



Course Specifications

Course Title:	General Chemistry 1
Course Code:	4021101-4
Program:	Chemistry - Industrial Chemistry – Physics - Medical Physics – Biology – Microbiology - Mathematics
Department:	Department of chemistry
College:	Faculty of Applied Science/
Institution:	Umm Al-qura University

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	3
C. Course Content	4
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	6
F. Learning Resources and Facilities	6
1. Learning Resources	6
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	7

A. Course Identification

1. Credit hours: 4
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:
4. Pre-requisites for this course (if any):
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	✓	74
2	Blended		
3	E-learning	✓	26
4	Distance learning		
5	Other	45	

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	22
2	Laboratory/Studio	30
3	Tutorial	--
4	Others (E-learning + Exams + office hours)	15
	Total	67

B. Course Objectives and Learning Outcomes

1. Course Description

Course Description: This course is an introductory chemistry course designed to prepare students for college level chemistry courses. The course introduces some basic principles of physical, organic and inorganic chemistry.

2. Course Main Objective

The course introduces some basic principles of physical, organic and inorganic chemistry.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	

CLOs		Aligned PLOs
1.1	Knows International system of units	K1
1.2	State laws that describe the behavior of ideal gases.	K1
1.3	Define surface tension and viscosity	K1
1.4	State concentrations units	K2
1.5	Mention the first law of thermodynamics.	K3
1.6	List the factors affecting equilibrium position and equilibrium concentration.	K1
1.7	State Hess's law and applications	K1
1.8	Define corrosion	K1
2 Skills :		
2.1	Summarize gases laws	S1
2.2	Compare between ideal and real gases	S1
2.3	Apply Hess's law for the calculation of heat of reaction.	S1
2.4	Apply Faraday's laws for calculating the amount deposited at electrodes	S1
2.5	Predict the spontaneity of chemical reaction.	S2
2.6	Calculate the density and molecular weight of a gas using gas's laws	S3
2.7	Calculate pH's of weak acid and base	S3
3 Values:		
3.1	Write and present a chemical report related to general chemistry.	V2
3.2	work individually and in a team to perform a specific experiment or preparing a report on the aliphatic chemistry	V3

C. Course Content

No	List of Topics	Contact Hours
1	Units of measurements; SI- units, intensive and extensive properties, uncertainty in measurements (precision and accuracy).	2
2	Significant figures: Rounding significant figures, Using significant figures in addition, subtraction, multiplication and divisions.	2
3	States of matter and measurement, molecules and molecular compounds, surface tension and viscosity.	1+1E
4	Gases; properties, laws of gases, ideal and real, calculations of density and molecular weight of gases.	2+2E
5	The mole, simple quantitative calculations with chemical reactions.	4
6	Basics of chemical equilibrium.	4
7	Acids and bases; types of acids and bases, ionization of water, calculation of pH of solutions; strong acids and bases, weak acids and bases.	2+2E
8	Thermochemistry, first law of thermodynamics, kinds of systems, enthalpy, heat of reaction, Hess's law and applications.	3+1E
9	Electrochemistry; oxidation-reduction, standard electrode potential, Batteries and corrosion.	2+2E
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Knows International system of units	Lectures Library visits Web-based study Library visits	Exam
1.2	State laws that describe the behavior of ideal gases.	Lectures	Exam
1.3	Define surface tension and viscosity	E-Learning	Assignments and activities on blackboard
1.4	State concentrations units	Lectures	Mid-term
1.5	Mention the first law of thermodynamics.	Lectures	Exam
1.6	List the factors affecting equilibrium position and equilibrium concentration.	Lectures	Exam
1.7	State Hess's law and applications	E-Learning Self-study	Assignments and activities on blackboard
1.8	Define corrosion	Self-study	Assignments
2.0	Skills		
2.1	Summarize gases laws	Lectures	Exam
2.2	Compare between ideal and real gases	Lectures Scientific discussion	Quiz
2.3	Apply Hess's law for the calculation of heat of reaction.	Lectures	Exam
2.4	Apply Faraday's laws for calculating the amount deposited at electrodes		
2.5	Predict the spontaneity of chemical reaction.		
2.6	Calculate the density and molecular weight of a gas using gas's laws	E-Learning	Assignments and activities on blackboard
2.7	Calculate pH's of weak acid and bse	E-Learning	Assignments and activities on blackboard
3.0	Values		
3.1	Write and present a chemical report related to general chemistry.	Lab work	Practical Lab report and Exam
3.2	work individually and in a team to perform a specific experiment or preparing a report on the aliphatic chemistry	Lab work	Practical Lab report and Exam

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	E-learning	All weeks	5%
2	Assignments and activities.	All weeks	5%
3	Mid-term Exam.	8	20 %

#	Assessment task*	Week Due	Percentage of Total Assessment Score
4	Practical Lab works (Reports and Exam)	11	30 %
5	Final Exam. (2 hours exam)	12	40 %

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<i>P. Atkins and J. de Paula</i> , Physical Chemistry, 10 th ed., 2006, New York.
Essential References Materials	Steven S. Zumdahl, Susan A. Zumdahl, 9 th ed., 2009, New York.
Electronic Materials	Power point lectures.
Other Learning Materials	Course available online

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	Faculty	Indirect
Quality of learning resources	Faculty	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Council
Reference No.	1
Date	2022

Head of Chemistry Department



Dr Moataz Morad

