



## Course Specifications

<b>Course Title:</b>	<b>General Chemistry 1</b>
<b>Course Code:</b>	<b>204101-4</b>
<b>Program:</b>	<b>Bachelor in Chemistry</b>
<b>Department:</b>	<b>Department of Chemistry</b>
<b>College:</b>	<b>College of Sciences</b>
<b>Institution:</b>	<b>Taif University</b>

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## A. Course Identification

<b>1. Credit hours:</b> 4 (3 Theoretical, 1 Lab)
<b>2. Course type</b>
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"/>
<b>3. Level/year at which this course is offered:</b> 1 <sup>st</sup> Level/ 1 <sup>st</sup> Year
<b>4. Pre-requisites for this course (if any):</b> NA
<b>5. Co-requisites for this course (if any):</b> NA

## 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5 Theoretical and 2 Practical hours/ Week	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	20
3	Tutorial	-
4	Others (specify)	-
	<b>Total</b>	<b>70</b>

## 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
<b>1</b>	<b>Knowledge and Understanding:</b>	
1.1	Recall basic chemical calculations and basic concepts of equilibrium.	K1
1.2	Describe electronic configuration of elements	K2
<b>2</b>	<b>Skills:</b>	
2.1	Apply the rules of chemical calculations	S1

CLOs		Aligned PLOs
2.2	Explain atomic models and electronic configuration	S2
2.3	Utilize scientific concepts in environmental applications	S3
<b>3</b>	<b>Values:</b>	
3.1	Illustrate the concept of teamwork	V1
3.2	Represent the academic ethics	V2

### 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, Brønsted 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
<b>Total</b>		<b>50</b>

### Lab Content

No	List of Topics	Contact Hours
1	Introduction to Chemistry Lab: Safety, Instrumentations	2
2	Experimental 1: Ions and chemical equations (1)	2
3	Experimental 2: Ions and chemical equations (2)	2
4	Experimental 3: Salt, Salt solubility and salts classifications	2
5	Experimental 4: Salt anions identification using $\text{AgNO}_3$	2
6	Experimental 5: General chart of salt anions identification	2
7	Experimental 6: Salt cations identification using $\text{NaOH}$ (1)	2
8	Experimental 7: Salt cations identification using $\text{NaOH}$ (2)	2
9	Experimental 8: Salt cations identification using $\text{NH}_4\text{OH}$	2
10	Experimental 9: General chart of salt cations identification	2
<b>Total</b>		<b>20</b>

### 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		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Recall basic chemical calculations and basic concepts of equilibrium	Lecture	Written exam
1.2	Describe electronic configuration of elements	Lecture	Written exam
<b>2.0</b>	<b>Skills</b>		
2.1	Apply the rules of chemical calculations	Problem-Solving	Practical tasks Practical Exam
2.2	Explain atomic models and electronic configuration	Discussion	Homework Assignments
2.3	Utilize scientific concepts in environmental applications	Discussion	Homework Assignments
<b>3.0</b>	<b>Values</b>		
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	Homework Assignments (Electronic)	Throughout Semester	5%
2	Individual presentations	Throughout Semester	5%
3	Mid Term Exam	6	20%
4	Practical tasks	Throughout Semester	25%
5	Final practical Exam	10/11	5%
6	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 different arrangements made by teaching staff to support student consultations including;

- Office hours: 8 hours per a week for each academic member.
- Academic guidance: an academic member has a number of students to guide them throughout degree journey.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>• CHEMISTRY, Raymond Chang (2012), McGraw-Hill Education (USA), Latest Edition. ISBN: 9780077141752. <a href="https://tinyurl.com/2p8aj94c">https://tinyurl.com/2p8aj94c</a></li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>• A summary of general chemistry, Abdullah Asiri and Muhammad Qazi (2005). Dar Hafez (Saudi Arabia), Latest Edition (Arabic language). ISBN: 9960472566.</li> </ul>

	<a href="https://tinyurl.com/ms876js9">https://tinyurl.com/ms876js9</a>
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>Saudi Digital Library (SDL) <a href="https://apps.tu.edu.sa/sdl/default.aspx">https://apps.tu.edu.sa/sdl/default.aspx</a></li> </ul>
<b>Other Learning Materials</b>	--

## 2. Facilities Required

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

## 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	Reports (Direct method)
Quality of learning resources	Peer referees Students	Reports (Direct method) Survey (indirect 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

<b>Council / Committee</b>	<b>Department Council/ Quality assurance committee</b>
<b>Reference No.</b>	2-5-1444
<b>Date</b>	01/11/2022