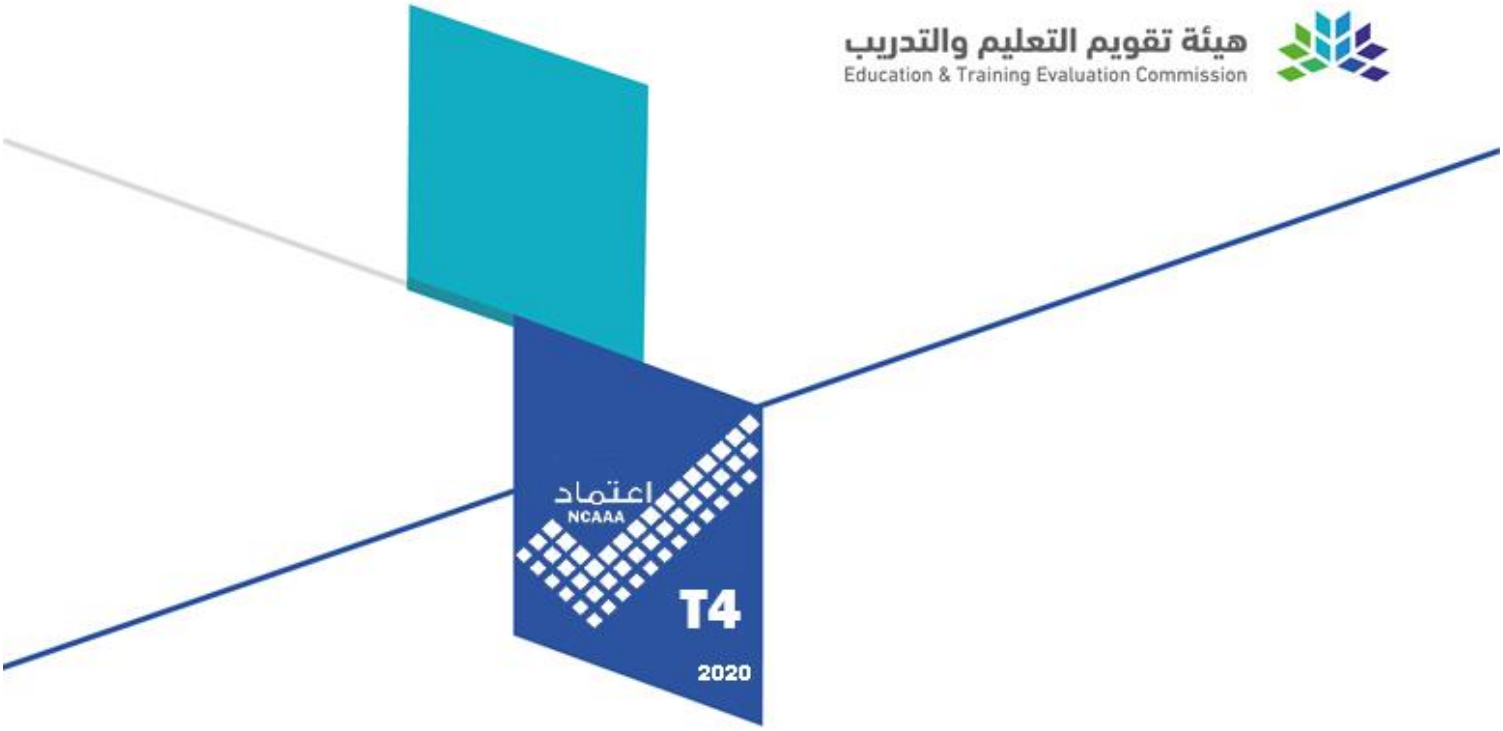
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**General and Physical Chemistry**
Course Code:	**CHEM 201**
Program:	**Bachelor in Chemistry**
Department:	**CHEMISTRY**
College:	**College of Science**
Institution:	**Jazan University (JU)**

Table of Contents

A. Course Identification

1. Credit hours: 4hs **Workload:** 221.5 **ECTS:** 7.9	
2. Course type	
a. University ☐ College ☐ Department ☑ Others ☐	
b. Required ☑ Elective ☐	
3. Level/year at which this course is offered: Level 3, Year 2	
4. Pre-requisites for this course (if any)**:** CHEM 101	
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**	45	100
2	**Blended**	30	------
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**	0
4	**Others** (specify)	0
	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 and Physical chemistry	CHEM 201	3	2	4	2nd year	3rd level	CHEM 101

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

2. Course Main Objective

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.*

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding** Up on completing this course, student will be able to	
1.1	Demonstrate an introductory knowledge in solution, chemical kinetics, thermodynamics, oxidation -reduction….,etc . (I)	K.1
1.2	Describe the essential facts, principles and theories related to thermodynamics, kinetics, solution chemistry,….etc (I)	K.2
2	Skills : Up on completing this 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)	S.1
2.2	Design and carry out scientific experiments as well as accurately record and analyze the results of such experiments. (I)	S.2
2.3	Examine his material and lab safety background to Follow proper procedures and regulations for safe handling and use of chemicals. (I)	S.3
3	**Values:** Up on completing this course, student will be able to	

CLOs		Aligned PLOs
3.1	Work as a group leader in cooperation with other colleagues. (I)	V1

C. Course Content

No	List of Topics	Contact Hours
1	Atomic and Molecular structure	6
2	Acids and Bases	6
3	Chemical kinetics	6
4	Redox reactions and Electrochemistry	6
5	Solutions	6
6	Chemistry and Ecology	6
7	Thermochemistry and Thermodynamics	3
8	Revision	6
13	Lab.	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 an introductory knowledge in solution, chemical kinetics, thermodynamics, and oxidation -reduction…., etc. (I)	*Lecture* *Open discussion in class* *Web-based work*	*MCQ* *Short answer Q*
1.2	Describe the essential facts, principles and theories related to thermodynamics, kinetics, solution chemistry…..etc. (I)	*Lecture* *Open discussion in class*	*Short answer Q*
2.0	**Skills**		
2.1	Demonstrate the knowledge and skills required to solve problems in the kinetic, colligative properties, thermodynamics, nuclear chemistry , ….etc (I)	*Lectures,* *Lab work*	*Practical exam* *laboratory notebooks* *Report rubric*
2.2	Design and carry out scientific experiments as well as accurately record and analyze the results of such experiments. (I)	*Lectures,* *Lab work*	*Papers, oral/written exam questions, problems, class discussions*
2.3	Examine his material and lab safety background to Follow proper procedures and regulations for safe handling and use of chemicals. (I)	Lab demonstrations	Safety exam
3.0	**Values**		
3.1	Work as a group leader in cooperation with other colleagues. (I)	Group work	Group work

2. Assessment Tasks for Students

#	Assessment task*		Week Due	Percentage of Total Assessment Score
1	quiz		4	5 %
2	Homework 1		3	0 %
3	Med term		9	15 %
4	Homework 2		8	0 %
6	Quiz in safety		13	0%
7	Laboratory	Sheet	15	10%
8		Final Practical Exam	15	20%
9	Final Exam		16	50%
			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:
4h/week instructor will be available for student consultation in his office

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	الكيمياء العامة: المفاهيم الأساسية ، ريموند تشانغ ،العبيكان للنشر Raymond, Chang ,General Chemistry: The Essential Concepts 5th , Edition 2018, ISBN-13: 978-0073311852
Essential References Materials	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	• 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
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms, laboratories,
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart board, Data show, Black board, internet

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Glassware, Laboratory instruments , equipment

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

The practical work of the course (201) involves the following Experiments.

Investigation and identification of inorganic mixtures

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	
7^{th} to 12^{th}	Identification Of Inorganic Mixtures	All basic radical group salts, reagents.	Conical flask , beakers , tubes , filter papers, holders, heater ,vacuum gas chamber	