Course Specification

(Bachelor)

Course Title:	GENERAL CHEMISTRY
Course Code:	101CHEM-4
Program:	Bachelor of Science in Chemistry
Department:	Physical Sciences
College:	College of Science
Institution:	Jazan University (JU)
Version:	TP 153 2024
Last Revision Date:	5/5/2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (4h)

2. Course type

A.	☐ University	☒ College	☐ Department	☐Track	☐Others
B.	☒ Required		☐Elective		

3. Level/year at which this course is offered: (2 L , 1st Year)

4. Course general Description:

Course Title	*Course Number*	*Contact Hours (CH)*		*Credit unit (CU)*	*Year*	*Level*	*Pre-requisite*
		Lec.	*Prac.*				
General Chemistry	*101CHEM4*	*3*	*2*	*4*	*1st*	*2*	*none*

The** General Chemistry course **aims to give the students some variety of information about the different topics. It is meant to introduce the students to the special chemistry courses in the next stages.

Course objectives: They are to identify the following.

- ***Recognize the students some information about the different gas laws and their applications***
- ***Recognize the students some properties of the liquids.***
- ***Recognize the students, the structure of the atoms, and the different atomic theories.***
- ***Recognize the students the chemical bonding and its properties.***
- ***Recognize the students the chemical elements and their properties from the periodic table.***

Syllabus: A-Theoretical contents

The scientific content of the theoretical part:

- ***The atomic structure- Periodic table- Chemical bonds- Gases- Chemical equilibrium – Ionic equilibrium- Liquids- Introduction to organic chemistry.***

Syllabus: A-Practical contents

Identification of anions and cations of simple unknown organic salt.

5. Pre-requirements for this course (if any)**:**

none

6. Co-requisites for this course (if any)**:**

none

7. Course Main Objective(s):

The course of General Chemistry aims to give the students some variety of information about the different branches of chemistry that are needed in the next stages.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
	Traditional classroom	75	100
	E-learning		
	• Hybrid		
	Traditional classroom		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**; (Upon completion of the course, student will be able to)			
1.1	Demonstrate a broad, knowledge and understanding in fundamentals of general chemistry (I)	K(1.1)	Lectures, Class Discussion	Objective Q
1.2	Describe the phenomenon of liquid state, boiling point, vapor pressure, surface tension, chemical equilibrium, ionic equilibrium, type of bonds and introduction to organic compounds. (I)	K(1.2)	Lectures, Class Discussion	Objective Q
...				
2.0	**Skills**; (Upon completion of the course, student will be able to)			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.1	***Demonstrate the gained knowledge and skills to solve problems associated with different topics in the course as, gas law, pH, chemical equilibrium, etc. (I)***	S(2.1)	***Lectures, Class Discussion***	***Solve problem***
2.2	***Design and carry out qualitative experiments to identify different anion and cations of selected compounds (I)***	S(2.2)	***Lab work, group work***	***Lab Report.***
...	***Know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals. (I)***	S(2.3)	***Lab Discussion***	***Safety Exam.***

C. Course Content

No	List of Topics	Contact Hours
1.	Matter and measurements	5
2.	Atoms-molecules and periodic tables	5
3.	The electronic structure of the atoms.	5
4.	chemical bonds	5
5.	Gases	5
6.	Liquids	5
7.	Chemical equilibrium	5
8.	ionic equilibrium	5
9.	introduction to organic chemistry	5
10.	Selected experiments related to salt identification	30

Total		**55**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework assignment	2-12	4 %
2.	Lecture Quizzes	3-12	1 %
3.	Mid-term exam	9-11	15 %
4.	LAB Sheet	15	2 %
5.	Quiz in Safety	10-15	3%
6.	Final practical exam	15	15 %
7.	Lab report	2-14	10 %
8.	Final Exam	16-17	50 %
...	Total		100 %

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	**Principles of general chemistry, Remond Chang., Obeikan Library, August, 2014.**
Supportive References	• Principles and Applications of general chemistry, Remond Chang.chemistry.com.pk/books/chemistry (10th Edition), 2017. • Introduction to organic chemistry, (7th Edition) written by Mark Weller, Tina Overton, Jonathan Rourke and Fraser Armstrong, Published by chemistry.com.pk. November 17, 2020 Introduction to physical chemistry, David Ronis, published by McGill University, 2015.
Electronic Materials	**Simplify of general chemistry, Saeed Abdullah Balubaid, (1st Edition), King Saud University, 2006.**
Other Learning Materials	https://chem.libretexts.org/Special:Search?qid=&fpid=230&fpth=&query=general+chemistry&type=wiki https://chemistry.com.pk/books/inorganic-chemistry-6e-by-shriver-weller-overton-rourke-armstrong/ https://chemistry.com.pk/books/chemistry-10e-by-zumdahl-and-decoste/

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1 Lecture room for groups of 50 students.
Technology equipment (projector, smart board, software)	1 Laboratory for a group of 25 students
Other equipment (depending on the nature of the specialty)	Data show, smart Board, ChemDraw, PowerPoint and ActivInspire

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	
Effectiveness of Students assessment		Liker-type Survey (CES) Indirect
Quality of learning resources	Instructor & Course coordinator	Class room evaluation
The extent to which CLOs have been achieved	(direct & indirect)	
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Physical Sciences Department Council
REFERENCE NO.	Psci2415
DATE	28/03/1446 Corresponding to 1 / 10 /2024

H. Attachments

1- Practical Work

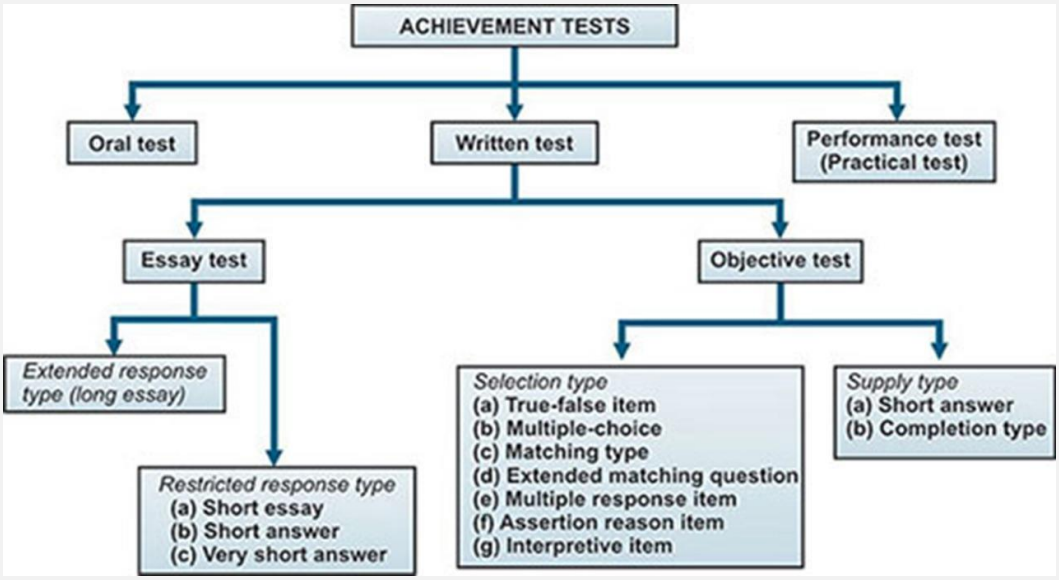
Week	EXPERMENTAL TITLE	Chemicals and Apparatus used	Remarks
1	Safety and regulations	Tubes, pipet, beakers, bottles,…etc	
2	Experiment no. 1 Group 1 acidic radical	Dil HCl, CO_3^{--}, HCO_3^{-}, $S_2O_3^{--}$, $BaCl_2$, $MgSO_4$	
3	Experiment no. 2 Group 2 acidic radical	Conc. H_2SO_4, Cl^{-}, Br^{-}, I^{-}, NO_3^{-}, $AgNO_3$, $Pb(CH_3COO)_2$	
4	Experiment no. 3 Group 3 acidic radical	$BaCl_2$, $AgNO_3$, SO_4^{--}, $B_4O_7^{--}$, PO_4^{---}	
5	Experiment no. 4 Group 1 basic radical	Pb^{+2}, dil HCl, KI, K_2CrO_4	
6	Acid Radical revision		
7	Experiment no. 5 Group 2 basic radical	Cu^{+2}, $Cd^{+2,}$ Bi^{+3}, dil HCl, H_2S,NaOH, NH_4OH	
8	Experiment no. 6 Group 3 basic radical	Al^{+3}, Fe^{+3}, Fe^{+2}, Cr^{+3}, NaOH, NH_4OH, NH_4Cl.	
9	Experiment no. 7 Group 4 basic radical	Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, NaOH, NH_4OH, NH_4Cl, H_2S, $K_3[Fe(CN)_6]$	
10	Experiment no. 8 Group 5 basic radical	Ca^{+2}, Sr^{+2}, Ba^{+2}, NaOH, NH_4OH, NH_4Cl,($NH_4)_2CO_3$, K_2CrO_4, $K_2Cr_2O_7$	
11	Experiment no. 9 Group 6 basic radical Group 6 basic radical	Na^{+}, K^{+}, Mg^{+2}, NH_4^{+}, NaOH, NH_4OH, NH_4Cl, ($NH_4)_2CO_3$,	
12	Acid Radical revision		
13-14	Acid /Base radicals unknown revision		
15	Final practical exam		

2- Blue Print

Course Name	General Chemistry
Course Code	101 CHEM-4

PLOs	K1	K2	S1	S2	S3	S4	V1	V2
CLOs	1.1	1.2	2.1	2.2	2.3	2.4	3.1	3.2
Marks	40	20	10	27	3	--	--	---

Learning Domain	PLOs	CLOs	Assessment Type	Assessment Tool	No of Questions	Marks of the Assessment	Weight of the Assessment
Knowledge & understanding	K1	1.1 (40M)	Homework 1	Objective Q & Essay Q	10	2	2
			Mid term	Objective Q & Essay Q	18	9	9
			Final Exam	Objective Q & Essay Q	29	29	29
	K2	1.2 (20M)	Homework 2	Objective Q & Essay Q	10	2	2
			Mid term	Objective Q & Essay Q	8	4	4
			Final Exam	Objective Q & Essay Q	14	14	14
Skills	S1	2.1 (10M)	Quiz 1	Solving Problems	5	1	1
			Mid term	Solving Problems	4	2	2
			Final Exam	Solving Problems	7	7	7
	S2	2.2 (27M)	Practical Sheet	Objective Q	5	2	2
			Lab Report	Rubric	10	10	10
			Final Lab Exam	Rubric	2	15	15
	S3	2.3 (3M)	Safety Quiz	Objective Q	6	3	3
TOTAL		100					100


ACHIEVEMENT TESTS
Oral test
Written test
Performance test (Practical test)
Essay test
Objective test
Extended response type (long essay)
Restricted response type
(a) Short essay
(b) Short answer
(c) Very short answer
Selection type
(a) True-false item
(b) Multiple-choice
(c) Matching type
(d) Extended matching question
(e) Multiple response item
(f) Assertion reason item
(g) Interpretive item
Supply type
(a) Short answer
(b) Completion type