Course Specification

(Bachelor)

Course Title:	Chemistry for Health Specialties
Course Code:	CHEM 105
Program:	All Health Programs at Jazan University
Department:	Physical Sciences
College:	College of Science
Institution:	Jazan University (JU)
Version:	TP135-2024
Last Revision Date:	05 May 2024

كلية العلوم ١٤٢٦هـ ٢٠٠٦م Faculty of Science

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (4h (3L+1P))					
2. Course type					
A.	☐University	√College	☐Department	☐Track	☐Others
B.	√Required		☐Elective		
3. Level/year at which this course is offered: (Level 2 / First Year)					
4. Course general Description:					
This course is to provide students with basic knowledges and practical skills in general and organic chemistry as well as some related applications in the medical fields					
5. Pre-requirements for this course (if any):					
ENGL 181					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
- Recognizing the basics of general, physical, analytical and organic chemistry as well as some related applications in the medical fields. - Qualitative analysis of inorganic salts (acidic and basic radicals). - Identification of unknown simple solid organic molecules					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom + Lab	45 + 30	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 the health programs	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**; (Upon completion of the course, student will be able to)			
1.1	Demonstrate a broad knowledge in the major concepts, theoretical principles and experimental findings in physical, inorganic, analytical and organic chemistry	K.1	Lecture, discussion in class and labs	Written examinations, quizzes and lab sheets
1.2	Explain the physical properties, chemical reactivity, theories of bonding and chemical forces of molecules as well as trends in structure and reactivity across the periodic table.	K.2	Lecture, discussion in class and labs	Written examinations, quizzes and lab sheets
2.0	**Skills**; (Upon completion of the course, student will be able to)			
2.1	Demonstrate analysis skills to solve problems and the ability to predict the outcomes of chemical reactions based on molecular structure.	S.1	Lecture, discussion in class and labs	Written examinations, quizzes and lab sheets
2.2	Use a variety of laboratory techniques to conduct chemical experiments and procedures such as identifying unknown simple organic compound or inorganic salt.	S.2	Lab. work	Lab. Report, sheets and exams.
2.3	Apply the safe practices in laboratory to respond properly in an emergency and to the hazards of handling chemicals and chemical wastes.	S.3	Lab. work	Written quiz

C. Course Content

Chapter	List of Topics	Contact Hours
1	Classification of Matter, Measurement, Temperature, Density and Specific Gravity	1.5
2	Elements, Structure of the Atom, Isotopes, The Periodic Table, Electronic Structure, Electronic Configurations, Valence Electrons and Periodic Trends.	4.5
3	Ions, Ionic Compounds, Naming Ionic Compounds, Physical Properties of Ionic Compounds, Covalent Bonding, Lewis Structures, Naming Covalent Compounds, Electronegativity and Bond Polarity.	4.5
4	Energy, Intermolecular Forces, Boiling Point and Melting Point.	3
5	Introduction to Chemical Reactions, Balancing Chemical Equations, Mole and Avogadro's Number and Mass to Mole Conversions.	4.5
7	Concentration Units, Percent Concentration, Concentration Units, Molarity and Dilution.	3
8	Introduction to Acids and Bases, The Reaction of a Brønsted–Lowry Acid with a Brønsted–Lowry Base, Dissociation of Water and pH Scale.	4.5
10	Introduction to organic chemistry, Functional Groups -Alkanes and Cycloalkanes.	4.5
11	Alkenes & Alkynes, Isomerism, Polymers and Aromatic Compounds.	4.5
12	Alcohols and their Reactions, Ethers, Aldehydes and ketones.	4.5
13	Carboxylic Acids, Esters, Nomenclature, Properties and Reactions, Amines as Bases, Reaction of amines, Amides, Nomenclature, Physical Properties and Hydrolysis	4.5
14	Carbohydrates , Introduction, Monosaccharaides, Disaccharides, Polysaccharides	1.5
Pract.	Acidic and Basic Radicals and Identification of Simple Unknown Solid Organic Compound.	30
Total		**75**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1	Quiz (1)- Theoretical	3	2.5%
2	Lab reports	Weekly	5%
3	Midterm exam	10	20%

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4	Quiz (2) - Theoretical	8	2.5%
5	Midterm practical exam.	8	10%
6	Final practical exam.	14	10%
7	Final exam	16	50%

*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	Principles of General, Organic, & Biological Chemistry 1st edition by Janice Gorzynski Smith, published by McGraw-Hill Science/Engineering/Math (2011).
Supportive References	Organic Chemistry 11th Binder edition by Solomons, T. W. Graham, Fryhle, Craig B., published by Loose Leaf (2013).
Electronic Materials	- http://www.chem1.com/chemed/genchem.shtml - https://chem.libretexts.org/Courses/can/general - Different course materials will be uploaded and deployed on the blackboard
Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	***Lecture room(s) for groups of 30 students.*** ***Lab room(s) for groups of 15 students.***
Technology equipment (projector, smart board, software)	***Computer laboratories for groups of 25 students*** ***Class room(s) equipped with computers and software***
Other equipment (depending on the nature of the specialty)	***Chemical Models, scientific videos***

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	***Student***	***Likert-type Survey (CES)*** ***Indirect***
Effectiveness of	***Instructor &***	***Class room evaluation***

Assessment Areas/Issues	Assessor	Assessment Methods
Students assessment	***Course coordinator***	***(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.	Psci2503
DATE	13/08/1446 Corresponding to 12 / 02 /2025

H. Attachments

1- Practical Work

The practical work of the course (CHEM 105) involves the following experiments

Week No.	Experiment title	Required Chemicals	Required glass wear & Equipments
All weeks	Laboratory Requirements and Safety Measures	Safety tools	
1	Identification of Unknown Acidic Radicals of Inorganic Salts (group I & II)	Some inorganic salts and reagents	Test tubes & Beakers
2	Identification of Unknown Acidic Radicals of Inorganic Salts (group III)	Some inorganic salts and reagents	Test tubes & Beakers
3	Scheme for Identification of Unknown Acidic Radicals of Inorganic Salts	Some inorganic salts and reagents	Test tubes & Beakers
4	Identification of Unknown Basic Radicals of Inorganic Salts (group 1&2)	Some inorganic salts and reagents	Test tubes & Beakers
5	Identification of Unknown Basic Radicals of Inorganic Salts (group 3&4)	Some inorganic salts and reagents	Test tubes & Beakers
6	Identification of Unknown Basic Radicals of Inorganic Salts (group 5&6)	Some inorganic salts and reagents	Test tubes & Beakers
7	Scheme for Identification of Unknown Inorganic Salts	Some inorganic salts and reagents	Test tubes & Beakers
8	Midterm practical exam	Some inorganic salts and reagents	Test tubes & Beakers
9	Identification of Simple Aliphatic Carboxylic acids	Some aliphatic carboxylic acids and reagents	Test tubes & Beakers
10	Identification of Simple Aromatic Acids.	Some aromatic carboxylic acids and reagents	Test tubes & Beakers
11	Identification of salts of carboxylic acids	Some salts of aliphatic, aromatic acids and reagents	Test tubes & Beakers

12	Identification of Carbohydrates.	Glucose, fructose, & starch and reagents	Test tubes & Beakers and Microscopes
13	Scheme for Identification of Unknown simple organic compound	Some carboxylic acids, their salts and Carbohydrates	Test tubes & Beakers
14	Final examination	Some acids and their salts	Test tubes & Beakers

2- Blue Print

Course Name	
Course Code	

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	21.5	21.5	32	25	0			

		Course Assessment Blueprint 20241							
Part	Course Name:	**Chemistry for health specialties**							
	Course Code:	**CHEM 105**							
	Learning Domain								
	Knowledge and Understanding	PLOs	CLOs	Total mark	Assessment Type	Assessment tools	Number of questions	Marks of assessment	Weight of assessment
Theoretical part	43%	K1	1.1	21.5	Quiz (1+2)	MCQ	3	1.5	1.5
					Midterm exam	MCQ	6	6	6
					Final exam	MCQ	14	14	14
		K2	1.2	21.5	Quiz (1+2)	MCQ	3	1.5	1.5
					Midterm exam	MCQ	5	5	5
					Final exam	MCQ	15	15	15
	Skills	S1	2.1	32	Quiz (1+2)	MCQ	4	2	2
					Midterm exam	MCQ	9	9	9

	57%				Final exam	MCQ	21	21	21
Practical part		S2	2.2	25	Lab reports	Reports	10	5	5
					Midterm practical exam	Practical exam	Practical exam	10	10
					Final practical exam	Practical exam	Practical exam	10	10
		S3	2.3	0	Lab safety exam	MCQ	10	0	0
	Total			100				100	100