



**Course Syllabus**  
**According to JORDAN National Qualification**  
**Framework (JNQF)**

**Course Name: General chemistry (1)**

**Course Number: 11011101**

### General Course Information:

Course title	General chemistry (1)
Course number	11011101
Credit hours	3
Education type	[Hybrid (Synchronous, Asynchronous)]
Prerequisites/corequisites	-
Academic Program	Bachelor
Program code	01
Faculty	Science
Department	Chemistry
Level of course	First-year
Academic year /semester	2021/2022- Second semester
Awarded qualification	Bachelor's degree in chemistry
Other department(s) involved in teaching the course	Engineering, Nursing, Mathematics, Physics, IT
Language of instruction	English
Date of production/revision	9/10/2022

### Course Coordinator:

Coordinator's name	Dr. Alaa Al-Ma'abreh
Office No	4204
Office Phone extension number	2527
Office Hours	10-11 Sunday, 11-12:30 Monday, 1-2 Tuesday, 12:30-2 Wednesday, 12-1 Thursday
Email	<a href="mailto:alaa.almaabreh@iu.edu.jo">alaa.almaabreh@iu.edu.jo</a> <a href="mailto:alaamabreh@yahoo.com">alaamabreh@yahoo.com</a>

### Other Instructors:

Instructor name	Dr. Samer Awaideh
Office No	-
Office Phone extension number	-
Office Hours	10-11 Sunday, 8:30-9:30 Monday, 10-11 Tuesday, 12:30-2 Wednesday, 2-3 Thursday
Email	<a href="mailto:samerawaideh@yahoo.com">samerawaideh@yahoo.com</a>

### Course Description (English/Arabic):

English	Introduction; Atoms, molecules and ions; Stoichiometry; Reactions in chemical solutions; Atomic structure; Periodic table, Chemical bonding (I): covalent bonds; chemical bonding (II): Molecular geometry and hybridization; Gases.
Arabic	مقدمة; الذرات و الجزيئات و الايونات; الحسابات الكيميائية التكافئية; التفاعلات في المحاليل المائية; البنية الالكترونية للذرات, الجدول الدوري; الروابط الكيميائية (I): الروابط التساهمية; الروابط الكيميائية (II): الاشكال الهندسية للجزيئات و تهجين الافلاك الذرية; الغازات.

**Textbook: Author(s), Title, Publisher, Edition, Year, Book website.**

Raymond Chang, *General Chemistry: The Essential Concepts*, 7th Edition, 2013, McGraw-Hill, New York. <https://www.amazon.com/General-Chemistry-Raymond-Chang-Dr/dp/0073402753>.

**References: Author(s), Title, Publisher, Edition, Year, Book website.**

Steven S. Zumdahl and Suzan A. Zumdahl, *Chemistry*, 8<sup>th</sup> Edition, 2010, Brooks/Cole, Cengage Learning, Belmont, USA,

**Course Educational Objectives (CEOs):**

1.	Recognize the basics and fundamental concepts related to matter and its properties, atomic structure, atoms, molecules, ions, the periodic table, stoichiometry, solutions, chemical reactions, chemical equations and balancing, and chemical bonding.
2.	Solve problems related to measurements, stoichiometry, solutions, chemical reactions, atomic structure, and gases
3.	Determine names of chemical compounds, solubility of chemical compounds, types of chemical bonding, types of chemical reaction, polarity of molecules, molecular geometry, hybridization and periodicity in periodic table.

**Intended Learning Outcomes (ILO's):**

1.	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	Descriptors**
2. A	Knowledge and Understanding:				
3. A1	The student will be able to recognize the basics and fundamental concepts related to general chemistry.	1	a	1	K
4. B	Intellectual skills:				
5. B1	The student will be able to solve problems related to measurements, stoichiometry, solutions, atomic structure, and gases.	2	C, d	3, 4	S
6. C	Subject specific skills:				
7. C1	The student will be able to determine the names and solubility of chemical compounds, types of chemical bonding and reactions, electron configuration, the polarity and geometry of molecules, hybridization, and periodicity in the periodic table.	3	B, c	1, 3	K, C
8. D	Transferable skills:				

### \*Bloom Taxonomy Levels

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**\*\* Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

### Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (Bachelor in chemistry) program will demonstrate:		Descriptors**		
		K	S	C
1.	Describe the fundamental scientific principles and theories across the four subfields of chemistry (Organic, inorganic, analytical and physical).	✓		
2.	Identify and confirm chemical compounds structures as well as determine chemical composition.	✓		
3.	Establish and concludes mechanisms of physical and chemical processes in addition to the ability of mastering qualitative and quantitative determination.			✓
4.	Solve the scientific problems using different mechanisms and procedures based on critical thinking.		✓	
5.	Conduct scientific experiments in chemistry.			✓
6.	Commitment and interest in lifelong learning, and collaborate effectively with other people in a team.			✓
7.	Prepare logical, organized and concise written reports, and oral and poster presentations that effectively communicate chemical content to other scientists.		✓	
8.	Commitment to the ethical principles of chemical research.			✓
9.	Find information about chemistry through databases and information		✓	
10.	Evaluation of calculations in chemistry experiments and information analysis using computer software.			✓
11.	Demonstrate safety laboratory techniques.		✓	

**\*\* Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

### Weekly Schedule (please choose the type of teaching)

☐ Face to Face

☐ Hybrid (2 Lectures Face – To - Face +1 Lecture Asynchronous)

☐ Hybrid (1 Lectures Face – To - Face +1 Lecture Asynchronous)

☐ Online (2 Lectures Synchronous +1 lecture Asynchronous)

Week	First Lecture (Synchronous)	Second Lecture (Synchronous)	Third Lecture (Asynchronous)	Ach. ILOs	Ach. PLOs	Descriptors* *
1	Chemistry: Introduction	9. Chemistry: Introduction	Chemistry: Introduction	1, 2	a, c, d	K, S, C
2	Atoms, ions, molecules	10. Atoms, ions, molecules	Atoms, ions, molecules	1, 2, 3	a, b, c, d	K, S, C

3	Stoichiometry	11. Stoichiometry	Stoichiometry	1, 2	a, c, d	K, S, C
4	Stoichiometry	12. Stoichiometry	Stoichiometry	1, 2	a, c, d	K, S, C
5	Solutions	13. Solutions	Solutions	1, 2, 3	a, b, c, d	K, S, C
6	Solutions	14. Solutions	Solutions	1, 2, 3	a, b, c, d	K, S, C
7	The electronic structure of atoms	15. The electronic structure of atoms	The electronic structure of atoms	1, 2, 3	a, b, c, d	K, S, C
8	The electronic structure of atoms	16. The electronic structure of atoms	The electronic structure of atoms	1, 2, 3	a, b, c, d	K, S, C
9	Periodic relationships among elements	17. Periodic relationships among elements	Periodic relationships among elements	1, 3	a, b, c	K, C
10	Periodic relationships among elements	18. Periodic relationships among elements	Periodic relationships among elements	1, 3	a, b, c	K, C
11	Chemical bonding I: basic concepts	19. Chemical bonding I: basic concepts	Chemical bonding I: basic concepts	1, 3	a, b, c	K, C
12	Chemical bonding I: basic concepts	20. Chemical bonding I: basic concepts	Chemical bonding I: basic concepts	1, 3	a, b, c	K, C
13	Chemical bonding II: Molecular geometry and hybridization of atomic orbitals	21. Chemical bonding II: Molecular geometry and hybridization of atomic orbitals	Chemical bonding II: Molecular geometry and hybridization of atomic orbitals	1, 3	a, b, c	K, C
14	Chemical bonding II: Molecular geometry and hybridization of atomic orbitals	22. Chemical bonding II: Molecular geometry and hybridization of atomic orbitals	Chemical bonding II: Molecular geometry and hybridization of atomic orbitals	1, 3	a, b, c	K, C
15	Gases	23. Gases	Gases	1, 2	a, c, d	K, S, C

\* K: Knowledge, S: Skills, C: Competency

## Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Interactive videos
- Practice Labs
- Discussion Forums
- Quizzes
- Other Interactive online activities
- Reports

## Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20 %**
- Midterm **30 %**
- Final Exam **50 %**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

### Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: <https://elearn.iu.edu.jo/>**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

### Assessment Tools implemented in the course:

- ✓ Final Exam
- ✓ Midterm Exam
- Quizzes
- ✓ Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:.....

### Responsible Persons and their Signatures:

Course Coordinator	<b>Dr. Alaa Al-Ma'abreh</b>	Completed Date	9/10/2022
		Signature	<i>Alaa Al-Ma'abreh</i>
Received by (Department Head)	<b>Dr. Manal Alkhabbas</b>	Received Date	16/10/2022
		Signature	<i>Manal Alkhabbas</i>