هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	**GENERAL CHEMISTRY**
Course Code:	**101CHEM-4**
Program:	**Bachelor in Chemistry**
Department:	**Chemistry**
College:	**College of Science**
Institution:	**Jazan University (JU)**
Version:	**T104 2022**
Last Revision Date:	**25 December 2022**

Table of Contents:

A. General information about the course:

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:	*Level 1* *Year 1*						

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*	*1*	*1*	*none*

The course of General chemistry aims to give the students some variety information about the different topics. It is meant to introduce the students to study 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- requirements for this course (if any): *None*

7. Course Main Objective(s)

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

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	33	100
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	33
2.	Laboratory/Studio	22
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	55

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 Essay Q***
2.0	Skills: (Upon completion of the course, student will be able to)			
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***

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
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.***
2.3	***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	4
2.	Atoms-molecules and periodic tabled	4
3.	The electronic structure of the atoms.	4
4.	chemical bonds	4
5.	Gases	3
6.	Liquids	4
7.	Chemical equilibrium	3
8.	ionic equilibrium	3
9.	introduction to organic chemistry	4
10.	Selected experiments related to salt identification	22
Total		55

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	***Homework assignment***	***2-10***	***4 %***
2.	***Lecture Quizzes***	***3-10***	***1 %***
3.	***Mid-term exam***	***6-8***	***15 %***
4.	***LAB Sheet***	***11***	***2 %***
5.	***Quiz in Safety***	***10-11***	***3%***
6.	***Final practical exam***	***11***	***15 %***
7.	***Lab report***	***2-10***	***10 %***
8.	***Final Exam***	12***-13***	***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, demonstration rooms/labs, etc.)	1 Lecture room for groups of 50 students. 1 Laboratory for group of 25 students
Technology equipment (AV, data show, Smart Board, software, etc.)	Data show, smart Board, ChemDraw, power point and ActivInspire
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Chemical reagents, test tubes, pipette and dis. Water.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching and Assessment	Student	Liker-type Survey (CES) Indirect
Extent of achievement of course learning outcomes	Instructor & Course coordinator	Class room evaluation (direct & indirect)
Quality of learning resources	Program coordinator	Indirect
Exam Quality assessment	Assessment committee	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching and Assessment	Student	Liker-type Survey (CES) Indirect

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)

G. Specification Approval Data

COUNCIL /COMMITTEE	Chemistry Department Council **CHEMS2301**
REFERENCE NO.	**CHEMS230104**
DATE	**11/1/2023G – 18/06/1444H**

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^{-}, $S_2O_3^{--}$, $BaCl_2$, $MgSO_4$	

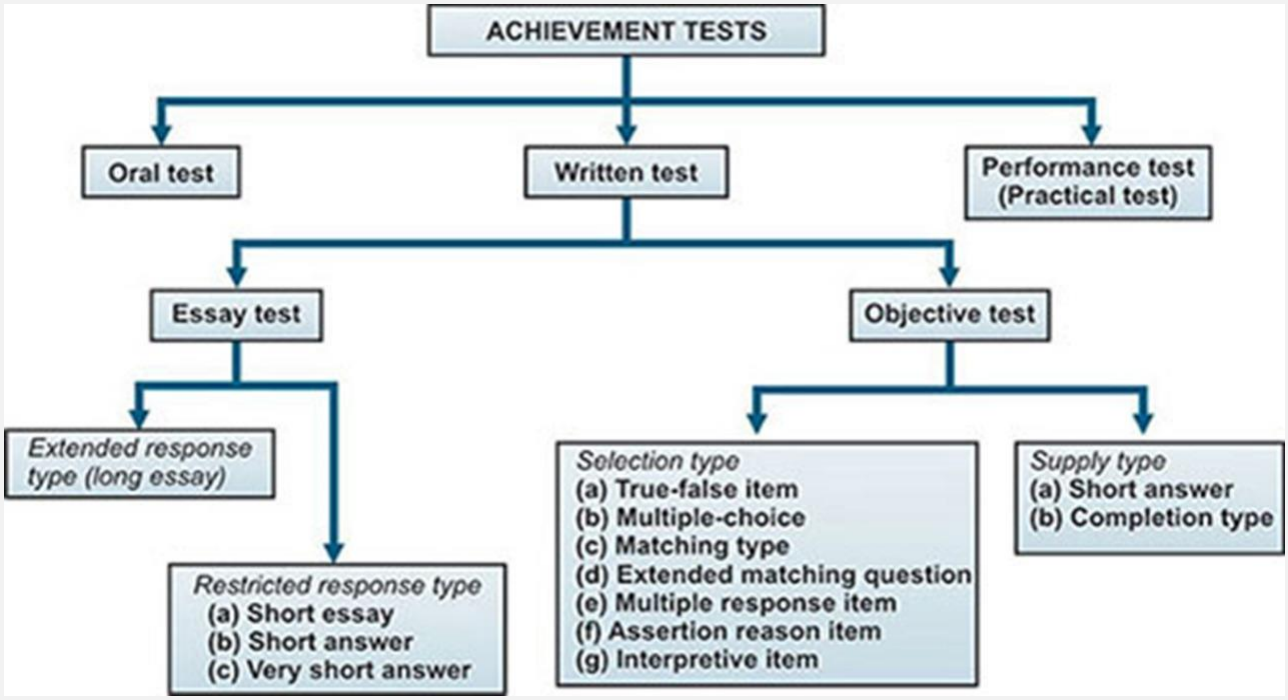
3	***Experiment no. 2*** Group 2 acidic radical	Conc. H_2SO_4, Cl^-, Br^-, I^-, NO_3^-, $AgNO_3$, $Pb(CH_3COO)_2$	
4	***Experiment no. 3*** Group 3 acidic radical	$BaCl_2$, $AgNO_3$, SO_4^{--}, $B_4O_7^{--}$, PO_4^{---}	
5	***Experiment no. 4*** Group 1 basic radical	Pb^{+2}, dil HCl, KI, K_2CrO_4	
6	***Experiment no. 5*** Group 2 basic radical	Cu^{+2}, $Cd^{+2,}$ Bi^{+3}, dil HCl, H_2S,NaOH, NH_4OH	
7	***Experiment no. 6*** Group 3 basic radical	Al^{+3}, Fe^{+3}, Fe^{+2}, Cr^{+3}, NaOH, NH_4OH, NH_4Cl.	
8	***Experiment no. 7*** Group 4 basic radical	Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, NaOH, NH_4OH, NH_4Cl, H_2S, $K_3[Fe(CN)_6]$	
9	***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, $K_2Cr_2O_7$	
10	***Experiment no. 9*** Group 6 basic radical Group 6 basic radical	Na^+, K^+, Mg^{+2}, NH_4^+, NaOH, NH_4OH, NH_4Cl, ($NH_4)_2CO_3$,	
11	***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