MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Chemistry**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CEES 203**				
ECTS Credits	**9**				
SWL (hr/sem)	**225**				
Module Level	UGII		**Semester of Delivery**	Two	
Administering Department	First		**College**	Civil Engineering	
Module Leader	Ghaidaa majeed jaid		**e-mail**	Ghaidaa.M.Jaid@uotechnology.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Master	
Module Tutor	Hala Adnan Abbas		**e-mail**	Hala.a.abbas@uotechnology.edu.iq	
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. To introduce students to the basic concepts and principles of chemistry. 2. To understand the properties , atomic structure , the bonds among molecular and composition of materials and reaction of materials with the environment (corrosion of metals, durability) . 3. To know how Calculate mole, molarity, and molality and to calculate percentage of elements or components in solutions 4. To understand the importance of chemistry and the periodic table. 5. To help the students thinking positively, logical and to understand the principles of nature.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Student will be able to identify and apply atomic theories and useful relationships from the periodic table, and they will make calculations . 2. Calculate mole, molarity, and molality, percentage of elements about liquid solutions ,building materials . 3. Study chemical reactions and strategies to balance them. 4. Study the periodic table and molecular compounds with using their chemical bonding knowledge and some other bond theories. 5. They will integrate their chemistry knowledge to their daily life with the real-world. 6. An ability to Identify the basic elements and their applications. 7. An ability to develop and conduct appropriate experiments ,analyze and use engineering judgment to draw conclusions .
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Study the Atomic Structure, and bonds</u>: Review of how electron distribution in atom and bonds between atoms and molecular. structure of atoms, protons, neutrons, electrons, isotopes, radioactivity, covalent, ionic and metallic bonds. Intermolecular forces (London Dispersions, and dipole- dipole) [15 hrs] <u>Dalton's Atomic Theory:</u> Tiny indivisible particles, atoms, Dalton’s theory were incorrect and correct, and Dalton atomic laws.[10 hrs] <u>Mole concept:</u> empirical formulas, Atomic and Molecular mass, Avogadro's number, the amount of substance ,Molar mass of an element and compound .[15 hrs] <u>measurements of concentration of solution:</u> Review of understanding the measurements of qualitatively and quantitatively concentration of solution and calculate the percent composition (by mass), molarity

	and molality.[15 hrs] Periodic table Review of distribution of periodic table and the benefit, organic compounds. inorganic chemistry, quantum numbers, atomic mass of elements, and periodic properties of elements. [10 hrs] Chemical methods for Water Quality Testing: Acids and bases, strong and weak acids, pH value, alkalinity, buffer solution, buffer capacity, indicators, solubility and pH, Chloride. [10 hrs] Cement Chemistry: cement formula ,cement types and properties , CaO, alumina, iron oxide, silica, alkalies, sulfur, magnesium oxide, clay, chemical reaction, water, and aggregate of various sizes

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Atomic Structure,
Week 2	Ionic bond
Week 3	Covalent bond
Week 4	Metallic bond
Week 5	Hydrogen bonds
Week 6	Van deer waals bonds,
Week 7	Dalton Atomic Concept
Week 8	Mid-term Exam
Week 9	Measuring Moles of Atoms
Week 10	Measuring Moles of Compounds
Week 11	Concentration of Solutions
Week 12	Periodic Table (metal& non metal),
Week 13	Properties of Elements
Week 14	Chemical methods for Water Quality Testing
Week 15	Cement Chemistry
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Chemical Laboratory(equipment usage and safety)
Week 2	Lab 2: Measurement of pH
Week 3	Lab 3: Preparing Standard Solution (Sodium Hydroxide)
Week 4	Lab 4: Acid -Base Titration **(**Calculate the concentration of acid) Titration of HCl with NaOH
Week 5	Lab 5: Calculate the concentration of an unknown weak base (Ammonia NH3)
Week 6	Lab 6: Calculate the concentration of chloride
Week 7	Lab 7: Preparation and standardization of potassium permanganate solutions (KMnO4)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

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