Course Specification
(Bachelor)

Course Title:	General and Physical Chemistry
Course Code:	201CHEM-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:	05 May 2024

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A. General information about the course:

1. Course Identification

1. Credit hours: (4 H)

2. Course type

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

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

4. Course general Description:

Course Title	Course Number	Contact Hours (CU)		Credit unit (CU)	Year	Level	Pre-requisite
		Lec.	Prac.				
General and Physical Chemistry	201CHEM4	3	2	4	2	3	101CHEM4

Course objectives: *They are to identify the following.*

1 - Identification of the laws of thermal chemistry and its various applications.

2 - Identify the types of solutions

3 - Identification of the laws of thermodynamics, and their various functions.

4 - Identify the different forms of energy, and the possibility of turning any of them to other forms.

5 - Identification of chemical contaminants and methods of monitoring, and disposal

Syllabus: *A-Theoretical contents*

Study Thermochemistry and thermodynamics, Solutions, Chemical kinetics, Redox reactions and Electrochemistry, Acids and bases, Atomic and Molecular Structure, Chemistry and Ecology.

Syllabus: B-Practical contents

Selected experiments in Identification the basic radicals of inorganic salts mixtures.

*See attachment

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

101 CHEM-4

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

None

7. Course Main Objective(s):

The course is designed to give the students some information about the different chemical items; Thermochemistry, Solutions, Chemical kinetics, Thermodynamics, Redox reactions and Electrochemistry, Atomic and molecular structure, Chemistry and Ecology.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	100
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

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 an introductory knowledge in solution, chemical kinetics, thermodynamics, oxidation -reduction….,etc . (I)	K(1.1)	***lecture / discussion Seminars /presentation***	***Objective question***
1.2	Describe the essential facts, principles and theories related to thermodynamics, kinetics, solution chemistry,….etc (I)	K(1.2)	***lecture / discussion / Seminars /Individual presentation***	Essay question

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.0	Skills: (Upon completion of the course, student will be able to)			
2.1	Demonstrate the knowledge and skills required to solve problems in the kinetic, colligative properties, thermodynamics, thermochemistry , ….etc (I) (P)	S(2.1)	***lecture / discussion / Seminars /Individual presentation***	Solving Problems & chart analysis
2.2	Design and carry out scientific experiments as well as accurately record and analyze the results of such experiments. (I)	S(2.2)	***Lab work,***	***Objective question, Essay question, lab report rubric***
2.3	Examine his material and lab safety background to Follow proper procedures and regulations for safe handling and use of chemicals. (I)	S(2.3)	***lab demonstrations / hands-on student learning activities***	***Safety exam***

C. Course Content

No	List of Topics	Contact Hours
1.	Atomic and Molecular structure	6
2.	Acids and Bases	3
3.	Chemical kinetics	6
4.	Redox reactions and Electrochemistry	6
5.	Solutions	6
6.	Chemistry and Ecology	6
7.	Thermochemistry and Thermodynamics	6
8.	Revision	6
9.	Lab.	30
	Total	75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz	5	5 %
2.	Mid term	9-12	15 %
3.	Safety EXAM	13	3 %
4.	LAB Sheet	***15***	***10 %***

No	Assessment Activities *		Assessment timing (in week no)	Percentage of Total Assessment Score
5.	Laboratory	Quiz in Safety	***9***	***10 %***
6.		Final practical exam	***15***	***7 %***
7.	Final Exam		16	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	الكيمياء العامة: المفاهيم الأساسية ، ريموند تشانغ ،العبيكان للنشر ,Raymond, Chang ,General Chemistry: The Essential Concepts 5th Edition 2018, ISBN-13: 978-0073311852
Supportive References	Physical Chemistry ,Peter Atkins, Julio de Paula, Julio DePaula W. H. Freeman, - 2005. - Physical Chemistry, 4th Edition Robert J. Silbey. Robert A. Alberty. Moungi G. Bawendi v. TM. Cambridge, Massachusetts. January 2004
Electronic Materials	Some course contents and materials are posted on Black board sites
Other Learning Materials	• https://learn.saylor.org/course/CHEM101 • https://chem.libretexts.org/Bookshelves/General_Chemistry • https://chem.libretexts.org/Special:Search?qid=&fpid=230&fpth=&query=physical+chemistry&type=wiki

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, laboratories,
Technology equipment (projector, smart board, software)	Smart board, Data show, Black board, internet
Other equipment (depending on the nature of the specialty)	none

F. Assessment of Course Quality

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

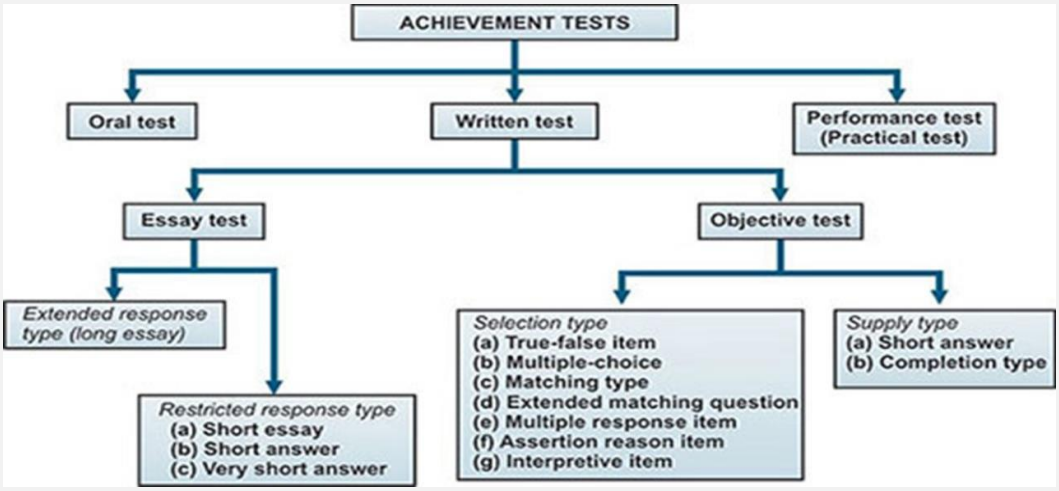
Week No.	Experiment Title	Required Chemicals	Required Glass Wear& equipment	Notes
1st	Group separation of 1st basic radical group	1st basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	
2nd	Group separation of 2nd basic radical group	2nd basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	
3rd	Group separation of 3rd basic radical group	3rd basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	
4th	Group separation of 4th basic radical group	4th basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	
5th	Group separation of 5th basic radical group	5th basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	
6th	Group separation of 6th basic radical group	6th basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	
7th to 14th	Identification Of Inorganic Mixtures	All basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	

2- Blue Print

Course Name	**General and Physical Chemistry**
Course Code	**201CHEM4**

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	25	25	20	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 (25M)	Quiz	Objective question	4	2	2
			Mid term	Objective question	5	5	5
			Final Exam	Objective question	8	18	18
	K2	1.2 (25M)	Quiz	Objective question	2	2	2
			Mid term	Objective question	5	5	5
			Final Exam	Objective question	4	18	18
Skills	S1	2.1 (20 M)	Quiz	Solving Problems & chart analysis	2	2	1
			Mid term	Solving Problems & chart analysis	2	4	5
			Final Exam	Solving Problems & chart analysis	6	14	14
	S2	2.2 (27 M)	Practical Sheet	Objective question	10	10	10
			Lab Report	10 EXP.	10	7	7
			Final Lab Exam	Task	1	10	10
	S3	2.3 (3 M)	Safety EXAM	Objective question	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