Course Specifications

Course Title:	**Chemistry**
Course Code:	**1102-102**
Program:	**B. Medicine/Applied Med. Science/ Nursing**
Department:	**Chemistry**
College:	**Science**
Institution:	**Northern Border University**

Table of Contents

A. Course Identification

1. Credit hours:3
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: 1th level /First year
4. Pre-requisites for this course (if any)**:**
5. Co-requisites for this course (if any)**:** Does not exist

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	45H	100%
2	**Blended**	-	
3	**E-learning**	-	
4	**Correspondence**	-	
5	**Other**	-	

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	45
2	**Laboratory/Studio**	-
3	**Tutorial**	-
4	**Others** (specify)	-
	Total	45
Other Learning Hours*		
1	**Study**	80
2	**Assignments**	10
3	**Library**	20
4	**Projects/Research Essays/Theses**	10
5	**Others** (specify)	-
	Total	120

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

- Fundamentals of chemistry: units, molecules, atoms and formulae, atomic structure and periodicity of elements, chemical bonding: ionic, covalent and hydrogen bond
- Type of solutions, concentration units and the concept of pH, Electrolytes and chemical equilibrium.
- Chemical reactions
- Basic principles of organic chemistry: classification and nomenclature of organic compounds
- Bonding, isomerism, Stereochemistry, reactions of mono functional organic compounds and reactions of different classes of organic compounds.
- Structure of different biochemical components.

2. Course Main Objective

After attending this course, the student should be able to:

- List units, molecules, atoms and formulae, atomic structure and periodicity of elements, chemical bonding: ionic, covalent, coordinate, hydrogen bond.
- Recognize type of solutions, concentration units and the concept of pH, Electrolytes and chemical equilibrium.
- Differentiate chemical reactions.
- Explain basic principles of organic chemistry, classification and nomenclature of organic compounds.
- Compare between bonding, isomerism, stereochemistry and reactions of mono functional and different classes of organic compounds.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	Summarized the Units, molecules, atoms and molecular formulae.	
1.2	Define Stoichiometry of the chemical reactions.	
1.3	Explain the atomic structure and quantum numbers, chemical bonding, chemical and ionic equilibrium.	
1.4	Recognize the Various types of organic compounds and their derivatives.	
2	**Skills :**	
2.1	Differentiate between different states of the matter, elements and compounds.	
2.2	Implements problems on Stoichiometry of the chemical reactions, chemical and ionic equilibrium.	
2.3	Discover the Periodic table and its properties.	
2.4	List the various types of reactions in aqueous solutions.	
3	**Competence:**	
3.1	The ability to know the main-group elements and the transition elements	
3.2	The ability to understand the polar and nonpolar covalent bonds.	
3.3	Research about some subject in general chemistry and the application.	
3.4	The ability of the students to deal with isotopes and atomic mass unit (amu)	

C. Course Content

No	Topics to be Covered	Theoretical	Contact Hours
1	**Introduction**	3	3
2	**Chapter I:** The International System of Units and Introduction to Chemistry	3	3
3	**Chapter I:** The International System of Units and Introduction to Chemistry	3	3
4	**Chapter II:** The Atomic Structure	3	3
5	**Chapter II:** The Atomic Structure	3	3
6	**Chapter III**: The Periodic Table of the Elements and Chemical Bonding	3	3
7	**Chapter IV:** Introduction to the Chemical Reaction and the Chemical Equilibrium	3	3
8	**Chapter IV:** Introduction to the Chemical Reaction and the Chemical Equilibrium	3	3
9	**Chapter V:** Reactions in aqueous solution	3	3
10	**Chapter V:** Reactions in aqueous solution	3	3
11	**Chapter VI:** Principles of organic Chemistry	3	3
12	**Chapter VI:** Principles of organic Chemistry	3	3
13	**Chapter VII:** Isomerism and Stereochemistry	3	3
14	**Chapter VII:** Isomerism and Stereochemistry	3	3
15	**Chapter VIII:** Introduction to Biochemistry	3	3
	Total	45	45

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**		
1.1	Define Atomic structure and the atomic orbitals with quantum numbers.	-Lectures. -Solve problems	-Exams - Exercises - Quizzes
1.2	Recognize the Various of exceptions to the octate rule	Discussion, comments and Asking questions	Quarterly tests
1.3	Summarized the Units, molecules, atoms and molecular formulae.	-Lecture	Questions at the end
2.0	**Skills**		
2.1	Write the organic compounds , the matter, elements and the chemical formulae.	-Lecture -Discussions	Performance in discussions during lectures, exams and quizzes.
2.2	Classification of organic compounds	-Lecture	Performance in discussions during lectures.
2.3	Differentiate between different states of the heterogeneous equilibrium and homogeneous equilibrium with examples.	-Lecture -Discussions	Performance in discussions during lectures, quizzes and exams.
3.0	**Competence**		
3.1	The ability to abstract, analysis and construct with an ability to recognize.	-Team work - problem solving	seminar presentations and logic exercises.
3.2	The ability to use e-mail to communicate with the instructor and other students	Encourage the students to submit their Research online .	Assignments
3.3	Research about some subject in general chemistry and the application.	Research in internet - Teamwork	- Small project
3.4	The ability of the students to deal with concentration units.	-Lectures. -Solve problems	-Exams - Exercises
3.5	The ability of the students to deal with the functional groups of organic chemistry	-Lectures. -Solve problems	-seminar presentations - Exercises

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	1st Periodic Exam	-	-%
2	2nd Periodic Exam	-	-%
3	Midterm Exam	7	30%
4	Quizzes	4 and 12	10%
5	Homework & Activities	2, 3, 8, 9 and 10	20%
6	Practical Exam	-	-%
7	Final Exam	15	40%
8	Others	-	-%
Total			%100

***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 :

- Office hours (2 hours per week).
- Academic Guidance.
- Tutoring hours
- Email
- Blackboard Forum Discussion.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	▪ Organic Chemistry, Morrison and Boyd, 6th ed., 2011, Allyn and Bacon. ▪ Chemistry, the Molecular Nature of Matter and Change, Silberberg and Amateis, 7th edition,2002 McGraw Hill
Essential References Materials	▪ Chemistry, The Molecular Nature of Matter and Change Silberberg & Amateis, 7th edition, McGraw – Hill ▪ Chemistry: 9th edition by R. CHANG, McGraw-Hill 2008.
Electronic Materials	YouTube Videos, PowerPoint presentations and Electronic Books.
Other Learning Materials	Computer-based programs/CD, professional standards or regulations and software.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room.
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board, Data show, and Blackboard
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	A special library for faculty members Software for calculations, plotting and statistical operations.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching and assessment.	Students	Direct
Quality of learning resources	Faculty and Student	Direct
Achievement of course learning outcomes	Faculty, Program leader.	Direct and indirect.

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	