



## ACADEMIC EXCELLENCE. REDEFINED

### American University of Ras Al Khaimah

#### General Chemistry-I (CHEM-211)

#### I. Instructor Information:

Name: Dr. Irshad Ahmad

Office Hours: Thursday, 13:00-14:00 PM

Email: [iahmad@aurak.ac.ae](mailto:iahmad@aurak.ac.ae)

Please observe these office hours or make an appointment for a different time.

#### II. Course:

Course Credit Hours: 3

Co-requisites: None

**III. Course Description:** (3:3:0) Foundation of chemical concepts: basic facts and principles of chemistry, including atoms, molecules, ions, chemical reactions, gas theory, thermochemistry, electrochemistry, chemical kinetics and equilibrium, molecular geometry, and states of matter.

#### IV. Course Materials and Basic Resources:

*Textbook: General Chemistry*, 9<sup>th</sup> edition, D. Ebbing and S. Gammon, 2009, Houghton Mifflin Co., ISBN-10:0618399410.

Online resources for textbook:

[http://college.cengage.com/chemistry/general/ebbing/general\\_chem/8e](http://college.cengage.com/chemistry/general/ebbing/general_chem/8e)

Other materials and supplies:

1. *Basic chemistry*, 2<sup>nd</sup> edition, K.C. Timberlake and W. Timberlake, Pearson Prentice Hall, USA, ISBN: 0-8053-4469-1

2. *Chemistry*, 8<sup>th</sup> Edition, Kenneth W. Whitten, Raymond E. Davis, M. Larry Peck, George G. Stanley, Thomson Corporation, USA, ISBN-0-495-01448-6

Web resources: [http://college.hmco.com/how/how\\_sitemap.html](http://college.hmco.com/how/how_sitemap.html)

3. All lecture handouts and assignment would be available on **Blackboard**.

<http://bb.aurak.ac.ae/>

**V. Course Goals:** The course enables the student to:

- Provide overview of the basic principles and theories underpinning the field of general chemistry.
- Introduce the language of chemistry and the scientific way of critical thinking and problem solving.

- To widen and deepen the students' knowledge of chemistry in general chemistry.
- Prepare students for various graduate examinations and careers in science and engineering.
- Integrate chemical knowledge with a complementary field to provide a coherent interdisciplinary understanding of general chemistry.

## VI. Student Learning Outcomes

At the end of this course student will be able to:

**CSLO 1.** Explain the basic principles of chemistry, including states of matter, and solve problems related to chemical formulas and stoichiometry.

**CSLO 2.** Analyze chemical kinetics, equilibrium constant of the reaction and the role of catalysts in chemical reactions.

**CSLO 3.** Solve quantitative problems allied to thermochemistry, gaseous states and electrochemistry.

**CSLO 4.** Explain chemical bonding theory and identify the bonding and geometry in a molecule.

**CSLO 5.** Predict the periodic properties of elements, including position, properties and electronic configuration.

### Evaluation Plan

Assignments	20%
Quizzes	20 %
Project/Homework	10%
Midterm Exam.	20%
Final Exam.	30%

Assessment Tool (number)	CSLO achieved	Weightage
Assignments (4) Assessment based on scientific knowledge and problem solving skills.	CSLO 1, CSLO 2, CSLO 3, CSLO 4, CSLO 5	20 % (each assignment is worth 5%)
Quizzes (4) [closed book, consisting of multiple choice , true and false and short answer questions ]	CSLO 1, CSLO 2, CSLO 3, CSLO 4, CSLO 5	20% (each assignment is worth 5%)
Midterm Examination (closed book, consisting of multiple choice, true and false and short answer questions in 2 hours)	CSLO 1, CSLO 2, CSLO 3, CSLO 5	20%
Project/Homework/Seminar: The goal of the course project/Homework/Seminar is to provide in depth knowledge of a particular area of the course.	CSLO 1, CSLO 2, CSLO 3, CSLO 4, CSLO 5, CSLO 6	10%
Final Examination (closed book consisting of multiple choice, true and false and short answer questions in 2 hours)	CSLO 1, CSLO 3, CSLO 4, CSLO 5	30%

Knowledge, understanding and application of the basic principles and concepts of General chemistry based on the material taught in class will be examined by “closed-book” quizzes and midterm and final examinations. Self-study and directed learning will be assessed by assignments and presentations. Written feedback will be provided to students on assignments, quizzes and presentations and examinations to highlight deficiencies in student responses and aspects that need particular attention by way of improvement.

## VII. Weekly Topics and Assignments

### Tentative Schedule

Week	Chapter No.	Topics/In-Class Activities	Assignment Due Dates	SLO
1	01	Chemistry & measurements		1
2	02	Atoms, molecules and ions		1
3		<b>Quiz and assignment</b>	16/9/2015	
3, 4	03	Calculations with chemical formulas and equations		1,2
5	04	Chemical Reactions, Chemical Kinetics and equilibrium		1,2
6		<b>Quiz and assignment</b>	07/10/2015	
7	05	The gaseous state		1,3
8	06	Thermo-chemistry		1,3
9		<b>Midterm Examination</b>	28/10/2015	
10	07	Electrochemistry		1,3
11	08	Electronic Configurations & Periodicity		1,5
12		<b>Quiz and assignment</b>	11/11/2015	
13	09	Ionic and covalent bonding		4
14	10	Molecular Geometry and chemical Bonding theory		4
15		<b>Quiz and assignment</b>	9/12/2015	
16	11	States of matter		1

### VIII. Evaluation of Learning

The grade breakdown is as follows:

Methods	Dates	Weights
Quiz and assignment	Mentioned in Tentative Schedule	40%
Midterm Examination	28/10/2015	20%
Project / Homework	18/11/2015	10%
Final Examination	11/01/ 2016	30%

### IX. Grading System and Scale

University course work is measured in terms of quantity and quality. A credit normally represents one hour per week of lecture or recitation or not fewer than two hours per week of independent or laboratory work throughout a semester. The number of credits is a measure of quantity. The grade is a measure of quality. The university system for undergraduate grading is as follows:

Grade	Percentage Scores	Grade Points
A	95-100	4.0
A-	90-94	3.75
B+	87-89	3.5
B	84-86	3.0
B-	80-83	2.75
C+	77-79	2.5
C	74-76	2.0
C-	70-73	1.75
D+	67-69	1.50

D	64-66	1.0
D-	60-63	0.75
F	0-59	0

**X. Methodologies for Teaching and Learning:** The primary method of instruction will be lectures using a combination of audiovisuals, whiteboard, blackboard and handouts. To enhance student learning and analytical thinking, methods that enforce active participation as well as individual and co-operative learning will be employed. These include student–led discussions, question and answer sessions and oral presentations/class discussion. Relevant and recent course-related information from scientific and popular media will be briefly discussed in class. Students are encouraged to make good use of the textbook and online resources for the textbook that provide additional materials such as animations, interactive activities, suggested readings etc. Assignments, Quizzes and presentations are intended to reinforce learning and involve self-study and literature searches that enhance skills in critical thinking and analysis, writing and presentation with particular emphasis on understanding and applying general chemistry concepts and principles. Rubrics will be provided to students for assignments and presentations. Homework assignments will comprise mainly of problem-solving questions requiring application of general chemistry principles and concepts learned in the classroom. Quizzes and examinations will assess student knowledge, understanding and application of the basic concepts and principles of general chemistry.

## **XI. Relevant Policies**

**Relevant policies [Except for the policy on academic misconduct, the inclusion of the following is only suggested and is at the discretion of the instructor].**

### **A. Academic Misconduct. A. Academic Misconduct:**

#### **The Honor Code and Honor System**

The Honor Code is an integral part of university life. Students are responsible, therefore, for understanding the code’s provisions. Cheating and attempted cheating, plagiarism, lying, and stealing of academic work and related materials constitute Honor Code violations. In the spirit of the code, a student’s word is a declaration of good faith acceptable as truth in all academic matters. To maintain an academic community according to these standards, students and faculty must report all alleged violations to the Honor Committee.

AURAK expects its students to uphold high standards of academic integrity and conduct. In particular, students are required to:

- Attend classes regularly and punctually.
- Be actively involved in class discussions and other course related classroom activities.
- Complete assignments on time.
- Meet the requirements for course and program completion.
- Abide by high standards of academic integrity, ethics, and honesty.
- Refrain from cheating on homework and examinations, plagiarizing other people’s work by submitting it as their own, or any other forms of academic dishonesty.
- Adhere to the published test or examination rules and regulations.
- Make every effort to maintain good academic standing.

Given the internet and easy access to information and knowledge sources, the University is committed to students' learning in an ethical manner. For all academic assignments, project work, and presentations, students need to ensure that due acknowledgement is given to the source of any information which they incorporate in their work. The following are some examples of academic misconduct:

- Cheating/using unfair means in examinations
- Significant paraphrasing in written academic work that is unacknowledged
- Unacknowledged use of information or ideas unless such ideas are commonplace
- Citing sources which student has not read or referred to
- Breaching the word limit of assignments and mentioning wrong word count Plagiarism

**Plagiarism.** Plagiarism is a serious academic offense. Plagiarism is the use of someone else's ideas, words, projects, artwork, phrasing, sentence structure or other work without properly acknowledging the ownership (source) of the property (item). Plagiarism is dishonest because it misrepresents the work of someone else as one's own. It is intellectual theft as it robs others of credit for their work.

Plagiarism takes many forms including:

- Using someone else's words without putting those words in quotation marks and providing full information about their source, sufficient information so that another person could easily locate the words that are being quoted, whether it is in an article, a book, or on the web.
- Using unique, original ideas, phrases, sentences, paragraphs, or other materials, etc. from a single source or a variety of sources such as a text, journal, web page, electronic source, design, artwork, etc. in one's work without citing all sources. For a student found plagiarizing, the punishment will be a failing grade in the assignment without the right to redo the assignment up to a failing grade in the course.

**Examples of Cheating.** Acts of cheating include, but are not limited to, the following:

1. Copying from another student's paper during an exam, or allowing or encouraging another student to copy from your paper during an exam.
2. Having someone else take your exam in your place, or taking an exam for someone else.
3. Obtaining unauthorized access to exams and accepting exams obtained by unauthorized access.

**Examples of Plagiarism. Acts of plagiarism include, but are not limited to, the following**

1. Handing in as 'original', work prepared by someone else or preparing/completing someone else's work.
2. Copying from a book or other publication without citing sources.
3. Using the same work to satisfy the requirements of two or more courses (during the same or different terms).
4. Having someone else rewrite a rough draft or rewriting a rough draft that is not your own work.

Violations of plagiarism are subject to evaluation according to the criterion of "reasonable doubt". The student's right to appeal and the procedures to be followed in carrying out the appeal of the University's decision is clearly stated in the *Student Handbook*.

Any violations of the University's academic rules, regulations or directives are reported to the Deputy Vice Chancellor Academic Affairs and may result in one of the following disciplinary measures.

- Verbal or written warning
- Repeating the term
- Dismissal from the University

Please refer to the relevant section in the *Handbook* and ensure a clear understanding of the provisions of the University honor code and honor system in order to avoid infringement of the policy and attendant penalization.

**B. Concerns about grades or other course matters.** Students are responsible for their learning experiences. If you are concerned about a class matter, first discuss it with the instructor. If the matter is not resolved, the next step is to meet with the Program Chair. If you still have a concern, meet with the Dean. The matter is likely to be resolved before it reaches that point, but if it is not, then the following positions are next on the organization chart: the Deputy Vice Chancellor for Academic Affairs, and, finally, the Vice Chancellor. Students who decide to “jump to the top” will be referred back to the appropriate next step.

**C. Assignments.** University policy is that assignments are due on the date assigned. Instructors may refuse to accept late assignments or lower the grade that would be otherwise given.

**D. Attendance.** University policy is that students are to attend all classes and to arrive on time. Verified emergencies may require an absence or delay, but habitual tardiness or absence affects your learning and disrupts the class. Your presence is important since student contributions are a significant part of classroom activity and absence deprives others of your contributions. According

to the AURAK resolution no.: 84-1-106/2013 Student Attendance Policy as follows:

- Attend all learning and teaching sessions associated with their program of study.
- Notify their course instructors in advance (in person, by phone or e-mail) that they will be absent from time-tabled class sessions.
- Obtain prior permission from their instructor or course manager, for planned absences of two or more consecutive class sessions during the semester.
- Provide a medical certificate or other corroborating evidence to explain their absence, if required by the University.

Unsatisfactory student attendance includes failure to regularly attend learning and teaching sessions without providing a satisfactory reason to instructors for absence and/or persistent late arrival at, or early departure from, learning and teaching sessions.

Where a student fails to attend classes for **two weeks cumulatively** without the University’s permission, the student will receive a “**non-attendance warning (NAW)**”, and will be required to provide satisfactory explanation for their non-attendance. With each subsequent NAW issued, a formal report on the student’s non-attendance is made to their sponsor.

Where a student fails to attend classes for **four or more weeks cumulatively**, or where a recurring pattern of non-attendance (that is more than **two NAWs**) is observed, over the course of the semester, the student may be deemed to have failed the course, in which case they will receive an “**F (Fail)**” or “**U (Unsatisfactory)**” grade, as appropriate. At this point, and at the instructor’s recommendation, the dean has the authority to instruct the registrar to remove the student from the course.

**E. Mobile Phones:**All mobile phones, pagers and/or other communication devices should be turned off before entering the classroom.

**F. Diversity and the Use of English.** English is the common language of the AURAK campus, the use of which includes everyone. It is the only language to be used in the classroom. AURAK brings

together students and faculty from diverse cultural and linguistic backgrounds, which is one of the strengths of the university. This diversity provides an opportunity to share our different experiences and enlarge our understanding of the world. Classroom discussions and other activities are to be conducted with courtesy and civility and respect for one another and for our differences.