



# Course Specification

## (Bachelor)

Course Title: **Main group chemistry**

Course Code: **CEM 250**

Program: **Chemistry**

Department: **Chemistry**

College: **College of Science**

Institution: **Majmaah University**

Version: **TP 153, 2024**

Last Revision Date: **11/12/2024**



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## A. General information about the course:

### 1. Course Identification

1. Credit hours: (2 h )

#### 2. Course type

A.  University  College  Department  Track  Others  
 B.  Required  Elective

3. Level/year at which this course is offered: (3<sup>rd</sup> Level/2<sup>th</sup> Year)

#### 4. Course General Description:

The course of Main group elements is presented in the Third level with 1 credit hours. This course provides inorganic chemistry of the elements. The topics to be covered include but are not limited to the following: selected descriptive chemistry of the main group elements s- and p block), the Synthesis, structure and reactivity of the Main group elements.

5. Pre-requirements for this course (if any):

General Chemistry I, CEM101

6. Co-requisites for this course (if any):

None

#### 7. Course Main Objective(s):

By the end of this course, the student should fully aware of:

- The main group elements in the periodic table
- The chemical properties of the main group element through their reaction

The existence and most important compounds of the main group elements.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4	Distance learning		





### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
<b>Total</b>		<b>30</b>

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Knowledge the principles of main-group (s and p block) element chemistry.	<b>K1</b>		Quiz Midterm Exam Final exam Homework
1.2				
...				
<b>2.0</b>	<b>Skills</b>			
2.1	Apply the definition of atomic and ionic size, ionization potential, electron affinity and electro-negativity to understand the periodic properties of main group (non-transition) elements.	<b>S2</b>	Lectures Scientific discussion	Quiz Midterm Exam Final exam Homework
2.2	Demonstrate the ability of use computers and internet to find all information related to main group elements and their compounds	<b>S3</b>	Lectures and discussion	
...				





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	work independently and as part of team	V1	Web based study and Group assessment	Class discussion
3.2				
...				

### C. Course Content

No	List of Topics	Contact Hours
1.	The arrangement of elements in the periodic table; groups and periods. Main Group Metals: Hydrogen The Group I Elements: The Alkali Metals The Group 2 Elements: The Alkaline Earth Metals The Group 13 Elements	6
2.	The elements and compounds; Synthesis, structure and reactivity of diborane and higher boranes, (Styx notation) carboranes, boron-halides, boron-oxygen compounds, boron nitrogen compounds	6
3.	Main Group Non-Metals: The Group 14 Elements The Group 15 Elements: The Pnictogens The elements and compounds. The Group 16 Elements: The Chalcogens The elements and compounds; Oxygen and oxides; Halides, oxides, and oxoacids of Sulphur, Sulphur-nitrogen compounds.	6
4.	The Group 17 Elements: The Halogens	6
5.	The Group 18 Elements: The Noble Gases The elements and compounds.	6
<b>Total</b>		<b>30</b>

### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Activity, Assignment and quizzes	Every week	20%
2.	Midterm 1	Week 6	15%
3.	Midterm 2	Week 12	15%



No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4.	E-exam	Week 13	10%
5.	Final Exam	Week 14	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

<b>Essential References</b>	A.G. Massey, Main Group chemistry, 2 <sup>nd</sup> edition, Wiley, 2000 Carlos Murillo, Advanced Inorganic Chemistry, Wiley. 1999 Raymond Chang And Golds Kenneth, Chemistry 12 Edition, McGraw-Hill Education, 2015
<b>Supportive References</b>	Das, Kumar V.G, Main Group Elements and their compounds, Springer, 1996.
<b>Electronic Materials</b>	Relevant Website
<b>Other Learning Materials</b>	Video clips, Microsoft office and power point.

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom can hold up to 40 students Lecture room and Laboratory contains Platform and computer
<b>Technology equipment</b> (projector, smart board, software)	Data show Smart Board computer Microsoft- office
<b>Other equipment</b> (depending on the nature of the specialty)	Availability of equipment relevant to the course material.

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	students	Questionnaire evaluation of the course
Effectiveness of Students assessment	Program/Department Instructor	Annual course report
Quality of learning resources	Program/Department Instructor	Annual course report





Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Peer review	- Check marking of a sample of exam papers, or student work. -Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.
Other		

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

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	<b>CHEMISTRY DEPARTMENT COUNCIL</b>
<b>REFERENCE NO.</b>	<b>17</b>
<b>DATE</b>	<b>15/12/2024</b>

