MODULE DESCRIPTION FORM

Module Information					
Module Title	Physics			Module Delivery	
Module Type	basic			☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code					
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		Semester of Delivery	1	
Administering Department	Type Dept. Code		College	Type College Code	
Module Leader	Ali Basheer		e-mail	E-mail	
Module Leader's Acad. Title	teacher		Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Rihab Raad Hamsa Burhan		e-mail	Rihab@uomosul.edu.iq hamsaalbazaz@uomosul.edu.iq	
Scientific Committee Approval Date	01/06/2023		Version Number	1.0	

Relation with other Modules Relationship with other subjects			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

كلية العلوم البيئية
قسم تقانات البيئة

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. to Develop the student's skills and ability to understand the basic principles of classical physics and to reach and formulate physical laws 2. Enriching the student with various topics in physics such as mechanics and its topics (vectors, physical quantities, types of motion, Newton's laws and fluids), thermodynamics and its contents of topics such as (thermal equilibrium, general law of gases, etc.) in addition to electrical physics and the topics it contains related to current, voltages, resistors andtypes of connecting resistors in electrical circuits. 3. Helping and developing the student's abilities to solve mathematical problems related to the above topics. 4. The study contains the practical part, which includes a set of experiments that are conducted in the laboratory as a practical application of some of the topics that have been given to the student in the theoretical part.
Module Learning Outcomes	1.Identify the concept of vectors, vector and non-vector quantities, operations on vectors and their applications. 2. Know the difference between linear and rotational motion and identify Newton's laws of motion and types of energy. 3. Identify the concept of torque, harmonic movement and projectilesmovement. 4. Learn about thermodynamics, temperature scales and heat transfer methods. 5. Identify the properties of gases, the general law of gases and the concept of heat capacity. 6. Identify some concepts of fluid science such as fluid properties such as surface tension, capillary tubes, cohesion and adhesion forces. 7. Identify some concepts of electrical physics such as current, voltages, resistance and types of connecting resistors in electrical circuits. 8. Learn how to conduct some experiments and know their laws
Indicative Contents	Basic concepts of vectors/physical quantities, units and symbols, vector magnitude, vector units of axes, vector algebra, numerical product, vector product, some vector applications, force moment, vector representation, vector analysis, definitions of vector quantity and non-vector quantity - solving questions. [11h] Mechanics, velocity vector,acceleration vector, linear motion, laws of linear

	motion, circular motion, rotational motion, Newton's laws of motion, Newton's first law, mass and force, Newton's second and third laws, position functional force, concept of potential energy and kinetic energy, linear momentum, vertical motion, The work, force and force types. [12h] Torque – radial angle – double torque, harmonic motion – harmonic oscillator, motion on a curve – simple pendulum – motion of a restricted body, motion of projectiles – force analysis – question solving. [7h] Thermodynamics-Heat and Temperature-Thermal Equilibrium, Zero Law of Thermodynamics-Heat Capacity-First Law of Thermodynamics, Thermometers Thermocouples-Thermodynamic Processes, Work, Heat Transfer, Black Body Radiation. [12 h] Kinetic energy theory of gases, general properties of gases, ideal gas, general gas law,Boyle's law, Charles' law, applications of Charles' law, heat capacity of gases, specific heat capacity, molar heat capacity [12h] Fluid mechanics, definition and classification of fluids, shear stress, properties of fluid particles, dynamic movement, surface tension force, cohesion force, adhesion force, capillary tubes - calculating the height of the fluid inside the capillary tube. [17h] Ohm's law, specific conductivity, current density, resistance, specific resistance, connectingresistors, electromotive force, metallic conductivity, solving questions. [10 hours] Identifying the practical part of the material in the laboratory by conducting a set of experiments, some of which are related to the topics of the theoretical part, and proving its laws in practice. [24h]

Learning and Teaching Strategies	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students to participate in solving exercises, while improving and expanding thinking skills at the same time. This will be achieved through interactive classes and tutorials and through some experiments that include the practical application of what has been studied in the semester.

Student Workload (SWL)

Structured SWL (h/sem)	108	**Structured SWL (h/w)**	7
Unstructured SWL (h/sem)	67	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	175		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
week 1	Basic concepts of physical vectors/quantities, units and symbols, vector magnitude - vector units of axes - vector algebra
week 2	Numerical Product-Cross Product-Some Vector Applications, Momentum of Force -Vector Representation-Product Analysis
week 3	Definitions of Vector and Non-vector Quantum – Solving Questions
week 4	Mechanics - Velocity vector - acceleration vector - Linear motion - Laws of Linear Motion-Circular motion - rotational motion
week 5	Newton's laws of motion - Newton's first law - mass and force - Newton's second and third laws - Torque – Radial Angle – Dual Torque,
week 6	Position Function Force - Concept of Potential Energy and Kinetic Energy - Linear Momentum, Vertical Motion –The Work - Force and Types of Force
week 7	Midtearm Exam
week 8	Harmonic Motion -Motion on a curve - simple pendulum - movement of a restricted body - motion of projectiles - force analysis - solving questions
week 9	Thermodynamics - Heat and Temperature - Thermal Equilibrium, Zero Law of Thermodynamic - Heat Capacity - First Law of Thermodynamic - Work - Heat Transfer - Black Body Radiation
week 10	Kinetic energy theory of gases - general properties of gases - ideal gas - general law of gases - Boyle's law - Charles law - applications of Charles' law
week 11	Heat Capacity of Gases - Specific Heat Capacity - Molar Heat Capacity - Fluid Mechanics - Definition and Classification of Fluids - Shear Stress

week 12	Properties of fluid molecules - dynamic motion - surface tensile strength, cohesion strength - adhesion force - capillary tubes - calculation of fluid height inside capillary tube
week 13	Ohm's Law – Specific Conduction – Current Density
week 14	Resistance-Specific Resistance-Connecting Resistors
Week 15	Electromotive Force - Metal Conductivity - Solving Questions
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1:An introductory lecture on how to write reports and explain the chart
Week 2	Lab 2: Simple Pendulum
Week 3	Lab 3: proof of Hook's law
Week 4	Lab 4: use a helical spring to determine the value of ground acceleration and find the equivalent mass of a helical spring
Week 5	Lab 5: Coefficient of static friction
Week 6	Lab 6: Prism refractive index
Week 7	Lab 7: Refractive index of glass block
Week 8	Lab 8: The focal length of a convex lens
Week 9	Lab9: Speed of sound using a one-ended closed resonant tube
Week 10	Lab 10: Ohm's law
Week 11	Lab11: find the viscosity coefficient of a liquid
Week 12	Lab 12: Archimedes base

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	-Physics for students of medicine and biology / General Physics for students of the Faculty of Agriculture and Forestry / Dr. Shaker Jaber	Yes

Recommended Texts	-Concepts in modern physics/ Dr. Moneim Mashkour and Mr. Shaker Jaber -Physics for students of geology / Dr. Farouk Ubaid - Mechanics for the students of science and engineering / Dr. Taleb Naji - Practical physics in units / E Armtiage - translated by Dr. Edmond Tobia George	No

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 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

Module Information					
Module Title	**MATHEMATICS I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code					
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		Bachelor's Degree	**Semester of Delivery**		1
Administering Department		Environmental Tech.	**College**	Environmental Science and Technology	
Module Leader	Marwan Jameel		**e-mail**	marwan.jameel@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		**Semester**	

Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. The aim of this course is to give an introductory course on basics concepts of analysis, to teach limit, derivative, integral concepts and their applications. 2. To develop problem solving skills and understanding of calculustheories through the application of techniques.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define basic functions, take the limit of functions and investigate their continuity, 2. Take the derivatives of functions, using derivative a student can sketch and interpret the graph of functions, 3. Solve maximum and minimum problems, 4. Classify integrals, use techniques of integration, 5. Define and classify improper integrals, 6. Apply derivative and integral concepts to his/her profession. 7. Define sequences, analyze the convergence of sequences, can recognize series and use convergence tests for series, can find Taylor and Maclaurin series expansion of given functions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Functions general overview, Limit and continuity, limits involving infinity, asymptotes.[15 hrs] Derivative and its applications-Chain rule, Mean Value theorem, Rolle?s theorem. [15 hrs] Curve sketching-Concavity, concave up, concave down, Maximum and minimum problems, Sequences and series-convergence and divergence [15 hrs] Introduction to integration, Definite integrals and fundamental theorem of calculus [15 hrs]

	Techniques of integration- Integration by parts, trigonometric integrals, integration of Rational functions, Improper integrals and Applications of integration. [20 hrs] Sequences and series-convergence and divergence, Convergence tests for series- Integral test, comparison test, the root and ratio test, Alternating series, Taylor and Maclaurin series.[10]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Activities are given in detail in the section of "Assessment Methods and Criteria" and "Workload Calculation" 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 in order to introducing the basic topics of analysis, to teach the concepts of limit, derivative, integration and their applications.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	90	**Structured SWL (h/w)**	6

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4, 12	LO #1, 2, 10 and 11
	Assignments	All	10% (10)	Per week	All
	Attendance	All	10% (10)	Per week	All
	Projects / Lab.	1	5% (5)	Continuous	All
	Report and seminar	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hrs.	20% (20)	7	LO # 1-7
	Final Exam	2 hrs.	40% (40)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Functions general overview
Week 2	Limit and continuity, limits involving infinity, asymptotes

Week 3	Derivative and its applications-
Week 4	Chain rule, Mean Value theorem, Rolle's theorem
Week 5	Curve sketching-Concavity, concave up, concave down
Week 6	Midterm exam, Maximum and minimum problems
Week 7	Introduction to integration
Week 8	Definite integrals and fundamental theorem of calculus
Week 9	Techniques of integration
Week 10	Integration by parts, trigonometric integrals
Week 11	Midterm exam
Week 12	integration of Rational functions
Week 13	Improper integrals and Applications of integration
Week 14	Sequences and series-convergence and divergence
Week 15	Taylor and Maclaurin series
Week 16	**Final exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Thomas, Calculus and Analytic Geometry, Addison-Wesley 1996.	Yes
Recommended Texts	Silverman R.A, Calculus with analytic geometry, Prentice-Hall Inc. 1985. Adams, R.A, Calculus, a complete course, Addison-Wesley 2003.	No

Websites	https://www.youtube.com/playlist?list=PLF797E961509B4EB5

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

Module Information					
Module Title	**General Biology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code					
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		UG1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Shaymaa Khaleel Abdullah Mayada Ahmed AL-Taii		**e-mail**	drshaymaakhleel@uomosul.edu.iq maysbio55@uomosul.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Diana Nooraldine Mustafa Abdullah Abdusttar Thanoon		**e-mail**	Dyasbio86@uomosul.edu.iq abdullah84@uomosul.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date			**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- The study of general biology aims to introduce the student to the groups of living organisms and the nature of their structural parts.** **2- Studying the multiple cellular structures according to the type of organism.** **3- Knowing how they spread and distribute in the surrounding environment and their interaction with it.**
Module Learning Outcomes	**1- Learn about biology, its branches, and its importance to humans and the environment** **2- Distinguish different cell shapes and their diversity according to the type of organism.** **3-Studying the chemical nature of cellular components.** **4- Understanding the difference between eukaryotic and prokaryotic organisms.** **5- Studying the process of cell division and growth** **6- identify the mechanism of formation the reproductive structures in higher organisms.** **7-Knowing the basics of classification and scientific naming of eukaryotic organisms.** **8-Distinguishing the phylum's and families of the animal and plant kingdoms .** **9-Clarifying the different feeding methods in animals and the process of energy production and metabolism.**

	10-Explain the nutritional metabolic activities in plants. **11- Studying the nature of the relationship between species of organisms and their surrounding environment.**
Indicative Contents	**Indicative content includes the following:** **Introduction - to biology, its branches and importance. - General instructions (7h)** **The cell: its discovery and structure - non-living cellular components - the nucleus and cellular organelles - the microscope and its components - estimation of the dimensions of cells and organelles - plant cells - animal cells (21h).** **Forms of living cells - animal and plant - cell types, plant and animal - meristematic tissues + parenchyma + sclerenchyma - epidermis + wood + bark + vascular tissues - practical exam (9h)** **Cell Division - Mitosis and Reduction - Mitosis Lab (6h)** **review (4h)** **midterm exam (1h)** **Reproduction and growth in animals - Reproduction and growth in plants (10h)** **Classification and Scientific Nomenclature - People of the Plant Kingdom - People of the Animal Kingdom - Protozoa (Amoebae + Paramecium) - Sponges and Hydra - Worms and Insects - Animal Tissues (25h)** **Nutrition and photosynthesis in plants - for feeding, digestion and metabolism in animals (10h)** **Environment and its effect on the distribution of animals and plants (5)** **review (4h)** **final exam(3h)**

Learning and Teaching Strategies	
Strategies	

	The main strategy that will be adopted in presenting this course is to encourage students to read and discuss, and to provide the student with the skill of scientific observation and description of the phenomenon, while improving their critical thinking skills at the same time. This will be achieved through daily and quarterly examinations, daily discussions, and through hands-on observations in laboratory experiments that include some sampling activities and examination of specimens and microscopic slides of the subject.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (hr./sem.)	108	**Structured SWL (hr./w)**	7.2
Unstructured SWL (hr./sem.)	67	**Unstructured SWL (hr./w)**	4.5
Total SWL (hr./sem.)	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	10% (10)	Lab. 7, 14 Lec. 5, 13	LO # 2-5 and 7-9 LO # 1,2,3 and 6,7
	Assignments	1	10% (10)	5	LO # 4
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	1 hr.	10% (10)	7	LO # 1-5
	Final Exam	3hr.	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to Biology**
Week 2	**The Cell: discovery and structure**
Week 3	**The Cell : Non-living cellular components**
Week 4	**The Cell : the Nucleus and Cellular organelles**
Week 5	**Shape of the Cell : Plant and Animal Cells and quiz 1**
Week 6	**The Cellular Divisionmitosis**
Week 7	**The cell division : meiosis and Mid-term Exam**
Week 8	**Growth and Reproduction in animals**
Week 9	**Growth and Reproduction in Plants**
Week 10	**Classification and Nomenclature**
Week 11	**The Animal Kingdom**
Week 12	**The Plant Kingdom**
Week 13	**Nutrition , Digestion and Metabolism in Animals and quiz 2**
Week 14	**Nutrition and photosynthesis in plants**
Week 15	**Environment and its influence on the distribution offauna and flora**
Week 16	**The final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**General Instructions**
Week 2	**Microscope and its components**
Week 3	**Estimating the dimensions of cells and organelles**
Week 4	**Cell division**
Week 5	**Meristemic tissue + parenchyma + sclerenchyma**
Week 6	**Epidermis + xylem + bark + vascular tissue**
Week 7	**Part 1 exam**
Week 8	**Cells : plant and animal types**
Week 9	**Protozoa: amoeba + paramecium**
Week 10	**Sponges and Hydra**
Week 11	**Worms and insects**
Week 12	**Starfish and arthropod**
Week 13	**Animal tissue**
Week 14	**Part 2 exam**
Week 15	**final exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	علم الاحياء ج1 ، ج2 . لجنة من وزارة التعليم العالي والبحث العلمي	
Recommended Texts	Jeff Hardin, Gregory Paul Bertoni, Lewis J. Kleinsmith - Becker's World of the Cell (8th Edition) (2011, Benjamin	No

	Cummings). Sylvia Mader, Michael Windelspecht - Essentials of Biology (2017, McGraw-Hill). Jain,Dk., Singh, V., Pande, Pc. (2018).Textbook of Botany.Fifth Ed.,India.	
Websites		

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	General Chemistry			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		1 (Undergraduate)	**Semester of Delivery**		1
Administering Department		Type Dept. Code Department of Environmental Technologies	**College**	Type College Code College of Environmental Science and Technologies	
Module Leader	Dr.Eman A.M. Al-jawadi		**e-mail**	emanaljawadi@uomosul.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D./Chemistry Science
Module Tutor	Mohammed Saadallah Younus Lena nofel mohammed salih Mustafa Amer Dhannoon Lab . Abeer Saleh Atiya		e-mail		
Peer Reviewer Name		Name	**e-mail**	E-mail	

Scientific Committee Approval Date		**Version Number**	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	To students; to provide the necessary knowledge accumulation in professional fields by comprehending basic chemistry subjects, to give knowledge of chemistry and the ability to apply concepts to the solution of chemistry problems.
Module Learning Outcomes	To be able to follow developments in chemistry fields such as environment, pharmaceuticals, food, polymers, paint, and health and solve the basic problems in research and development laboratories related to these fields
Indicative Contents	SKILLS Ability to apply theoretical and practical knowledge of chemistry to advanced studies in the chemical industry Ability to apply occupational safety principles to ensure the safe use and disposal of chemicals and keep their global environmental impact at minimum level To be able to adapt to the rapidly developing technological environment with the awareness of lifelong learning and follow the developments in science and technology To be able to follow developments in chemistry fields such as environment, pharmaceuticals, food, polymers, paint, and health and solve the basic problems in research and development laboratories related to these fields

Learning and Teaching Strategies	
Strategies	Strategies of Teaching is knowing prenciples of chemical and methods and apparatus used .

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7.2 (108/15)
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.46 (67/15)
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4,6,8,12,15	LO #1 -3,4-5,6-7,19-12and 13-14
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Tutorial	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	9	LO # 1-8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Module Name	SSWL(hr/W)						Exam (hr/Sem)	SSWL (hr/Sem)	USSWL (hr/Sem)	SWL (hr/Sem)	ECTS
	CL (hr/W)	Lect (hr/W)	Lab (hr/W)	Pr (hr/W)	Tur (hr/W)	SEM (hr/W)					
General Chemistry I 1st Class	3	1	2		1		3	108	67	175	7
	45 (3/15)	15 (1/15)	30 (2/15)		15 (1/15)		3				

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General Introduction, Chemical Bonds and Molecular Structures
Week 2	Periodic Relationships Among the Elements, Atomic and Molecular Orbitals, Hybridizations

Week 3	**Chemical Bonding II: Molecular Geometry and Hybridization**
Week 4	**Functional Groups, Intermolecular Forces.quiz**
Week 5	**An Introduction to Organic Reactions and Their Mechanism, Nomenclature and Conformation of Alkanes / Cycloalkanes**
Week 6	**Nucleophilic Substitution Reactions of Alkyl Halides .quiz**
Week 7	**Properties and Synthesis of Alkenes and Alkynes**
Week 8	**Aromatic Compounds , Rezonance Theory. quiz**
Week 9	**Mid-term Exam**
Week 10	**General properties of solutions**
Week 11	**Concentration.. Ideal, diluted or concentrated solutions.**
Week 12	**Solubility. Solutions of electrolites .quiz**
Week 13	**. Changes of state in liquid solutions**
Week 14	**Osmosis. Colligative properties and determination of molecular weight.**
Week 15	**Colloidal systems:Hydrophilic and hydrophobic colloidal systems.: micelles and bilayers. quiz**
Week 16	**final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Qualitative analysis of cations**
Week 2	**Melting point**
Week 3	**boiling point**
Week 4	**simple distillation**
Week 5	**Fractional distillation**

Week 6	**Sublimation**
Week 7	**Recrystallization**
Week 8	**Purification of NaCL**
Week 9	**Determination of Fe +3 and Fe+2**
Week 10	**Purification of NaCL & KCL**
Week 11	**Complex preparation**
Week 12	**Preparation of methane gas**
Week 13	**Acetylene preparation**
Week 14	**Identification of double and triple bond (in unsaturated compounds)…1**
Week 15	**Identification of double and triple bond (in unsaturated compounds)…2**

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Chemistry, 13th Edition, Raymond Chang & Jason Overby	
Recommended Texts	General Chemistry: Principles and Modern Applications, 11th Edition, Ralph H. Petrucci, F. Geoffrey Herring, Jeffry D. Madura, Carey Bissonnette	
Websites		

Grading Scheme

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