



ACADEMIC EXCELLENCE. REDEFINED

American University of Ras Al Khaimah

Fall Semester

General Chemistry I Laboratory (CHEM-212.01)

I. Instructor Information:

Name: Dr. Shagufta Waseem

Office Hours: 10:00AM-11:00 AM (Tuesday)

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

II. Course:

Course Credit Hours: 1

Co-requisites: CHEM 211

III. Course Description: (1:0:1.40) Laboratory techniques and reactions arranged to accompany CHEM- 211. This laboratory course provides experience in physical /chemical measurement, synthesis based experiments, qualitative, and quantitative analysis.

IV. Course Materials and Basic Resources:

Textbook and other learning resources

Experimental Chemistry, 8th edition, J. F. Hall, 2010, Houghton Mifflin, USA, ISBN-13:978-0-547-16854-8

Handouts containing detailed procedures will be provided for some laboratory exercises

Other materials and supplies:

1. Exploring Chemical Analysis, 3rd edition, Daniel C. Harris, W. H. Freeman, 2004, ISBN: 0-7167-0571-0

Web resources:

http://chemistry.about.com/od/chemistrylabexperiments/General_Chemistry_Lab_Experiments.htm

MIT OpenCourseWare-MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT, USA)

<http://ocw.mit.edu/courses/chemistry/5-310-laboratory-chemistry-spring-2003/download-course-materials/>

V. Course Goals:

To provide a laboratory-rich learning environment where students will learn proper laboratory protocols, plan and conduct experiments in areas of inorganic and physical chemistry, practice the scientific method, analyze data, and reach logical and reasonable conclusions.

VI. Student Learning Outcomes

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

CSLO1: Apply laboratory procedures, safety rules, scientific methods while performing general chemistry experiment.

CSLO2: Analyze the experimental data using chromatography, qualitative analysis and heat of reaction.

CSLO3: Synthesize and purify chemical compounds using relevant instruments and related technologies and identify structure of molecule through molecular modeling.

CSLO4: Create a clear and concise scientific report, including laboratory observation and experiment.

VII. Evaluation Plan

- Lab Report 10%
- Lab Skills 10%
- Quizzes 20%
- Midterm Exam 20%
- Final Exam 40%

Assessment Tool (number)	CSLO achieved	Weightage
Lab reports	CSLO 1, CSLO 2, CSLO 3, CSLO 4	10%
Lab skills	CSLO 1, CSLO 2, CSLO 3, CSLO 4	10%
Quizzes (2) [closed book, consisting of problem-solving, and short answer questions]	CSLO 1, CSLO 2, CSLO 3, CSLO 4	20% (each quiz is worth 10%)
Midterm Examination (closed book, consisting of problem-solving and multiple choice, true and false and short answer questions and a practical element in 2 hours)	CSLO 1, CSLO 2, CSLO 3, CSLO 4	20%
Final Examination (closed book	CSLO 1, CSLO 2,	40%

consisting of multiple choice, true and false, short answer questions and experiments problems in 2.5 hours)	CSLO 3, CSLO 4	
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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.

VIII. Weekly Topics and Assignments

Tentative Schedule

Week	Experiment No.	Topics of experiment	Quiz due date	SLO
1	01	Introduction, safety, check in		1,
2	02	Measurements		1,4
3	03	Graphing/ Density of solutions		1,4
4	04	Empirical formula of zinc iodide		1,2,4
5		Quiz 1	29/09/2015	
6	05	Absorption spectroscopy		1,2,4
7	06	Thin layer chromatography (TLC)		1,2,4
8		Midterm Examination	20/10/2015	
9,10	07	Synthesis and purification of Aspirin		1,3,4
11	08	Volumetric analysis		1,2,4
12	09	Heat of reaction		1,2,4
13		Quiz 2	24/11/2015	
14	10	Periodic properties: Anion analysis		1,2,4
15	11	VSEPR theory and molecular modelling		1,3,4
16		Final Examination	15/12/2015	

IX. Evaluation of Learning

The grade breakdown is as follows:

Methods	Dates	Weights
Lab report	-	10%
Lab skill	-	10%
Quizzes	Mentioned in Tentative Schedule	20%
Midterm Examination	20/10/2015	20%
Final Examination	15/12/2015	40%

X. 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 less 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

XI. Methodologies for Teaching and Learning:

One of the primary methods of instruction for this course is lecture and demonstrations that train students in the methodology used for problem-solving as well as performing standard laboratory techniques in general chemistry. Laboratory exercises involving problem-solving will take the form of in-class and homework assignments and are geared to provide students with fundamental experiments skills required to analyse and interpret data of different experiments. In addition to students working individually, pair/group work will also be encouraged during the performance of laboratory exercises to foster the building of teamwork, leadership and organizational skills by students. Laboratory reports communicate the experimental laboratory exercises in writing and require students to exercise data, interpretation, analysis and written presentation skills. Students will be provided a general rubric for writing of lab reports and will be informed of any additional requirements for specific laboratory reports. Assignments, quizzes and discussion sessions are intended to reinforce learning. Assignments will consist of data analysis and/or review questions

based on the laboratory exercise. Methods that foster active participation as well as individual and cooperative learning will be employed and these include student-led discussions, question and answer sessions and data analysis. The application of the methodologies and techniques used in the laboratory for general chemistry based research will also be emphasized. Quizzes and examinations will assess student knowledge; understanding and application of laboratory-based methodologies used in general chemistry.

XII. 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 Honour 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
- The 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 offence. 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', a 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 clearly states 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 materials. 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 activities 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.