relationship between differentiation and integration. - Indefinite integrals using basic rules and substitution methods. - Area between curves using definite integrals. **Applications of Definite Integrals:** [10 hrs] - Definite integrals to compute volumes using cross-sections and cylindrical shells. - Arc length of curves in Cartesian form. - Surface areas of revolution using definite integrals. - Variable forces and solve fluid force problems using integration.

| | - Moments and centers of mass for planar regions.

Transcendental Functions: [15 hrs]
- Concept of inverse functions and their derivatives.
- Properties and applications of natural logarithms and exponential functions.
- Separable differential equations modeling exponential growth and decay.
- L'Hôpital's Rule to solve indeterminate forms.
- Derive and integrate inverse trigonometric functions.

Integration Techniques: [15 hrs]

- Hyperbolic functions and their applications.
- Relative rates of growth for functions involving exponential and polynomial terms.
- Integrals using standard formulas and the method of integration by parts.
- Trigonometric integrals effectively.
- Trigonometric substitutions for integrals involving radicals.
- Integration using partial fraction decomposition.
- Integral tables and computer algebra systems for complex integrals.
- Numerical methods such as the trapezoidal rule and Simpson's rule to approximate integrals.
- Integration techniques in basic probability contexts

First-Order Differential Equations: [15 hrs]
- Slope fields for first-order differential equations.
- Euler's method to approximate solutions of differential equations.
- Solving first-order linear differential equations analytically.
- First-order differential equations applications in real-world modeling problems.
- Graphically interpret autonomous differential equations.
- Systems of first-order differential equations.
- Interpret and sketch phase planes for dynamic systems. |

| **Learning and Teaching Strategies** |
| استراتيجيات التعلم والتعليم |
| **Strategies** | The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting. |

<table>
<tr><th colspan="4">Student Workload (SWL)
الحمل الدراسي للطالب</th></tr>
<tr>
<td>Structured SWL (h/sem)
الحمل الدراسي المنتظم للطالب خلال الفصل</td>
<td>63</td>
<td>Structured SWL (h/w)
الحمل الدراسي المنتظم للطالب أسبوعيا</td>
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الحمل الدراسي غير المنتظم للطالب خلال الفصل</td>
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<td>Unstructured SWL (h/w)
الحمل الدراسي غير المنتظم للطالب أسبوعيا</td>
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<table>
<tr><th colspan="6">Module Evaluation
تقييم المادة الدراسية</th></tr>
<tr>
<td colspan="2"></td>
<td>Time/Number</td>
<td>Weight (Marks)</td>
<td>Week Due</td>
<td>Relevant Learning Outcome</td>
</tr>
<tr>
<td rowspan="4">Formative assessment</td>
<td>Quizzes</td>
<td>4</td>
<td>10% (10)</td>
<td>3,6 , 9, 12</td>
<td>LO #1, 2, 8 and 10</td>
</tr>
<tr>
<td>Assignments</td>
<td>4</td>
<td>10% (10)</td>
<td>2,6,10, 12</td>
<td>LO # 3, 4, 6 and 7</td>
</tr>
<tr>
<td>Projects</td>
<td></td>
<td>0% (0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report</td>
<td>1</td>
<td>5% (5)</td>
<td>9</td>
<td>LO # 5, 8 and 10</td>
</tr>
<tr>
<td rowspan="2">Summative assessment</td>
<td>Midterm Exam</td>
<td>1hr</td>
<td>15% (15)</td>
<td>8</td>
<td>LO # 1-7</td>
</tr>
<tr>
<td>Final Exam</td>
<td>3hr</td>
<td>60% (60)</td>
<td>16</td>
<td>All</td>
</tr>
<tr>
<td colspan="2">Total assessment</td>
<td colspan="2">100% (100 Marks)</td>
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<table>
<tr><th colspan="2">Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري</th></tr>
<tr><th colspan="2">Material Covered</th></tr>
<tr>
<td>Week 1</td>
<td>Integrals: Area and Estimating with Finite Sums; Sigma Notation and Limits of Finite Sums</td>
</tr>
<tr>
<td>Week 2</td>
<td>Integrals: The Definite Integral; The Fundamental Theorem of Calculus</td>
</tr>
<tr>
<td>Week 3</td>
<td>Integrals: Indefinite Integrals and the Substitution Method; Definite Integral Substitutions and the Area Between Curves</td>
</tr>
<tr>
<td>Week 4</td>
<td>Applications of Definite Integrals: Volumes Using Cross-Sections; Volumes Using Cylindrical Shells; Arc Length</td>
</tr>
<tr>
<td>Week 5</td>
<td>Applications of Definite Integrals: Areas of Surfaces of Revolution; Work and Fluid Forces; Moments and Centers of Mass</td>
</tr>
<tr>
<td>Week 6</td>
<td>Transcendental Functions: Inverse Functions and Their Derivatives; Natural Logarithms; Exponential Functions;</td>
</tr>
<tr>
<td>Week 7</td>
<td>Transcendental Functions: Exponential Change and Separable Differential Equations; Indeterminate Forms and L'Hôpital's Rule; Inverse Trigonometric Functions</td>
</tr>
</table>

Week 8	**Mid-term Exam**
Week 9	**Transcendental Functions**: Hyperbolic Functions; Relative Rates of Growth
Week 10	**Techniques of Integration**: Using Basic Integration Formulas; Integration by Parts; Trigonometric Integrals
Week 11	**Techniques of Integration**: Trigonometric Substitutions; Integration of Rational Functions by Partial Fractions; Integral Tables and Computer Algebra Systems
Week 12	**Techniques of Integration**: Numerical Integration; Improper Integrals; Probability
Week 13	**First-Order Differential Equations**: Solutions, Slope Fields, and Euler's Method; First-Order Linear Equations
Week 14	**First-Order Differential Equations**: Applications; Graphical Solutions of Autonomous Equations
Week 15	**First-Order Differential Equations**: Systems of Equations and Phase Planes
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: There are no laboratory experiments.
Week 2	Lab 2: There are no laboratory experiments.

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Calculus and Analytic Geometry by George B. Thomas, any edition.	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 is required, but credit is given.
	F – Fail	راسب	(0-44)	A significant amount of work is 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

Module Information

Module Title	**Engineering Drawing**	**Module Delivery**	
Module Type	**Base**	☐ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	**SEE153**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Dr. Ahmed Khalid Ibrahim	**e-mail**	alnajar.ahmed9@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	PhD
Module Tutor	Rehab Nashwan Sadoon Eman Ahmed Hanootie	**e-mail**	rehab.alshamaa@uomosul.edu.iq eman.alhanoti@uomosul.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	03/03/2025	**Version Number**	1.0

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	Students will be able to: 1. Drawing engineering shapes manually and clearly, including the effective use of the computer-aided drawing program (AutoCAD). 2. Develop a solid understanding of the basic principles of engineering drawing, Included: a. Solid conceptual understanding of the central principles of engineering drawing, b. The ability to work with concepts, analytically, and visualize them c. A functional understanding of how these ideas will manifest in the real world. 3. Use the graphic results of a specific design and convert them into engineering drawings. 4. Determine the strategies to be used and the assumptions to be made. 5. Use both manual and computer approaches in drawing figures. 6. Develop the ability to use engineering tools flexibly and creatively. 7. Develop an integrated understanding of the AutoCAD module. 8. Developing their ability to communicate scientific ideas. 9. Identify what they do not understand, and ask specific questions to gain understanding. 10. Develop expertise in experimental methodologies.
Module Learning Outcomes	1. Understand and apply the basics of drawing types of lines. 2. Define, explain and apply engineering drawing operations. 3. Understand the basics of drawing an ogee curve 4. Understand and apply the basic idea of central projection theory. Apply the principle of conservation of mechanical energy to solve simple problems in mechanics. 5. Explanation of the central and parallel projection theory to understand the projection process. 6. Explain what different reference planes are Horizontal Plane (HP), Vertical Frontal Plane (VP), Side Or Profile Plane (PP), 7. Explain Different Views are Front View (FV), Top View (TV) and Side View (SV) FV is a view projected on VP. TV is a view projected on HP. SV is a view projected on PP. 8. Drawing the side View by using the Auxiliary planes 9. Explanation of parallel projection methods The method of projection in the first quadrant, and the method of projection in the third quadrant. 10. Adopting the projection method in the third quarter to draw engineering projections. 11. Understanding the interrelationship of the three projections (F.V, S.V, & T.V). 12. Drawing a triangular solid of geometric shapes using the method of interconnecting its three projections. 13. Deduce the missing projection after drawing the triangular geometry. 14. Drawing cuts in the triangular shape using a FULL SECTION), using two levels (HALF SECTION), using multiple levels (OFFSET SECTION)
Indicative Contents	**Indicative content includes the following: -** **Introduction to engineering drawing and its tools, Point** [5 hrs]

- Introduction and introducing students to the subject of engineering drawing, which includes the following: --Identification of engineering tools and how to use them.
- Types of pens used in drawing geometric shapes.
- Billboard layout and address field numbers.
- How to deal with the engineering board and the engineering Painting.

The types of line and its properties, Line: [10 hrs]
- State, explain, and apply Newton's three laws of motion.
- Differentiate between static and kinetic friction, and solve friction problems.
- State and apply Hooke's law for ideal springs.

Engineering shapes and the arcs, lamina. , Dimensions: [15 hrs]
- Various engineering operations: -
- Introducing the drawing scale and its types: civil, mechanical, zoom-in, and zoom-out scale.
- Teach students how to apply and draw the following engineering operations:
- Drawing a straight line parallel to a known straight line
- The division of the rectum into two halves
- Angle division is known.
- Drawing a straight line parallel to a known straight line from a point that does not belong to the known straight line.
- Draw a tangent to a circle from a point that does not belong to it.
- Draw a tangent to two contiguous circles from the outside.
- Draw a tangent to two contiguous circles from the inside
- Draw a tangent to one circle from the inside and the other from the outside.
- Draw a tangent to a circle passing through a straight line
- Draw an ogee curve

Multi view projection [20 hrs]
- Perpendicular Projection Theory of Objects:
- Types of projection in drawing and its practical importance
- projections with vertical rays
- Types of projections resulting from vertical projection and approved in the projection of various engineering objects
- Frontal view
- Side view.
- Top view

Isometric drawing [15 hrs]
- Types of three-dimensional figures and their practical benefits Isometric
- Drawing axes of measurement and how to put dimensions on them
- Linking the given projections with the process of imagining and drawing

The section in Isometric [10 hrs]
- Full section
- Half section
- Offset section

Learning and Teaching Strategies

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

Student Workload (SWL)

Structured SWL (h/sem)	125	Structured SWL (h/w)	4
Unstructured USSWL (h/sem)	47	Unstructured USSWL (h/w)	1
Total SWL (h/sem)	125		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	2, 5, 9,12,13,15	LO #1, 2, 10 and 11
	Assignments	6	10% (10)	2, 5, 9,12,13,15	LO # 3, 4, 6 and 7
	Projects / Lab.	6	20% (20)	2, 5, 9,12,13,15	LO # 3, 4, 6 and 7, 5, 8 and 10
	Report	0	0% (0)	0	
Summative assessment	Midterm Exam	3hr	20% (20)	10	LO # 1-4
	Final Exam	3hr	40% (40)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	**Introduction to engineering drawing and its tools, Point** Introduction and introducing students to the subject of engineering drawing, which includes the following: --Identification of engineering tools and how to use them. • Types of pens used in drawing geometric shapes. • Billboard layout and address field numbers. • How to deal with the engineering board and the engineering Painting
Week 2	**The types of line and its properties, Line** • Types of lines in engineering drawing: ----

	• Visible lines, hidden lines, center lines, dimension lines, cutting lines.
	• Draw an applied painting on the subject
Week 3	**Engineering shapes and the arcs, lamina, Dimensions**
	Various engineering operations: -
	• Introducing the drawing scale and its types: civil, mechanical, zoom-in, and zoom-out scale.
	• Teach students how to apply and draw the following engineering operations:
	• Drawing a straight line parallel to a known straight line
Week 4	**Engineering shapes and the arcs, lamina, Dimensions**
	Various engineering operations: -
	The division of the rectum into two halves
	• Angle division is known.
	• Drawing a straight line parallel to a known straight line from a point that does not belong to the known straight line.
	Draw a tangent to a circle from a point that does not belong to it.
Week 5	**Engineering shapes and the arcs, lamina, Dimensions**
	Various engineering processes: -
	• Draw a tangent to two contiguous circles from the outside.
	• Draw a tangent to two contiguous circles from the inside
	• Draw a tangent to one circle from the inside and the other from the outside.
	• Draw a tangent to a circle passing through a straight line
	• Draw an ogee curve
Week 6	Multi view projection
Week 7	Perpendicular Projection Theory of Objects:
Week 8	• Types of projection in drawing and its practical importance
Week 9	• projections with vertical rays
	• Types of projections resulting from vertical projection and approved in the projection of various engineering objects
	• Frontal view
	• Side view.
	• Top view
Week 10	**Isometric drawing**
Week 11	• Types of three-dimensional figures and their practical benefits Isometric
Week 12	• Drawing axes of measurement and how to put dimensions on them
	• Linking the given projections with the process of imagining and drawing
Week 13	**The section in Isometric**
Week 14	• Full section
Week 15	• Half section
	• Offset section
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
Material Covered

Week 1-15	The application of each part of the covered drawing subject theoretically and according to the weekly sequence of the curriculum in the AutoCAD laboratory **Note: By two hours a week**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	➤ "NGINEERING DRAWING AND GRAPHIC TECHNOLOGY", Thirteen Edition, By: THOMAS E.FRENCH, CHARLES .VIERCK, ROBERT J.FOSTER ➤ ENGINEERING DRAWING AND AUTO CAD", By:RAMZY SYHOOD HAMIED ➤ TECHNICAL GRAPHICS COMMUNCATION", THIRD EDITION, Gary R.	No
Recommended Texts	➤ William D.CallisterJr.&David D.Rethwisch.(2010)"Material Science and Engineering An introduction", eightEdition. ➤ D. R. Askeland (2011) "The Scinence and engineering of materials". Course Outcomes	No
Websites	ENGINEERING DRAWING Any edition	

Grading Scheme

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.
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	F – Fail	راسب	(0-44)	A significant amount of work is required.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	**General Chemistry**		**Module Delivery**		
Module Type	B		☐ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
Module Code	**SEE155**				
ECTS Credits	**4**				
SWL (hr/sem)	100				
Module Level	1	**Semester of Delivery**			2
Administering Department	SEE	**College**	ENG		
Module Leader	Dr. Ahmed Fouad Mahmood	**e-mail**	ahmedfalneama@uomosul.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	10/09/2024	**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	Students will be able to: 1. Understanding atomic structure and electron configuration. 2. Applying knowledge of chemical bonding and molecular geometry. 3. Performing stoichiometric calculations for chemical reactions. 4. Understanding and applying gas laws and the principles of thermodynamics. 5. Analyzing chemical equilibria and reaction kinetics. 6. Exploring the properties of acids, bases, salts, and conducting titrations. 7. Understanding the basic concepts of hydrocarbons and their reactions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. A good understanding of the scientific method 2. A broad understanding of the fundamental concepts of chemical bonding, reactions, and practical applications 3. The ability to recognize and understand the impact that chemistry has on every aspect of their lives 4. A working knowledge of chemistry especially as it relates to the world around them 5. The ability to read popular media and understand the significance of chemistry as it relates to the world around them. 6. Classify matter and relate its classification to physical and chemical properties. 7. Relate the properties of elements to their structure, location on the periodic table, and natural state. 8. Measure quantities in the laboratory using appropriate equipment and perform calculations preserving the precision of those measurements. 9. Identify the bonding characteristics of substances based upon their properties and elemental makeup. 10. Perform quantitative calculations to predict projected yields of reactions with regard to products, masses, and energy output or consumption. 11. Calculate specific concentration ratios and predict the dependence of reaction mechanisms (rate and direction) on relative quantities. 12. Identify acids and bases as to their properties and reactions, as well as methods to determine the concentration of acids and bases. 13. Apply theoretical ideas studied to practical situations in the laboratory. 14. Perform data collection and analysis drawing meaningful conclusions from the data as part of a cooperative group in the laboratory
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Atomic Structure, Electron Configuration, Elements** – Define and describe atomic structure, including protons, neutrons, and electrons. – Explain electron configuration and its significance in determining the chemical properties of elements. – Understand and classify elements in the periodic table, including groups and periods. **Ionic Bonding, Ionic Nomenclature, Covalent Bonding** – Define ionic bonding and explain how ions form through the transfer of electrons. – Describe and apply the rules of ionic nomenclature to name ionic compounds.

– Explain covalent bonding, including single, double, and triple bonds, and describe how atoms share electrons.

Qualitative Analysis, Geometry, Polarity, Nomenclature

– Understand qualitative analysis techniques for identifying ions in a solution.
– Explore molecular geometry using VSEPR theory and predict the shapes of molecules.
– Discuss molecular polarity and how it affects physical properties.
– Apply rules of nomenclature to name covalent compounds.

Calculations, Moles, Reactions

– Perform chemical calculations involving moles, molar mass, and Avogadro's number.
– Write and balance chemical equations for various types of reactions.
– Understand and apply the concept of stoichiometry in chemical reactions.

Chemical Reactions, Stoichiometry

– Classify different types of chemical reactions, including synthesis, decomposition, single replacement, and double replacement.
– Perform stoichiometric calculations to determine the amounts of reactants and products in chemical reactions.
– Apply the concept of limiting reactants and percent yield in stoichiometric calculations.

Gases, Gas Laws, Phases

– Explore the properties of gases and the principles behind the gas laws (Boyle's, Charles', and Avogadro's laws).
– Apply the ideal gas law to solve problems involving pressure, volume, temperature, and moles.
– Understand the different phases of matter and the phase transitions between solid, liquid, and gas.

Solution Formation

– Describe the process of solution formation, including solvation and factors affecting solubility.
– Discuss the different types of solutions (solid, liquid, gas) and their properties.
– Explore the role of solutes and solvents in the formation of solutions.

Mid-Term Exam

– Review and assess understanding of the content covered in Weeks 1-7.

Concentration, Colligative Properties

– Calculate the concentration of solutions in terms of molarity, molality, and percent composition.

– Explore colligative properties such as boiling point elevation, freezing point depression, and osmotic pressure.
– Understand the impact of solute concentration on the physical properties of solutions.

Redox Reactions

– Define oxidation and reduction and identify redox reactions.
– Assign oxidation states to elements in compounds and reactions.
– Balance redox equations using the oxidation number method.

Reaction Energetics, Equilibria

– Discuss the energetics of chemical reactions, including exothermic and endothermic reactions.
– Explore the concept of chemical equilibrium and the factors that affect it.
– Understand and apply Le Châtelier's principle to predict changes in equilibrium.

Equilibrium Constant, Le Châtelier

– Define the equilibrium constant (K) and calculate it for various chemical reactions.
– Apply Le Châtelier's principle to predict the effects of changes in concentration, pressure, and temperature on equilibrium.
– Solve problems involving the calculation of equilibrium concentrations.

Acids, Bases, Salts

– Define acids, bases, and salts according to the Arrhenius, Brønsted-Lowry, and Lewis theories.
– Explore the properties of acids and bases, including pH and pOH calculations.
– Discuss the formation and properties of salts.

Neutralization, Titration

– Understand the process of neutralization and the formation of water and salt in acid-base reactions.
– Perform titration calculations to determine the concentration of acids or bases in a solution.
– Explore indicators and their role in titration experiments.

Introduction to Hydrocarbons

– Define and classify hydrocarbons, including alkanes, alkenes, and alkynes.
– Discuss the structure, nomenclature, and properties of hydrocarbons.
– Explore the basic reactions of hydrocarbons, such as combustion and addition reactions.

Preparatory Week Before Final Exam

– Review and consolidate understanding of the entire course content.
– Prepare for the final exam with practice problems, revision sessions, and Q&A.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The primary strategy for delivering this module will be to encourage students to participate in the exercises while refining and expanding their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of simple experiments involving sampling activities that students find interesting.

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	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
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)	4, 9, 12	LO #1, 2, 10 and 11
	Assignments	4	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.		0% (0)		
	Report	1	5% (5)	9	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1hr	15% (15)	8	LO # 1-4
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Atomic Structure, Electron Configuration, Elements

Week 2	Ionic Bonding, Ionic Nomenclature, Covalent Bonding
Week 3	Qualitative Analysis, Geometry, Polarity, Nomenclature
Week 4	Calculations, Moles, Reactions,
Week 5	Chemical Reactions , Stoichiometry
Week 6	Gases, Gas Laws, Phases
Week 7	Solution Formation
Week 8	Mid-Term exam
Week 9	Concentration, Colligative, Properties
Week 10	Redox Reactions
Week 11	Reaction Energetics, Equilibria
Week 12	Equilibrium Constant, LeChâtelie
Week 13	Acids, Bases, Salts
Week 14	Neutralization,Titration
Week 15	Introduction to Hydrocarbons
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: There are no laboratory experiments.
Week 2	Lab 2: There are no laboratory experiments.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	**1. Stoker, S.H. General, Organic, and Biological Chemistry, Sixth Edition, 2010. Houghton Mifflin. Boston, Mass.** **2. Bundy, Robert, Castiglia Lab Manual for Fundamental Chemistry I, Chemistry 101, 2014-2015 Edition**	Yes
Recommended Texts	➢	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance.

(50 - 100)	**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 is required, but credit is given.
	F – Fail	راسب	(0-44)	A significant amount of work is 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**	**Module Delivery**	
Module Type	**Support**	☒ Theory ☒ Lecture ☐ Lab ☐Tutorial ☒ Practical ☒ Seminar	
Module Code	**UOM102**		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	1	**Semester of Delivery**	1
Administering Department	Computer Eng.	**College**	College of Eng.
Module Leader	Dr. Mustafa Siham	**e-mail**	Mustafa.qassab@uomosul.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	This course develops further knowledge of the grammar and of essential vocabulary in order to lead the students to an advanced level of proficiency. Emphasis is placed on developing listening, speaking, reading and writing skills through an integrated approach. It focuses on grammar and fundamental writing skills. By the end of the course, students are expected to: 1. Understand the main ideas of a variety of written and spoken texts 2. Participate effectively in a short conversation using appropriate language 3. Produce a range of text types in the form of a logical and cohesive paragraph 4. Select appropriate vocabulary to talk about feelings, opinions and experiences. 5. Recognize, understand and use a number of phrasal verbs and collocations. 6. Use effective organizational strategies that include introductions, paragraphs, transitions, and conclusion
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	CLO 1: An ability to acquire and apply new knowledge and using appropriate learning strategies. CLO 2: An ability to participate and work professionally and ethically in different projects to function on multi-disciplinary teams. CLO 3: Comprehend and analyze various written and spoken texts: Demonstrate the ability to understand the main ideas, key details, and nuances of different types of texts, including articles, essays, speeches, and dialogues. CLO 4: Communicate effectively in spoken interactions: Engage in short conversations using appropriate language and effective communication strategies. Express ideas, opinions, and experiences clearly and coherently. Demonstrate active listening skills and respond appropriately to others. CLO 5: Produce well-structured written texts: Generate logically organized and cohesive paragraphs in written assignments. Apply appropriate grammar, vocabulary, and sentence structures to enhance clarity and coherence. Use effective writing strategies such as introductions, topic sentences, transitions, and conclusions. CLO 6: Employ appropriate vocabulary and expressions: Select and use a wide range of vocabulary to accurately express feelings, opinions, and personal experiences. Recognize, understand, and utilize phrasal verbs and collocations to enhance language fluency and natural expression. CLO 7: Apply effective language organization and coherence: Demonstrate the ability to structure and organize written and spoken

		communication effectively. Use appropriate discourse markers and transitional words to establish coherence and facilitate smooth flow of ideas. These course learning outcomes aim to develop the students' overall English language proficiency and skills in listening, speaking, reading, and writing. By the end of the course, students should be able to understand and analyze various texts, participate actively in conversations, produce well-structured written texts, employ appropriate vocabulary and expressions, and demonstrate effective language organization and coherence.
Indicative Contents المحتويات الإرشادية		Grammar Vocabulary Everyday English

earning 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	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	12% (12)	4, 7, 10	LO #1, 3, 5, 6
	Assignments	3	9% (9)	2,4,6	LO #1, 5, 6

		1	9% (9)	9	LO #4, 5, 7
	Reports	1	9% (9)	9	LO #4, 5, 7
	Online Assessment	1	10% (10)	10, 11, 12, 13	LO #1, 2, 4, 5, 7
Summative assessment	Midterm Exam	2 hr	10% (10)	15	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	UNIT 1 A world of difference: part 1
Week 2	UNIT 1 A world of difference: part 2
Week 3	UNIT 1 A world of difference: part 3
Week 4	UNIT 2 The working week: part 1.
Week 5	UNIT 2 The working week: part 2.
Week 6	UNIT 2 The working week: part 3.
Week 7	UNIT 3 Good times, bad times: part 1.
Week 8	UNIT 3 Good times, bad times: part 2.
Week 9	UNIT 3 Good times, bad times: part 3.
Week 10	Online assessment Group1.
Week 11	Online assessment Group2.
Week 12	Online assessment Group3.
Week 13	Online assessment Group4.
Week 14	Reviewing the Units 1-3 and open discussion.
Week 15	Midterm exam.
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered

Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	SOARS, J. & SOARS, L. 2014. New Headway: Intermediate Fourth Edition: Student's Book and iTutor Pack, OUP Oxford.	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
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	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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معلومات المادة الدراسية</td>
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اسم المنهج</td>
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☒ Theory
☐ Lecture
☐ Lab
☐ Tutorial
☐ Practical
☒ Seminar</td>
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<td>SWL (hr/sem)
الحمل الكلي</td>
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Module Level / المستوى	1	Semester of Delivery / سحب المنهج	1
Administering Department القسم الإداري	SEE	**College** الكلية	Engineering
Module Leader اسم التدريسي		**e-mail** البريد الالكتروني	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name	------	**e-mail**	E-mail
Scientific Committee Approval Date	26/11/2023	**Version Number**	2.0

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العلاقة مع المواد الدراسية الأخرى</td>
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<td>Prerequisite module</td>
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<td>Semester</td>
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<tr>
<td>Co-requisites module</td>
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<td>Semester</td>
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	Module Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives أهداف المادة الدراسية	الهدف من هذا الفصل الدراسي هو تعريف الطلاب بالموضوعات الرئيسية لمادة اللغة العربية. سيغطي الفصل الدراسي المتطلبات الأساسية لتعاريف اللغة العربية، قواعد نحوية للأزمنة، تنمية القدرات النحوية لصيغ المفرد والجمع والممنوع من الجرد، بالإضافة الى البلاغة والتطبيق. وفي نهاية الفصل، سيكون لدى الطلاب معرفة واسعة بالمفاهيم وسيتم تحقيق ذلك من خلال المحاضرات النظرية والدروس والواجبات البتية والتقارير ذات الصلة بالمواضيع المطروقة.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**CLO1:** تعريف الطالب بألفاظ اللّغة العربيّة الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. **CLO2:** أن يستغل الطالب وقت فراغه بالقراءة والاطلاع والرجوع إلى المكتبة. **CLO3:** تمكين الطالب من القراءة الصحيحة، وأن يكتسب القدرة على استعمال اللغة استعمالاً صحيحاً في الاتّصال مع الآخرين. **CLO4:** تنمية الذوق الأدبي لدى الطالب حتى يدرك النواحي الجمالية في أساليب الكلام ومعانيه وصورة. **CLO5:** تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة للكتب والمخاطبات الرسمية. **CLO6:** تمكين الطالب على كتابة التقارير العملية والنظرية والعروض التقديمية بلغة عربية واضحة وصحيحة. **CLO7:** القدرة على اكتساب وتطبيق المعرفة الجديدة واستخدام استراتيجيات تعليم مناسبة. **CLO8:** القدرة على المشاركة والعمل بمهنية واخلاقية للعمل في فرق متعددة التخصصات.
Indicative Contents المحتويات الإرشادية	**الجزء الأول:** مقدمة عن اللغة العربية (4 ساعات) • مقدمة عن اللغة العربية • تعريف اللغة العربية ومميزاتها **الجزء الثاني:** قواعد نحوية وتشمل: (6 ساعات) • الفعل الماضي • الفعل الماضي • الافعال الخمسة **الجزء الثالث:** تنمية القواعد النحوية وتشمل: (6 ساعات) • المثنى والجمع (المذكر السالم والمؤنث السالم) • التعجب • الممنوع من الصرف • المجرد والمزيد **الجزء الرابع:** البلاغة والتطبيق (8 ساعات) • الاستعارة • الجناس • الطباق • التشبيه **الجزء الخامس:** قواعد املائية: (3 ساعات) سوف يتم تعريف الطالب عن الأخطاء الاملائية الشائعة وطرق تجنبها بالإضافة الى كتابة المخاطبات الادرية. **الجزء السادس:** قواعد العد والمعدود: (3 ساعات)

	تعريف الطالب بقواعد واحكام العد والمعدود في اللغة العربية.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies الاستراتيجيات	توسيع مدارك الطلاب لمادة اللغة العربية، والإلمام بالمفاهيم الأساسية للغية العربية والبلاغة، والقدرة على التمييز بين الأزمنة. يحتوي هذه الفصل على العديد من المكونات التي تشمل دراسة المحاضرات والبرامج التعليمية والمناقشة والواجبات المنزلية ومنصات التعلم الإلكتروني. سيتم تدريس الدورة باللغة العربية، ويجب تقديم جميع المهام الإلزامية في غضون المواعيد النهائية للقبول في الامتحان.

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	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative Assessment التقويم التكويني	**Quizzes** الكويز	3	6% (18)	4, 9, and 13	All
	H.W Assignments الواجبات البيتية	2	4% (8)	5, 11	CLO4, CLO5, and CLO6
	Seminars السمنار	1	6% (6)	12	All
	On-site Assignment واجبات داخل الصف	2	4% (8)	6, 10	CLO4, CLO5, and CLO6
Summative Assessment التقويم التلخيصي	**Midterm Exam** امتحان نصف الفصل	2 hrs	10% (10)	7	All
	Final Exam الامتحان النهائي	3 hrs	50% (50)	16	All
Total Assessment / التقويم النهائي		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered / المواضيع المغطاة
Week 1	مقدمة عن اللغة العربية وتعريف اللغة العربية ومميزاتها
Week 2	قواعد نحوية: الفعل الماضي
Week 3	قواعد نحوية: الفعل المضارع

Week 4	قواعد نحوية: الأفعال الخمسة
Week 5	تنمية القواعد النحوية: المثنى والجمع (المذكر السالم والمؤنث السالم)
Week 6	تنمية القواعد النحوية: التعجب، الممنوع من الصرف والمجرد والمزيد
Week 7	الامتحان الفصلي
Week 8	البلاغة والتطبيق: الاستعارة
Week 9	البلاغة والتطبيق: الجناس
Week 10	البلاغة والتطبيق: الطباق
Week 11	البلاغة والتطبيق: التشبيه
Week 12	الأخطاء الاملائية
Week 13	المخاطبات الإدارية
Week 14	قواعد واحكام العد والمعدود
Week 15	قواعد واحكام العد والمعدود
Week 16	الامتحان النهائي

Delivery Plan (Weekly Lab. Syllabus)

	المواضيع المغطاة / **Material Covered**
Week 1	لا يوجد
Week 2	لا يوجد
Week 3	لا يوجد
Week 4	لا يوجد
Week 5	لا يوجد
Week 6	لا يوجد
Week 7	لا يوجد

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text الاسم	**Available in the Library?** هل متوفر في المكتبة؟
Required Texts المنهج المطلوب	جامع الدروس العربية / مصطفى الغلاييني	نعم
Recommended Texts المنهج الموصى به	النحو الوافي / عباس حسن	نعم
Websites المواقع الالكترونية	https://uomosul.edu.iq/en/engineering/environmental-engineering-dept/	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Computer**	Module Delivery
Module Type	**Basic**	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	**UOM 103**	
ECTS Credits	**3**	
SWL (hr/sem)	**75**	

Module Level	1	Semester of Delivery	1
Administering Department	SEE	**College**	ENG
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	<mark>10/09/2024</mark>	**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	The Module aim is to prepare students to deal with computers. In addition to, teach the students the fundamentals of computers and its components Furthermore, learning how to use two of Microsoft Office applications(Word and Excel).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. An ability to identify, analyze, and solve complex engineering problems according to principles of engineering, science, and mathematics. 2. An ability to acquire and apply new knowledge and using appropriate learning strategies. 3. An ability to participate and work professionally and ethically in different projects to function on multi-disciplinary teams.

	It is expected from the student who passes this module learn the following topics:
	1. Utilize the computer for fundamental tasks.
	2. Identify and discuss the hardware components of the computer system.
	3. Creating documents using a word processor and creating presentations.
	4. Conducting research on the Internet.
	5. An introduction to Artificial Intelligence.
Indicative Contents المحتويات الإرشادية	1. **Introduction to Computer**: concept of Hardware and Software with their components; Concept of computing, Data and Information; Applications of Information Electronics and communication Technology (IECT); Connecting input/output devices, and peripherals to CPU.[4] 2. **Computer Components**: Computer Portions, Hardware Parts, I/O Units, Memory Types, Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types).[8] 3. **Operating System and Graphical User Interface GUI**: Operating System; Basics of Common Operating Systems; The User Interface; Using Mouse Techniques; Use of Common Icons. Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.[8] 4. **Word Processing**: Word Processing Basics; Opening and closing of documents; Text creation and Manipulation, Formatting of Text; Table handling; Spell check; Language setting and thesaurus; Printing of word document.[8] 5. **Spread Sheet**: Basics of Spreadsheet; Manipulation of cell; Formulas and Functions, Editing of Spreadsheet; printing of Spreadsheet.[8] 6. **Presentation Software:** Basics of Presentation Software; Creating Presentation; Preparation and Presentation of Slides, Slide Show; Taking printouts of Presentation / handouts.[8] 7. **Introduction to internet and Web Browsers:** Computer network basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet; World Wide Web; Web Browsing software's; Search Engines; Understanding URL; Domain name; IP Address.[4] 8. **Communications and Emails:** Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Documents collaboration.[4] 9. **Computer Troubleshooting:** Identifying and solving common hardware and software problems that computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving issues.[4]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The course will use the following teaching and learning methods: . Board (Normal Or Smart) . Computers . Presentation Software such as PowerPoint.

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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	56	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.8
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)	4, 11	LO #Q1: 1-2, Q2: 7-9
	Assignments	2	5% (5)	3, 10	LO #A1: 1-2, A2: 7-9
	Lab.	10	20% (20)	Continuous	All
	Report	1	5% (5)	14	All
Summative assessment	Midterm Exam	2 hr	10% (10)	9	LO # 1-5
	Final Exam	3hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Computer
Week 2	Computer Components
Week 3	Computer Components:(continued).
Week 4	Operating System and Graphical User Interface GUI:
Week 5	Operating System and Graphical User Interface GUI:(continued)
Week 6	Word Processing:
Week 7	Word Processing:(continued)
Week 8	Spread Sheet:
Week 9	Spread Sheet: (continued)
Week 10	Presentation Software:

Week 11	Presentation Software:(continued)
Week 12	Introduction to internet and Web Browsers:
Week 13	Introduction to internet and Web Browsers:. continued)
Week 14	Communications and Emails:
Week 15	Computer Troubleshooting
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Computer
Week 2, 3	Computer Components
Week 5,6	Operating System and Graphical User Interface GUI
Week 6,7	Word Processing:
Week 8,9	Spread Sheet
Week 10,11	**Presentation Software**
Week 12,13	Introduction to internet and Web Browsers
Week 14	Communications and Emails
Week 15	Computer Troubleshooting
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	2015 Computer Literacy BASICS: A Comprehensive Guide to IC3 Connie Morrison, Dolores Wells, Lisa Ruffolo Cengage Learning. ISBN: 128576658X	Available as PDF
Recommended Texts	IC3 GS5 Certification Guide Using Windows 10 & Office 2016	Available as PDF
Websites	Google Classroom	

| 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	Democracy and Human Rights		**Module Delivery**	
Module Type	B		☐ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOM1040			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	**Semester of Delivery**	three	
Administering Department		**College**		
Module Leader		**e-mail**		
Module Leader's Acad. Title		**Module Leader's Qualification**		
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date	10/09/2024	**Version Number**	1.0	

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

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

Module Aims أهداف المادة الدراسية	The aim of studying the democracy and human rights topics is to: 1. **Understand** the concept of human rights and explore their sources, including international, regional, national, and religious sources. 2. **Define** administrative corruption, explore its types, and understand its detrimental effects on society. Study methods to combat administrative corruption and promote transparency, accountability, and good governance. 3. **Trace** the historical development and evolution of human rights, examining key milestones and movements that have shaped the modern understanding of human rights. 4. **Differentiate** between different categories of human rights, including civil and political rights, economic and social rights, and environmental, cultural, and developmental rights. 5. **Explore** legal, institutional, and societal guarantees to prevent human rights violations, including guarantees of human rights in Islam, national-level protections, and international safeguards. 6. **Comprehend** the concept of democracy, including its principles, values, and various forms of democratic governance such as direct, semi-direct, indirect, and digital democracy. Overall, studying these topics aims to develop a comprehensive understanding of human rights, democracy, and combating corruption, empowering individuals to actively promote and protect human rights and democratic values in society.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After these module aims, students should be able to: 1. Demonstrate a comprehensive understanding of the concept of human rights and their sources, including international, regional, national, and religious sources. 2. Identify and explain the fundamental characteristics of human rights, such as universality, indivisibility, interdependence, and inalienability. 3. Analyze the historical emergence and evolution of human rights, including key milestones and movements that have shaped their development. 4. Differentiate between different categories of human rights, including civil and political rights, economic and social rights, and environmental, cultural, and developmental rights. 5. Evaluate and apply legal, institutional, and societal guarantees to prevent human rights violations, considering guarantees in Islam, at the national level, and within the international framework. 6. Understand and discuss the concept of democracy, including its principles, values, and different forms of democratic governance. 7. Evaluate the Islamic stance on democracy and engage in critical analysis of the strengths and weaknesses of the democratic system. 8. Recognize and assess the impact of administrative corruption on society and propose methods to combat and prevent corruption in administrative systems. 9. Demonstrate critical thinking skills by analyzing and evaluating different perspectives on human rights, democracy, and corruption. 10. Apply acquired knowledge and skills to promote and protect human rights,

	democracy, and good governance in personal, professional, and civic contexts. Overall, students should have a solid understanding of democracy and human rights, democracy, and corruption issues, and be able to apply this knowledge to contribute to the advancement of human rights and democratic values in society.
Indicative Contents المحتويات الإرشادية	The indicative content includes: 1. Definition and sources of democracy and human rights (international, regional, national, religious). [3h] 2. Characteristics of democracy and human rights: universality, indivisibility, interdependence, inalienability. [3h] 3. Emergence and evolution of human rights: historical development, key milestones, influential movements. [3h] 4. Types of human rights: civil and political, economic and social, environmental, cultural, and developmental. [3h] 5. Guarantees to prevent human rights violations: legal, institutional, societal safeguards, Islamic guarantees, national and international levels. [3h] 6. Concept of democracy: principles, values, forms of governance (direct, semi-direct, indirect). [3h] 7. Islamic stance on democracy: compatibility, strengths, weaknesses. [3h] 8. Critique of the democratic system: analysis of strengths and weaknesses. [3h] 9. Administrative corruption: definition, types, societal impact. [3h] 10. Methods to combat administrative corruption. [3h]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	When it comes to learning and teaching strategies for a human rights module, there are several approaches can be taken to enhance understanding and engagement. Here are some effective strategies: 1. Interactive Discussions: Encourage students to actively participate in discussions, debates, and group activities. This promotes critical thinking, allows for different perspectives to be shared, and fosters a deeper understanding of human rights issues. 2. Case Studies: Present real-life case studies that highlight human rights violations or achievements. Analyzing these cases helps students apply theoretical concepts to practical situations and develops their problem-solving skills. 3. Research Projects: Assign research projects on specific human rights topics or issues. This encourages independent learning, critical analysis, and the development of research skills.

	4. Collaborative Learning: Foster collaboration among students through group projects or assignments. This encourages teamwork, peer learning, and the exchange of diverse perspectives. 5. Assessment Variety: Use a variety of assessment methods, including essays, presentations, debates, and quizzes, to assess students' understanding of human rights concepts and their ability to apply them to real-world situations.

Student Workload (SWL)
الحمل الدراسي للطالب

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	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of human rights and sources of rights (international sources / regional sources / national sources / religious sources).
Week 2	Characteristics of human rights.
Week 3	The emergence and evolution of human rights.

Week 4	Types of human rights / civil and political rights. Economic and social rights. Environmental, cultural, and developmental rights.
Week 5	Guarantees to prevent human rights violations / guarantees of human rights in Islam.
Week 6	Guarantees for the protection of human rights at the national level.
Week 7	Guarantees of human rights at the international level.
Week 8	The concept of democracy.
Week 9	Characteristics of a democratic system.
Week 10	Forms of democratic governance (direct democracy / semi-direct democracy / indirect democracy).
Week 11	Digital democracy / definition and advantages and disadvantages of digital democracy / manifestations of digital democracy.
Week 12	The Islamic stance on democracy.
Week 13	Critique of the democratic system.
Week 14	Administrative corruption / definition and types.
Week 15	Methods to combat administrative corruption.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	ضمانات حقوق الانسان وحمايتها وفقا للقانون الدولي والتشريع الوطني / نبيل عبد الرحمن ناصر الدين	No	
Recommended Texts	الديمقراطية وحقوق الانسان / د. امير عبد العزيز	No	
Websites			

Grading Scheme				
مخطط الدرجات				
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