جامعة البحرين
University of Bahrain
مركز ضمان الجودة والاعتماد الأكاديمي
Quality Assurance and Accreditation Center

Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

القسم الخاص بالطالب
Section Concerning the Student

1. Course Code:	CHEMY 101	**1. رمز المقرر:**
2. Course Title	General Chemistry I	**2. اسم المقرر:**
3. College:	Science	**3. الكلية:**
4. Department:	Chemistry	**4. القسم:**
5. Academic Program:	Bachelor of Science in Chemistry	**5. البرنامج الأكاديمي:**
6. Course Credits:	3-2-4	**6. عدد الساعات المعتمدة:**
7. Course NQF Level:	5	**7. مستوى المقرر وفقا للإطار الوطني للمؤهلات:**
8. Notional Hours:	170	**8. عدد الساعات الافتراضية:**
9. NQF Credits:	17	**9. عدد الساعات المعتمدة للمقرر وفقا للإطار الوطني للمؤهلات:**
10. Prerequisite:	NA	**10. المتطلب السابق للمقرر:**
11. Lectures Timing & Location:		**11. وقت المحاضرة ومكانها:**
12. General Mode of Teaching and Learning	Traditional تقليدي	**12. النمط العام للتعليم والتعلّم:**

13. Course Coordinator:		**13. منسّق المقرر:**
14. Course Instructor:		**14. مدرّس المقرر:**
15. Office Hours and Location:		**15. الساعات المكتبية ومكانها:**
16. Instructor's Email:		**16. البريد الإلكتروني لمدرّس المقرر:**
17. Academic Year:		**17. السنة الأكاديمية:**
18. Semester:		**18. الفصل الدراسي:**

19. Textbook(s):	**19. الكتب الدراسية للمقرر:**
CHEMISTRY, Steven S. Zumdahl, Susan A. Zumdahl, and Donald J. Decoste, 10th Edition, CENGAGE Learning, 2018.	
20. References:	**20. المراجع:**
CHEMISTRY by Jason Overby and Raymond Chang, 14th Edition, 2022, McGraw Hill. CHEMISTRY: Principles and Reactions by Masterton Hurley 8th edition, 2016.	
21. Other Learning Resources Used (e.g. e-learning, field visits, periodicals, software, etc.):	**21. مصادر التعلّم الأخرى (مثال: التعلّم الإلكتروني، زيارات ميدانية، دوريات، برمجيات، إلخ....)**
22. Course Description (as published in the College Catalogue):	**22. توصيف المقرر (حسب ما ورد في دليل الكلية):**
Atomic structure; formulas and names of chemical molecules; Avogadro's number and the mole; stoichiometry of chemical reactions; acid-base and redox reactions, solutions, concentration units, and colligative properties; gases and gas laws; electronic structure and the electron configuration; periodic properties and chemical bonding: ionic and covalent; Lewis structures and formal charge; molecular geometry and hybridization. Related practical work.	
23. Course Intended Learning Outcomes (3 to 5 CILOs):	**23. مخرجات التعلّم للمقرر (CILOs) (3 إلى 5 مخرجات تعلّمية):**
1. Explain the properties of elements & compounds, basic principles of Lewis structure, covalent bonding and gases.	
2. Infer the formulas and the names of chemical molecules and chemical equations for different types of chemical reactions.	
3. Solve with some guidance basic chemical reaction problems such as moles, mass percent, and molarity and explain real-life phenomenon such as colligative properties of a solution.	
4. Use the ideal gas law and its applications in quantitative problems.	
5. Use basic skills to obtain meaningful conclusions from experimental data.	
24. Course Assessment Percentages (as per Regulations of Study and Examination at the University of Bahrain):	**24. أساليب التقييم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):**

Assessment التقييم	Type النوع	Percentage النسبة	Assessment Date تاريخ التقييم
Midterm I	Individual فردي	12.5	
Midterm II	Individual فردي	12.5	
quizzes	Individual فردي	10	
homework	Individual فردي	5	
Lab reports	individual	10	
Lab exam	individual	10	
Final Exam	individual	40	
Total	**100%**		

25. Description of Topics Covered	**25. وصف الموضوعات التي ينبغي تناولها:**
Topic Title ***(e.g. chapter/experiment title)*** **الموضوع**	***Description*** **التفصيل**
Chapter 1 Chemical Foundations	1.3 Units of Measurements *p 8* is expected to be covered independently by all students. 1.5 Significant figures and Calculations *p 14* and Safety rules are introduced during the first lab session.
Chapter 2 Atoms, Molecules, and Ions.	2.5 The Modern View of Atomic Structure: An Introduction *p 46-47* 2.6 Molecules and Ions *p 48-50* 2.7 The Periodic Table *p 51-53* 2.8 Naming Simple Compounds *p 53-63*
Chapter 3 Stoichiometry	3.1 Counting by Weighing *p 69-70* 3.2 Atomic Masses *p 70-72* 3.3 The Mole *p 72-77* 3.4 Molar Mass *p 77-79* 3.6 Percent Composition of Compounds *p 81-83* 3.7 Determining the Formula of a Compound *p 83-90* 3.8 Chemical Equations *p 90-92* 3.9 Balancing Chemical Equations *p 92-95* 3.10 Stoichiometric Calculations: Amounts of Reactants and Products *p 95-100* 3.11 The Concept of Limiting Reactant *p 100-110*
Chapter 4 Types of Chemical Reactions and Solution Stoichiometry	.1 Water, the Common Solvent *p 117-119*

	4.2 The Nature of Aqueous Solutions: Strong and Weak Electrolytes *p 119-123* 4.3 The Composition of Solutions *p 123-130* 4.4 Types of Chemical Reactions *p 130* 4.5 Precipitation Reactions *p 131-136* 4.6 Describing Reactions in Solution *p 136-138* 4.8 Acid-Base Reactions *p 140-147* 4.9 Oxidation-Reduction Reactions *p 147-152*
Chapter 11 Properties of Solutions	11.1 Solution Composition *p 434-437* 11.3 Factors Affecting Solubility *p 441-445* 11.4 The Vapor Pressures of Solutions *p 445-448* 11.5 Boiling-Point Elevation and Freezing-Point Depression *p 451-454* 11.6 Osmotic Pressure *p 454- 458 (only first figure)* 11.7 Colligative Properties of Electrolyte Solutions *p 459-460* 11.8 Colloids *p 461-463*
Chapter 5 Gases	5.1 Pressure *p 165-167* 5.2 The Gas Laws of Boyle, Charles, and Avogadro *p 167-173* 5.3 The Ideal Gas Law *p 173-178* 5.4 Gas Stoichiometry *p 179-183* 5.5 Dalton's Law of Partial Pressures *p 183-189*
Chapter 7 Atomic Structure and Periodicity	7.1 Electromagnetic Radiation *p 252-253* 7.2 The Nature of Matter *p 254 (last paragraph),255 (first example), 258 (last part only)* 7.3 The Atomic Spectrum of Hydrogen *p 260-261* 7.4 The Bohr Model *p 262-265* 7.5 The Quantum Mechanical Model of the Atom *p 266* 7.6 Quantum numbers *p 269* 7.7 Orbital Shapes and Energies *p 270-272* 7.8 Electron Spin and the Pauli Principle *p 273* 7.9 Polyelectronic Atoms *p 274-275* 7.10 The Aufbau Principle and the Periodic Table *p 278-284*

	7.12 Periodic Trends in Atomic Properties *p 284-287, 289-291*
Chapter 8 Bonding: General Concepts	8.1 Tyes of Chemical Bonds *p 301-302, 304-305* 8.2 Electronegativity *p 305-307* 8.3 Bond Polarity and Dipole Moments *p 307-310* 8.4 Ions: Electron Configurations and Sizes *p 310-314* 8.5 Energy Effects in Binary Ionic Compounds *p 314-315* 8.6 Partial Ionic Character of Covalent Bonds *p 318* 8.7 The Covalent Chemical Bond: A Model *p 319* 8.9 The Localized Electron Bonding Model *p 325* 8.10 Lewis Structures *p 325-329* 8.11 Exceptions to the Octet Rule *p 329-332* 8.12 Resonance *p 333-337* 8.13 Molecular Structure *p 337-350*
Chapter 9 Covalent Bonding: Orbitals	9.1 Hybridization and the Localized Electron Model *p 355-362 (till the end of the first figure) p 364-366* 9.2 Paramagnetism *p 372 (first paragraph)*

26. Weekly Schedule			**26. الجدول الأسبوعي**	
Week **الأسبوع**	**Date** **التاريخ**	**Topics Covered** **الموضوعات المتناولة**	**CILOs** **مخرجات التعلُم (CILOs) للمقرر**	**Teaching/Assessment Mode and Method** **منهجية ونمط التدريس/التقييم**
1		(2) 2.5 The Modern View of Atomic Structure: An Introduction 2.6 Molecules and Ions 2.7 The Periodic Table 2.8 Naming Simple Compounds	*1*	Traditional تقليدي
2		(3) 3.1 Counting by Weighing 3.2 Atomic Masses 3.3 The Mole 3.4 Molar Mass 3.6 Percent Composition of Compounds 3.7 Determining the Formula of a Compound	**1**	Traditional تقليدي

3		3.8 Chemical Equations 3.9 Balancing Chemical Equations 3.10 Stoichiometric Calculations: Amounts of Reactants and Products 3.11 The Concept of Limiting Reactant.	**1**	Traditional تقليدي
4		(4) 4.1 Water, the Common Solvent 4.2 The Nature of Aqueous Solutions: Strong and Weak Electrolytes 4.3 The Composition of Solutions 4.4 Types of Chemical Reactions	**2,4**	Traditional تقليدي
5		4.5 Precipitation Reactions 4.6 Describing Reactions in Solution 4.8 Acid-Base Reactions 4.9 Oxidation-Reduction Reactions	**2**	Traditional تقليدي
6		4.9 Oxidation-Reduction Reactions **(Tutorial)** (11) 11.1 Solution Composition 11.3 Factors Affecting Solubility	**2**	Choose an item.
7		11.4 The Vapor Pressures of Solutions 11.5 Boiling-Point Elevation and Freezing-Point Depression 11.6 Osmotic Pressure	**1,2**	Traditional تقليدي
8		11.7 Colligative Properties of Electrolyte Solutions 11.8 Colloids	**2**	Traditional تقليدي
9		5.1 Pressure 5.2 The Gas Laws of Boyle, Charles, and Avogadro 5.3 The Ideal Gas Law	**3**	Traditional تقليدي

		5.4 Gas Stoichiometry 5.5 Dalton's Law of Partial Pressures		
10		7.1 Electromagnetic Radiation *p 252-253* 7.2 The Nature of Matter 7.3 The Atomic Spectrum of Hydrogen 7.4 The Bohr Model 7.5 The Quantum Mechanical Model of the Atom 7.6 Quantum numbers	**3**	Traditional تقليدي
11		7.7 Orbital Shapes and Energies 7.8 Electron Spin and the Pauli Principle 7.9 Polyelectronic Atoms 7.10 The Aufbau Principle and the Periodic Table **(Tutorial)**	**3**	Traditional تقليدي
12		7.12 Periodic Trends in Atomic Properties (8) 8.1 Tyes of Chemical Bonds 8.2 Electronegativity	**3,4**	Traditional تقليدي
13		8.3 Bond Polarity and Dipole Moments 8.4 Ions: Electron Configurations and Sizes 8.5 Energy Effects in Binary Ionic Compounds 8.6 Partial Ionic Character of Covalent Bonds	**3.4**	Traditional تقليدي
14		8.7 The Covalent Chemical Bond: A Model 8.9 The Localized Electron Bonding Model .10 Lewis Structures 8.11 Exceptions to the Octet Rule	**3,4**	Traditional تقليدي

		8.12 Resonance 8.13 Molecular Structure		
15		(9) 9.1 Hybridization and the Localized Electron Model 9.2 Paramagnetism (Tutorial)	**3,4**	Traditional تقليدي
16				

27. Academic Integrity Statement	**27. بيان النزاهة الأكاديمية**
Students are to observe the highest level of honesty and academic ethics in pursuit of their academic goals as per UOB Regulations of Student Conduct and Academic Integrity, Anti-plagiarism Policies, and Students' Rights and Responsibilities Handbook. The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious and will be dealt with as per the aforementioned policies and regulations.	يتعيّن على الطلبة الالتزام بأعلى مستويات الصدق والأمانة والأخلاق الأكاديمية في سعيهم لتحقيق أهدافهم الأكاديمية وفقًا للوائح سلوك الطلاب والنزاهة الأكاديمية، سياسات مكافحة الانتحال، ودليل حقوق الطلبة وواجباتهم، المعمول بها في جامعة البحرين. يمكن لعواقب الغش والسرقة الأدبية والتعاون غير المصرح به وغيرها من أشكال عدم الأمانة الأكاديمية أن تكون خطيرة للغاية وسيتم التعامل معها وفقًا للسياسات واللوائح المذكورة آنفا.
28. Attendance and Absence Regulations	**28. نظام الحضور والغياب**
Students are required to adhere to regular attendance for class lectures and practical sessions, as determined by the nature of the course, as per Article (33) of Regulations of Study and Examination at the University of Bahrain.	يجب على الطلبة الالتزام بالحضور المنتظم للمحاضرات الصفية والعملية، حسبما تحدده طبيعة المقرر الدراسي، ووفقا للمادة (33) من نظام الدراسة والامتحانات في جامعة البحرين.