



Jordan University of Science and Technology
Faculty of Science & Arts
Chemistry Department

CHEM103 General Chemistry

Summer Semester 2019-2020

Course Catalog

3 Credit Hours. The CHEM 103 course focuses the attention on different aspects of Chemistry. It starts with discussing Chemistry: Matter & Measurements, periodic properties, the mole & Mass Relationships in Chemical Reactions, Reactions in Aqueous Solutions. In the second part of the course discusses Chemical Bonding, Gases, and the Physical Properties of Solutions are intensively discussed. In the third part, Chemical Kinetics & Acids -Bases are explained and studied.

Text Book

Title	Chemistry: The Central Science
Author(s)	Brown, LeMay, Bursten, Murphy, & Woodward.
Edition	12th Edition
Short Name	Text Book
Other Information	

Instructor

Name	Dr. Mazin Shatnawi
Office Location	N4 L0
Office Hours	Sun : 10:00 - 11:00 Mon : 13:00 - 14:00 Tue : 10:00 - 11:00 Wed : 10:00 - 11:00 Thu : 10:00 - 12:00
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Instructor

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Instructor	
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Class Schedule & Room
<p>Section 1: Lecture Time: Sun, Mon, Tue, Wed : 08:30 - 10:00 Room: منصة الكترونية</p> <p>Section 3: Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30 Room: منصة الكترونية</p> <p>Section 4: Lecture Time: Sun, Mon, Tue, Wed : 13:00 - 14:30 Room: منصة الكترونية</p> <p>Section 7: Lecture Time: Sun, Mon, Tue, Wed : 14:30 - 16:00 Room: منصة الكترونية</p> <p>Section 8: Lecture Time: Sun, Mon, Tue, Wed : 14:30 - 16:00 Room: منصة الكترونية</p> <p>Section 9: Lecture Time: Sun, Mon, Tue, Wed : 11:30 - 13:00 Room: منصة الكترونية</p>

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Matter & Measurements 1.4 Units of Measurement 1.5 Uncertainty in Measurement 1.6 Dimensional Analysis	Ch. 1 From Text Book
Weeks 2, 3	2. Atoms, Molecules, and Ions 2.5 The Periodic Table 2.7 Ions and Ionic Compounds 3. Stoichiometry: Calculations with Chemical Formula and Equations 3.4 Avogadro's Number and the Mole	Ch. 2+3 From Text Book
Week 3	3.6 Quantitative Information from Balanced Equation 3.7 Limiting Reactants	Ch. 3 From Text Book
Week 4	Aqueous Reactions and Solution Stoichiometry 4.5 Concentrations of Solutions 4.6 Solution Stoichiometry and Chemical Analysis	Ch. 4 From Text Book

Week 5	Basic Concepts of Chemical Bonding 8.1 Chemical Bonds, Lewis Symbols, and the Octet Rule 8.2 Ionic Bonding (includes Ionic Radius Trends in Chapter 7-section 7.3) 8.3 Covalent Bonding 8.4 Bond Polarity and Electronegativity	Ch. 8 From Text Book
Weeks 6, 7	Gases 10.2 Pressure 10.3 The Gas Laws 10.4 The Ideal-Gas Equation 10.5 Further Applications of the Ideal-Gas Equation 10.6 Gas Mixture and Partial Pressures 10.8 Molecular Effusion & Diffusion	Ch. 10 From Text Book
Week 8	Physical Properties of Solutions 13.4 Ways of Expressing Concentration 13.5 Colligative Properties	Ch. 13 From Text Book
Weeks 9, 10	Chemical Kinetics 14.1 Factors Affecting Reaction Rates 14.2 Reaction Rates 14.3 Concentration and Rate Laws 14.4 The Change of Concentration with Time 14.5 Temperature and Rate	Ch. 14 From Text Book
Weeks 11, 12, 13	Acid-Base Equilibria 16.1 Arrhenius Definition of Acids & Bases 16.2 Brønsted-Lowry Acids & Bases 16.3 The Autoionization of Water 16.4 The pH Scale 16.5 Strength of Acids & Bases 16.6 Weak Acids 16.7 Weak Bases 16.8 Relationship Between K_a & K_b 16.9 Acid-Base Properties of Salt Solutions 16.11 Lewis Acids & Bases	Ch. 16 From Text Book
Week 14	Additional Aspects of Aqueous Equilibria 17.1 The Common-Ion Effect 17.2 Buffered Solutions	Ch. 17 From Text Book
Week 15	Revision	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Perform stoichiometric calculations with units and applying rules of significant figures. [1a, 1b]	36%	
Know the periodic trends and different types of chemical bonds. Know the different gas laws and the general gas law and their applications and perform calculations involving gas phase reactions. Know properties of solutions and colligative properties. [1a, 1b]	36%	
Know the fundamentals of chemical kinetics, rate law, reaction order, and rate-temperature relationship. Know the chemistry of acids and bases, pH calculations, buffer calculations, and acid-base properties of salts. [1a, 1b, 1e, 1k]	28%	

Relationship to Program Student Outcomes (Out of 100%)										
a	b	c	d	e	f	g	h	i	j	k
43	43			7						7

Evaluation	
Assessment Tool	Weight
First	30%

second	30%
Final	40%

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