



Course Specifications

Course Title:	General Chemistry 1
Course Code:	204101-4
Program:	Bachelor in Biotechnology
Department:	Department of Biotechnology
College:	College of Science
Institution:	Taif University

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	3
C. Course Content	4
D. Teaching and Assessment	4
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	4
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	5
1. Learning Resources	5
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	6

A. Course Identification

1. Credit hours: 4 (3 Theoretical, 1 Lab)
2. Course type
a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 3 rd Level/ 1 st Year
4. Pre-requisites for this course (if any): NA
5. Co-requisites for this course (if any): NA

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	80	100 %
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	50
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	80

B. Course Objectives and Learning Outcomes

1. Course Description

The course is designed to describe the fundamentals of chemistry science such as; Atomic theory, Chemical calculations, Solutions, Electronic configuration and periodic table, Chemical bonds, Gas laws, Chemical equilibrium, Ionic equilibrium, Introduction to organic chemistry.

2. Course Main Objective

The course aims to build a good foundation in chemical knowledge, to define the fundamental properties of matter, to identify trends in chemical and physical properties of the elements using the periodic table and to describe the bonding in and the shape of simple molecules and ions.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Recall basic chemical calculations and basic concepts of equilibrium.	K1
1.2	Describe electronic configuration of elements.	K1
2	Skills:	

CLOs		Aligned PLOs
3	Values:	

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to general chemistry: Atomic theory, Atoms, Molecules, and Ions.	5
2	Chemical calculations, mass relationships in chemical reactions.	5
3	Solutions, Calculation of concentrations, concentration units	5
4	Gases, physical characteristics, Laws of gases, Boyle, Charles, Avogadro, General gas law, the ideal gas equation.	5
5	Quantum Theory and the electronic structure of atoms	5
6	Periodic table, periodic relationships among the elements	5
7	Chemical bonds, ionic and covalent bonds, hybridization of atomic orbitals	5
8	The Concept of equilibrium and the equilibrium constant, factors that affect chemical equilibrium (Le Châtelier's Principle).	5
9	Ionic equilibrium: Acids and bases, Bronsted Acids and Bases, Lewis Acids and Bases, and pH calculations.	5
10	Introduction to organic chemistry, classes of organic compounds, aliphatic and aromatic hydrocarbons, chemistry of the functional groups.	5
Total		50

Lab Content

No	List of Topics	Contact Hours
1	Introduction to Chemistry Lab: Safety, Instrumentations.	3
2	Experimental 1: Ions and chemical equations (1).	3
3	Experimental 2: Ions and chemical equations (2).	3
4	Experimental 3: Salt, Salt solubility and salts classifications.	3
5	Experimental 4: Salt anions identification using AgNO_3 .	3
6	Experimental 5: General chart of salt anions identification.	3
7	Experimental 6: Salt cations identification using NaOH (1).	3
8	Experimental 7: Salt cations identification using NaOH (2).	3
9	Experimental 8: Salt cations identification using NH_4OH .	3
10	Experimental 9: General chart of salt cations identification.	3
Total		30

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	Recall basic chemical calculations and basic concepts of equilibrium.	Lecture	Written exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Describe electronic configuration of elements.	Lecture	Written exam
2.0	Skills		
2.1	Apply the rules of chemical calculations.	Problem-Solving	Practical tasks and Exam
2.2	Explain atomic models and electronic configuration	Discussion	Homework Assignments
3.0	Values		
3.1	Illustrate the concept of teamwork.	Collaborative Learning	Individual presentations
3.2	Represent integrity professional and academic ethics and responsible citizenship.	Self-learning	Individual presentations

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignment and Individual presentations	Throughout Semester	20%
2	Mid Term Exam	6	20%
3	Practical tasks and Exam	Throughout Semester	20%
4	Final exam	11/12	40%

*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:

Commitment to the rules of the Academic Advising Department at the university in accordance with the academic guidance manual approved by the university and the attached forms. There are 6 h per week for this purpose and the students know these hours according to the time of professor who teach the course.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> CHEMISTRY, Raymond Chang (2012), McGraw-Hill Education (USA), Latest Edition. ISBN: 9780077141752. https://books.google.com.sa/books/about/Chemistry.html?id=7z6BZwEACAAJ&source=kp_book_description&redir_esc=y
Essential References Materials	<ul style="list-style-type: none"> A summary of general chemistry (Arabic language), Abdullah Asiri and Muhammad Qazi. Dar Hafez, Latest Edition.
Electronic Materials	<ul style="list-style-type: none"> Saudi Digital Library (SDL) https://apps.tu.edu.sa/sdl/default.aspx
Other Learning Materials	--

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> Lecture hall with 100 seats. Equipped Lab with essential instrumentations.
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> Computer and data show with Wi-Fi access.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> Data Computer room of about 20 stations.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching and assessment	Students	Survey (indirect method)
Extent of achievement of course learning outcomes	Program leader	Survey (indirect method)
Quality of learning resources	Peer referees	Reports (Direct method)

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	
Reference No.	
Date	