هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	**General Chemistry**
Course Code:	**192 CHEM**
Program:	**Chemical Engineering Technology (CHET)**
Department:	**Chemical Engineering Technology**
College:	**College of Applied Industrial Technology (CAIT)**
Institution:	**Jazan University**
Version:	**2022**
Last Revision Date:	**01 March 2024**

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	2				
2. Course type					
a.	University ☐	College ☒	Department☐	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:	**I/1yr**				
4. Course general Description This course offers understanding of chemistry for technical students. The course enables students to learn the states of matter and units of measurements, atoms, molecules and ions, the modern view of the atomic structure, the electronic structure of atoms and related hypothesis, periodic table, stoichiometry (calculations with chemical formulas, types of chemical reaction), solutions (definition, properties and concentrations), solubility and precipitation reactions, red-ox reaction and its implication, chemistry of nonmetals, basic concepts of chemical bonding, saturated and unsaturated hydrocarbons, and organic compounds. Moreover, as technical students, the course cover electrical Power Conversion, renewable energy, batteries, super capacitor, Engineering Technology aspects of materials. The practical components of the course include teaching students the awareness of safety regulations as well as their ability in experimentation, observation, measurements, and documentation.					
5. Pre-requirements for this course (if any): No					
6. Co- requirements for this course (if any): No					
7. Course Main Objective(s): The course aims to prepare the students of engineering technology programs to become familiar with the scope, methodology, and application of modern chemistry and learn to appreciate its ability to explain the physical world of industrial chemistry.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	33	100%
2.	E-learning	-	-
3.	Hybrid • Traditional classroom • E-learning	-	-
4.	Distance learning	-	-

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	11
2.	Laboratory/Studio	22
3.	Field	-
4.	Tutorial	-

5.	Others (specify)	-
	Total	33

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			
1.1	Describe the basics and the principle of general chemistry, including the matter and its classification, states, physical and chemical properties.	K1.1	Lecture, tutorial, active learning	Quiz, class activities, Assignment, exams
…				
2.0	Skills			
2.1	Use the chemical theories and the laws to solve basic chemical problems.	S1.2	Lecture, tutorial, active learning	Quiz, class activities, Assignment, exams
2.2	Apply the appropriate technique of work at the laboratory	S2.2	Lecture, tutorial, active learning	Quiz, class activities, Assignment, exams
2.3	Analyze basic mathematical and statistical techniques.	S4.1	Lecture, tutorial, active learning	Quiz, class activities, Assignment, exams
3.0	Values, autonomy, and responsibility			
3.1	Manage the interpersonal skills and managed team work.	V1.1	active learning and work assigned	Surprise test, class activities, and participating in classroom
…				

C. Course Content

No	List of Topics	Contact Hours
1.	**Unit Dimensions (Chemical Foundations):** • This will be a review and unit dimension practice	1
2.	**Stoichiometry: Chemical Arithmetic:** – Names and Symbols of Elements – The Mole Concept – Molecule and Molecular Mass • – Chemical Formulas and Equations	1
3.	**The periodic table** – Preface	1

	– The modern periodic table – Consequences of the Periodic Table – Metals, nonmetals and alloys	
4.	MID EXAM	1
5.	**Chemical Bonding:** – Chemical Bonds –The Ionic Bonds – The Covalent Bond – Lewis Symbols –Types of Chemical Reactions –Solution Stoichiometry	1
6.	**Oxidation** – Oxidation Number – Oxidation-Reduction Reactions – Balancing Redox Equations – Anodic cathodic reactions	1
7.	**The Gaseous State:** – General Properties of Gases – Studying Gases Methods – Dalton's Law of Partial Pressures – Liquefaction of Gases	1
8.	**Liquid and solid states:** – Intermolecular Attractive Forces – The Liquid State – Solid State of Matter	1
9.	**Solutions:** – Terminologies of Solutions – Mixing and Diluting of Solutions – Phases of Solutions – Solutions and electric conductance	1
10.	**Energy Engineering:** – Electrical Power Conversion – Renewable energy – Batteries, super capacitor – Solar cells	1
11.	**Materials Science Engineering:** – Classes of Engineering materials – Engineering aspects of materials – Advanced materials: applications in industries	1
12.	**Chemical Bonding:** – Chemical Bonds –The Ionic Bonds – The Covalent Bond – Lewis Symbols –Types of Chemical Reactions –Solution Stoichiometry	1
Total		11

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Oral discussion and participation in classroom (+Assignments for Self-study, Attendances etc.)	All weeks	5%
2.	Quizzes	Week 4 & 9/10	10%
3.	Midterm Exam	Week 6-7	15%
4.	Lab (Learning expt. and submitting report and viva)	All weeks	15%
5.	Homework (SSR, ppt, performance in whole semester)	Last week 10	15%
6.	Final Term Exam	As scheduled	40%

*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	Chemistry, 8th Edition, Steven S. Zumdahl and Susan A. Zumdahl, BROOKS/COLE CENGAGE Learning, 2010.
Supportive References	• Classroom policy • General Chemistry: Principles, Patterns, and Applications, Patricia Eldredge, R.H. Hand, LLC Copyright Year: 2011 ISBN 13: 9781453322307;Publisher: Saylor Foundation • Soft and hard copies of lecture notes and some of sections from Chemistry, 8th Edition, Steven S. Zumdahl and Susan A. Zumdahl, BROOKS/COLE CENGAGE Learning, 2010. • Materials Science and Engineering: An Introduction; Edited by, William D. Callister, ISBN-10-0470419970
Electronic Materials	• NCERT Chemistry Books class 11 and 12, • https://ncerthelp.com/text.php?ques=NCERT+Chemistry+Books+class+11+and+12+download+pdf+Hindi+English+ • https://sites.google.com/site/santhirajupilli/lecture-notes_jazan-university/chet-191-gen-chemistry
Other Learning Materials	• Not utilized

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	• Classrooms should be well furnished for at least 25 students with White board, projector • Laboratory with required equipment and with a lab instructor • Appropriate Table and Chairs • Proper internet/Wi-Fi facility must be available
Technology equipment (projector, smart board, software)	• Computer with data show, software
Other equipment (depending on the nature of the specialty)	• Not utilized

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Direct
Effectiveness of students assessment	Students	Indirect
Quality of learning resources	Program leader	Indirect
The extent to which CLOs have been achieved	Peer reviewer	Indirect
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Chemical Engineering Technology, CAIT
REFERENCE NO.	CAITCET24012
DATE	modified on: 01/03/2024