هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	**General Chemistry**
Course Code:	**CHEM 101**
Program:	**Bachelor in Chemistry**
Department:	**Chemistry**
College:	**College of Science**
Institution:	**Jazan university (JU)**

Table of Contents

A. Course Identification

1. Credit hours:4	**Workload: 207.2** **ECTS: 7.4**
2. Course type	
a.	University ☐ College ☑ Department ☐ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**L 2, Year 1**
4. Pre-requisites for this course (if any)**:**	**none**
5. Co-requisites for this course (if any)**:**	**none**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom** **LAB**	45 30	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

Course Title	*Course Number*	*Contact Hours (CH)*		*Credit unit (CU)*	*Year*	*Level*	*Pre-requisite*
		Lec.	*Prac.*				
General Chemistry	*101 chem*	*3*	*2*	*4*	*1st*	*2nd*	--------

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.

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

Syllabus: A-Theoretical contents

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

Syllabus: B-Practical contents

Identification of anions and cations of simple unknown organic salt.

Ass: selected experiments for the identification of anionic and cationic radicals.

*See attachment

2. Course Main Objective

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.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding** ***Up on completing this course, student will be able to***	
1.1	*demonstrate a broad, knowledge and understanding in fundamentals of general chemistry (I)*	K.1
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.2
2	**Skills:** ***Up on completing this 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.1
2.2	*Design and carry out qualitative experiments to identify different anion and cation of selected compounds (I)*	S.2
2.3	*Know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals. (I)*	S. 3
3	**Values:** ***Up on completing this course, student will be able to***	
3.1	*Work as a leader in cooperation with other colleagues.*	V. 1

C. Course Content

No	List of Topics	Contact Hours
1	***Matter and measurements***	5
2	***Atoms-molecules and periodic tabled***	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		75

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	*demonstrate a broad, knowledge in fundamentals of general chemistry (I)*	Lectures, Class Discussion	Quiz, Exams
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)*	Lectures, Class Discussion	Quiz, Exams
2.0	**Skills**		
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)*	Lectures, Class Discussion	Quiz, Exams.
2.2	*Design and carry out qualitative experiments to identify different anion and cation of selected compounds (I)*	Lab Work	Lab Report.
2.3	*Know and follow proper procedures and regulations for safe handling, use, and disposal of chemicals. (I)*	Lab Discussion	Quiz.
3.0	**Values**		
3.1	*Work as a leader in cooperation with other colleagues*	Lab Work	Group work. Lab Discussion.

2. Assessment Tasks for Students

#	Assessment task*		Week Due	Percentage of Total Assessment Score
1	Quiz		5	0
2	H.W		8	0
3	Mid Term Exam		9	20
4	Quiz in Safety		13	0
5	LAB	Sheet	13	10
6		final	14	20
7	Final Exam		17	50
8	Total			100

***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: Instructor possess 4h\day for consultation of students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Principles of general chemistry, Remond Chang., Obeikan Library, August, 2014.
Essential References Materials	• 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. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	***1 Lecture room for groups of 50 students.*** ***1 Laboratory for group of 25 students***
Technology Resources (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.***

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching and Assessment	***Student***	***Likert-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***

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	**Chemistry Department Council**
Reference No.	42 / 35 /102 112
Date	17 /09 /1442 Corresponding to 28 / 04 /2021

Attachment 1:

No	*Title of Experiment*	*Tools, Chemicals, and equipment Needed in Experiments*	*No of Weeks*	*Contact Hours*	*Total contact hours*
1	General lab. safety	Tubes, pipet, beakers, bottles,…etc	1	2	30h
2	Group 1 acidic radical	Dil HCl, CO_3^{--}, HCO_3^-, $S_2O_3^{--}$, $BaCl_2$, $MgSO_4$	1	2	
3	Group 2 acidic radical	Conc. H_2SO_4, Cl^-, Br^-, I^-, NO_3^-, $AgNO_3$, $Pb(CH_3COO)_2$	1	2	
4	Group 3 acidic radical	$BaCl_2$, $AgNO_3$, SO_4^{--}, $B_4O_7^{--}$, PO_4^{---}	1	2	
5	Scheme of identification of acidic radicals	Dil HCl, CO_3^{--}, HCO_3^-, $S_2O_3^{--}$, $BaCl_2$, $MgSO_4$, Conc. H_2SO_4, Cl^-, Br^-, I^-, NO_3^-, $AgNO_3$, $Pb(CH_3COO)_2$, SO_4^{--}, $B_4O_7^{--}$, PO_4^{---}	1	2	
6	Group 1 basic radical	Pb^{+2}, dil HCl, KI, K_2CrO_4	1	2	
7	Group 2 basic radical	Cu^{+2}, $Cd^{+2,}$ Bi^{+3}, dil HCl, H_2S,NaOH, NH_4OH	1	2	
9	Group 3 basic radical	Al^{+3}, Fe^{+3}, Fe^{+2}, Cr^{+3}, NaOH, NH_4OH, NH_4Cl.	1	2	
10	Group 4 basic radical	Zn^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, NaOH, NH_4OH, NH_4Cl, H_2S, $K_3[Fe(CN)_6]$	1	2	
11	Group 5 basic radical	Ca^{+2}, Sr^{+2}, Ba^{+2}, NaOH, NH_4OH, NH_4Cl,($NH_4)_2CO_3$, K_2CrO_4, $K_2Cr_2O_7$	1	2	
12	Group 6 basic radical	Na^+, K^+, Mg^{+2}, NH_4^+, NaOH, NH_4OH, NH_4Cl, ($NH_4)_2CO_3$,	1	2	
13	Scheme of identification of basic radicals	All chemicals from week 6 till week 13	1	2	
14	Scheme of identification of unknown salts.	All chemicals that mentioned above.	1	2	
15	Final Exam	All chemicals that mentioned above.	1	2	