



## Course Specifications

Institution:	Date:
College/Department :	

### A. Course Identification and General Information

1. Course title and code: General Chemistry 1, 4021011-4																				
2. Credit hours: Four (3 theoretical + 1 practical) hrs.																				
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) <ul style="list-style-type: none"><li>• <b>Chemistry</b></li><li>• <b>Industrial Chemistry</b></li><li>• <b>Physics</b></li><li>• <b>Medical Physics</b></li><li>• <b>Biology</b></li><li>• <b>Microbiology</b></li><li>• <b>Mathematics</b></li><li>• <b>Preparatory year</b></li></ul>																				
4. Name of faculty member responsible for the course: : <b>Prof. Mohamed Ismail Awad</b>																				
5. Level/year at which this course is offered: 1 <sup>st</sup> / 1																				
6. Pre-requisites for this course (if any):-----																				
7. Co-requisites for this course (if any):-----																				
8. Location if not on main campus:-----																				
9. Mode of Instruction (mark all that apply): <table><tr><td>a. traditional classroom</td><td><input type="text" value="80"/></td><td>What percentage?</td><td><input type="text"/></td></tr><tr><td>b. blended (traditional and online)</td><td><input type="text" value="20"/></td><td>What percentage?</td><td><input type="text"/></td></tr><tr><td>c. e-learning</td><td><input type="text"/></td><td>What percentage?</td><td><input type="text"/></td></tr><tr><td>d. correspondence</td><td><input type="text"/></td><td>What percentage?</td><td><input type="text"/></td></tr><tr><td>f. other</td><td><input type="text"/></td><td>What percentage?</td><td><input type="text"/></td></tr></table>	a. traditional classroom	<input type="text" value="80"/>	What percentage?	<input type="text"/>	b. blended (traditional and online)	<input type="text" value="20"/>	What percentage?	<input type="text"/>	c. e-learning	<input type="text"/>	What percentage?	<input type="text"/>	d. correspondence	<input type="text"/>	What percentage?	<input type="text"/>	f. other	<input type="text"/>	What percentage?	<input type="text"/>
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Comments:

## B Objectives

### 1. Summary of the main learning outcomes for students enrolled in the course.

This course is an introductory chemistry course designed to prepare students for college level chemistry courses. The course introduces some basic principles of physical, organic and inorganic chemistry.

2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field).

- The use of teaching intelligent classes for lectures.
- Encourage students to prepare reports in general topics in chemistry.
- The use of information technology or the Internet in order to increase awareness of the concepts of chemistry.

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

1. Topics to be Covered		
Topic	No of Weeks	Contact hours
Units of measurements; SI- units, intensive and extensive properties, uncertainty in measurements (precision and accuracy).	1	3
Significant figures: Rounding significant figures, Using significant figures in addition, subtraction, multiplication and divisions.	1	3
States of matter and measurement, molecules and molecular compounds.	2	6
The periodic table, nomenclature, electronic structure of atoms, simple periodic properties of the elements.	2	6
Chemical bonding, molecular geometry, and properties of various states of matter.	1	3
Ions and ionic compounds, chemical reaction types.	1	3
Stoichiometry, atomic and molecular weights.	1	3
The mole, simple quantitative calculations with chemical reactions.	1	3
Basics of chemical equilibrium.	1	3
Acids and bases.	1	3
Thermochemistry.	1	3
Hydrocarbons, nomenclature and simple reactions.	1	3

## Laboratory Experiments Outline

Topics to be Covered		
List of Experiments	No of Weeks	Contact hours
The practical part includes the following experiments:		
Introduction	1	3
Density and viscosity of liquids.	1	3
Compound type (polar – nonpolar – ionic).	1	3
Chemical reactions.	1	3
Acids and bases and pH measurements and calculations.	1	3
Titration of vinegar.	1	3
Oxidation-reduction reactions.	1	3
Molar mass of acid.	1	3
Qualitative analysis (acidic and basic radicals).	1	3
Collegative properties (determination of molecular weight).	1	3
Determination of the heat capacity of the calorimeter.	1	3
Determination of the critical solution temperature of phenol - water system	1	3
Review	1	3
Final Exam.	1	3

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planned	42	---		42		42
	Actual	42	----		42		42
Credit	Planned	3			1		
	Actual	3			1		

3. Additional private study/learning hours expected for students per week.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On the table below are the five NQF Learning Domains, numbered in the left column.**

**First**, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0			
1.1	Knows International system of units	Lectures Scientific discussion Library visits Web-based study	Exams portfolios long and short essays posters lab manuals
1.2	Familiar with the laws that describe the behavior of ideal gases.		
1.3	Knows atom structure		
1.4	Describe types of solids.		
1.5	Mention the first law of thermodynamics.		
1.6	List the factors affecting equilibrium position and equilibrium concentration.		
2.0	Cognitive Skills		
2.1	Summarize gases laws	Lectures Scientific discussion homework assignment containing problem thinking activities	1. Midterm exam 2. quizzes 3. Final exam
2.2	Compare between ideal and real gases		
2.3	Apply Hess's law for the calculation of heat of reaction.		
2.4	Apply Faraday's laws for calculating the amount deposited at electrodes		
2.5	Predict the spontaneity of chemical reaction.		
3.0	Interpersonal Skills & Responsibility		
	<ul style="list-style-type: none"> <li>Manage resources, time and collaborate with members of the group.</li> <li>Ability to work independently to handle Chemicals and perform laboratory illustrations safely.</li> <li>Ability to communicate results of work to classmates.</li> <li>Ability to work in a team to perform a specific task</li> </ul>	Team work groups General discussion with students for solving a problem.	Assessment of the solution problems submitted by the students.
4.0	Communication, Information Technology, Numerical		
	<ul style="list-style-type: none"> <li>Work effectively both in a team, and independently on solving chemistry problems.</li> <li>Communicate effectively with his lecturer and colleagues</li> <li>Use university library and web search engines for collecting information and search about different topics .</li> </ul>	Write a Report Use libraries	Evaluation of the report presented
5.0	Psychomotor		
5.1	NOT APPLICABLE		

5.2			
5. Schedule of Assessment Tasks for Students During the Semester			
5. Schedule of Assessment Tasks for Students During the Semester:			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Class activities, Attendances and Duties	Throughout the Term	10%
2	Mid-Term Exam (s)	5-14	20%
3	Lab Activity and Final Exam on Lab	Throughout the Term	30%
4	Final Exam.(2 hours exam)	End of the Term	40%
5	Total		100%

#### **D. Student Academic Counseling and Support**

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

#### **E. Learning Resources**

1. List Required Textbooks

*P. Atkins and J. de Paula*, Physical Chemistry, 10<sup>th</sup> ed., 2006, New York.

2. List Essential References Materials (Journals, Reports, etc.)

Steven S. Zumdahl, Susan A. Zumdahl, 9<sup>th</sup> ed., 2009, New York.

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

Chemistry, R. Chang, 10<sup>th</sup> Edition, McGraw-Hill Higher Education, 2011.

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

## F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)
<b>1. Accommodation</b> (Lecture rooms, laboratories, etc.) Classroom capacity (60) students. To supply the classrooms with the appropriate educational means.
<b>2. Computing resources</b> Hall is equipped with a computer and Data Show and TV.
<b>3. Other resources</b> (specify --eg. If specific laboratory equipment is required, list requirements or attach list) None

## G. Course Evaluation and Improvement Processes

<p>1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching            Complete the questionnaire evaluation of the course in particular.</p> <p><b>Assess the progress of the operation by the students using the evaluation forms or group discussion in order to reach weaknesses and processed.</b></p>
<p>2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor  <b>Observations and the assistance of colleagues.</b>  <b>Independent evaluation for extent to achieve students the standards.</b>  <b>Independent advice of the duties and tasks.</b></p>
<p>3 Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> <li>• Workshops for teaching methods.</li> <li>• Continuous training of member staff.</li> <li>• Review of strategies proposed.</li> <li>• Providing new tools for learning.</li> <li>• The application of e-learning.</li> <li>• Exchange of experiences internal and external.</li> </ul>
<p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <ul style="list-style-type: none"> <li>• Check marking of a sample of exam papers, or student work.</li> <li>• Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.</li> </ul>
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> <li>• Periodic Review of the contents of the syllabus and modify the negatives.</li> <li>• Consult other staff of the course.</li> <li>• Hosting a visiting staff to evaluate of the course.</li> <li>• Workshops for teachers of the course.</li> </ul>

Course Coordinator: **Professor Mohamed Ismail Awad**