



كلية الصيدلة جامعة الزيتونة الأردنية
Faculty of Pharmacy
Al-Zaytoonah University of Jordan

" نحو تعليم صيدلاني متميز "
Toward Excellence in Pharmaceutical
Education

زيتونة الأردنية
Al-Zaytoonah University of Jordan
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Faculty of Pharmacy



" Tradition and Quality "

Detailed Course Description - Course Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-3.0E
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Faculty	Pharmacy	Department	Pharmacy
Course number	201143	Course title	General Chemistry for engineering
Number of credit hours	3	Pre-requisite/co-requisite	-

Brief course description

This course introduces the fundamental basics of chemistry to engineering students. The course covers the topics stoichiometry, thermochemistry, chemical bonding, chemical kinetics and chemical equilibrium.

Course goals and learning outcomes	
Goal 1	Comprehension of stoichiometry.
Learning outcomes	1.1 Students should be able to correlate between the chemical formula of a compound and the quantitative relationship between its individual elements. 1.2 Students should gain the ability to determine the chemical formula of a compound from its mass percentages. 1.3 Students should be able to calculate the amounts of reactants and products in a balanced chemical equation.
Goal 2	Application of thermodynamic concepts on chemical reactions
Learning outcomes	2.1 Students should understand the thermodynamic description of chemical reactions. 2.2 Students should gain the ability to calculate the enthalpy change of chemical reactions. 2.3 Students should become familiar with calorimetry and how it is used to determine enthalpy changes of reactions.
Goal 3	Understanding the concepts of kinetics and equilibrium in chemical reactions
Learning outcomes	3.1 Students should gain the ability to determine the factors that govern the rates of chemical reactions. 3.2 Students should understand the concepts of reaction mechanisms and chemical equilibrium. 3.3 Students should be able to determine the equilibrium constant of a chemical reaction and understand the factors that affect it.
Textbook	Chemistry, The Central Science, Brown , LeMay , Bursten and Murphy , Prentice Hall
Supplementary references	1. General Chemistry; by Ebbing and Gammon, Houghton Mifflin. 2. Chemistry; by Chang, McGraw Hill. 3. Chemistry; by Zumdahl and Zumdahl, Houghton Mifflin. 4. Chemistry, The Molecular Nature of Matter and Change; by Silberberg, McGraw Hill.



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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1	- Introduction	Ch#1	
	1	- The study of chemistry.		
	1	- Properties of Matter.		
02	1	- Units of measurement.	Ch#1	
	1	- Uncertainty in measurement.		
	1	- Dimensional analysis		
03	1	- The atomic theory of matter.	Ch#2	
	1	- The discovery of atomic structure.		
	1	- The modern view of atomic structure.		
04	1	- The Periodic Table.	Ch#2	
	1	- Molecules and molecular compounds.		
	1	- Ions & Ionic compounds.		
05	1	- Chemical equations and patterns of chemical reactivity	Ch#3	
	1	- Atomic and molecular weights and the mole.		
	1	- Empirical formulas from analyses		
06	1	- Quantitative information from balanced equations.	Ch#3	
	1	- Limiting reactants.		
	1	-First Exam.		
07	1	- Solution composition and properties of solutes in aqueous solution.	Ch#4	
	1	- Acids, bases, and salts.		
	1	- Ionic equations		
08	1	- Metathesis reactions.	Ch#4	
	1	- Introduction to oxidation - reduction reactions.		
	1	- Solution Stoichiometry and chemical analysis		
09	1	- The nature of energy and 1 st law of thermodynamics.	Ch#5	
	1			
	1	- Enthalpy and Enthalpies of reactions.		
10	1	- Calorimetry	Ch#5	
	1	- Hess's law		
	1	- Enthalpies of formation		
11	1	- Electron configuration and the periodic table.	Ch#6	
	1	- Lewis symbols and the octal rule.	Ch#8	
	1	- Ionic bonding and size of ions		
12	1	-Covalent bonding, bond polarity and electronegativity.	Ch#8	
	1	- Drawing Lewis structures and resonance structures.		
	1	- Exceptions to the octet rule, strengths of covalent bonds, and oxidation numbers.		



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13	1	- Second Exam	Ch#9 Ch#14	
	1	- Molecular Shapes, the VSEPR theory, covalent bonding, VBT theory and Hybrid orbitals.		
	1	- Factors that affect reaction rates. - Reaction rates, and the rate law.		
14	1	- Concentration and rate, and the change of concentration with time	Ch#14	
	1	- Temperature and rate and reaction mechanisms		
	1	catalysis.		
15	1	- The concept of equilibrium and equilibrium constant.	Ch#15	
	1	- Heterogeneous equilibrium.		
	1	- Calculating equilibrium constant. - Application of equilibrium constant. Le Chatelier's principle		
16	1	Final Exam		
	1			
	1			

Theoretical course evaluation methods and weight	First exam 20% Second exam 20% Student's work 10% Final exam 50%	Practical (clinical) course evaluation methods	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Laurance Bourghli	Office Number	410
Phone number (extension)	197	Email	laurance.bourghli@zuj.edu.jo
Office hours			