



# Course Specification

— (Bachelor)

Course Title: **Chemistry for Health Specialties**

Course Code: **CHEM 105**

Program: **All Health Programs at Jazan University**

Department: **Chemistry**

College: **College of Science**

Institution: **Jazan University (JU)**

Version: **TP135-2023**

Last Revision Date: **05 May 2024**

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## 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 3 / 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
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## 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
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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.	1.5
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, Monosaccharides, Fischer Projection Formulas, cyclic Forms of Monosaccharides, Haworth Projections, Disaccharides and Polysaccharides (Cellulose-Starch)	3
<b>Pract.</b>	Acidic and Basic Radicals and Identification of Simple Unknown Solid Organic Compound.	30
<b>Total</b>		<b>75</b>

#### 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%
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

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

### 2. Required Facilities and equipment

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

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	<i>Student</i>	<i>Likert-type Survey (CES) <u>Indirect</u></i>
Effectiveness of Students assessment	<i>Instructor &amp; Course coordinator</i>	<i><u>Class room evaluation</u> <u>(direct &amp; indirect)</u></i>
Quality of learning resources	<i>Program coordinator</i>	<i><u>Indirect</u></i>
The extent to which CLOs have been achieved	<i>Assessment committee</i>	<i><u>Indirect</u></i>
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)





### G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	

Course coordinator: Dr. Samy K El-Desouky



## H. Attachments

*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
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## 2- Blue Print

Course Name		Chemistry for Health Specialties											
Course Code		105 CHEM											
PLOs	K1			K2			S1			S2			
CLOs	1.1			1.2			2.1			2.2			
Marks	21.5			21.5			32			25			
				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			
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					
43%	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				
				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		

