Kingdom of Saudi Arabia

The National Commission for

Academic Accreditation & Assessment

Course Specifications

General Chemistry 1

402101

Institution **Umm Al-Qura University**	Date of Report
College/Department **Applied Science /Chemistry Department**	

A. Course Identification and General Information

1. Course title and code: **General Chemistry 1 (402101)**
2. Credit hours **5h**
3. Program(s) in which the course is offered. **Chemistry** (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course **Prof. Mohamed Ismail Awad**
5. Level/year at which this course is offered **first level**/first year
6. Pre-requisites for this course (if any) **No**
7. Co-requisites for this course (if any) **Laboratory Chem. 101**
8. Location if not on main campus **both on El-Abedyah, and El-Zaher**
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	70 %
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other	■	What percentage?	30 %

Comments:

B Objectives

1. What is the main purpose for this course? **By the end of this course student will be able to:** • Explore the role of measurements in understanding and quantifying principles of chemistry. • Comprehend quantitative relationships in chemical equations. • Solve quantitative problems involving thermochemistry • Solve quantitative problems involving properties of gases • Run elementary chemistry experiments.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) • **Use a lot of Web sites that contain videos and animated illustrations that clarify the scientific idea faster and better.** • **An attempt to link the scientific theories and concepts to life as much as possible with examples and applications in our daily lives.**

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Solution, concentration expressions and types of solutions and their properties.	**2**	**8**
Thermodynamics and thermochemistry: first law of thermodynamics, Hess's law and applications on Hess's law.	**2**	**8**
Exam	**1**	**4**
Chemical equilibrium- law of mass action – Le Chatelier principle.	**2**	**8**
Electrochemistry: Galvanic cells- Electrochemical series- Cell potential- Nernst equation- Electrolytic cells- Faraday's law of electrolysis.	**2**	**8**

Gaseous state: ideal gas equation- Van der Waals equation – gas liquefaction	**2**	**8**
Liquid state: Evaporation- vapor pressure-boiling-boiling point-surface tension-viscosity.	**2**	**8**
Exam	**1**	**4**
Solid state: melting point-crystalline systems- X-ray and crystal structure	**2**	**8**

Experiment	No. of weeks	Contact hours
Introduction and Safety in laboratory	**1**	**3**
Density and viscosity of liquids	**1**	**3**
Types of chemical compounds (polar-non-polar-ionic-covalent)	**1**	**3**
Chemical reaction	**1**	**3**
Exam	**1**	**3**
Acids and Bases- calculation of pH	**1**	**3**
Vinegar titration	**1**	**3**
Oxidation-reduction reactions	**1**	**3**
Molecular weight of acid	**1**	**3**
Qualitative analysis (acid and basic radicals)	**1**	**3**
Determination of molecular weight of chemical compounds	**1**	**3**
Enthalpy determination	**1**	**3**
Determination of **critical temperature of phenol-water system**	**1**	**3**
Exam	**1**	**3**
Revision	**1**	**3**
Final exam	**1**	**3**

Practical part:

2016

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	**64**			**48**		
Credit	**4**			**1**		

3. Additional private study/learning hours expected for students per week.
Requires 4 hours per week between revision and solve the exercises and websites on the subject.

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

	NQF Learning Domains And Course Learning Outcomes	**Course Teaching Strategies**	**Course Assessment Methods**
1.0			
1.1	**List the different expression methods of the concentration of solutions.**	• 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	**Identify characteristics of liquids.**		
1.4	**Describe types of solids.**		
1.5	**Identify types of thermochemical reactions.**		
1.6	**Mention the first law of thermodynamics.**		
1.7	**Identify types of electrochemical cells and differences between them.**		
1.8	**List the factors affecting equilibrium**		

	position and equilibrium concentration.		
2.0	**Cognitive Skills**		
2.1	**Summarizes 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**		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Manage resources, time and collaborate with members of the group.	Team work groups General discussion with students for solving a problrm.	Assessment of the solution of problems submitted by the students.
3.2	Use university library and web search engines for collecting information and search about different topics .		
4.0	**Communication, Information Technology, Numerical**		
4.1	Work effectively both in a team, and independently on solving chemistry problems.	Write a Report Use libraries	Evaluation of the report presented
4.2	Communicate effectively with his lecturer and colleagues		
5.0	**Psychomotor**		
5.1	NOT APPLICABLE		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Exam	5-14	20%
2	Assignments		10

3	Practical Exam	15	30%
4	Final Exam	16	40%
	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)

- **We have faculty members to provide counseling and advice.**
- **Office hours: During the working hours weekly.**
- **Academic Advising for students.**

E. Learning Resources

1. List Required Textbooks

1. **P. Atkins and J. de Paula, Physical Chemistry, 10th ed., 2006, New York.**
2. **General Chemistry – d/Al Owais — Dar Al-kheraigi**
3. **Simplify General Chemistry – d/Abdullah Al beed**

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

1. **B. S. Bahl, Essential of physical chemistry, S. Chand & Co. , 1995, New Delhi, India.**
2. **G. Rakshi, Physical Chemistry, 1995.**
3. **J. E. Brady, and J. E. Humiston, General Chemistry Principles and Structure, 5th edition, 1990, JohnWiley &Sons.**

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

Chemistry, R. Chang, 10th Edition, McGraw-Hill Higher Education, 2011.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

- **http://www.chemweb.com**
- **http://www.sciencedirect.com**

5. 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 (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • **Classrooms capacity (30) students.** • **Providing hall of teaching aids including computers and projector.**

2. Computing resources (AV, data show, Smart Board, software, etc.) ▪ **Room equipped with computer and projector.**
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) • **No other requirements.**

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Complete the questionnaire evaluation of the course in particular.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor • **Observations and the assistance of colleagues.** • **Independent evaluation for extent to achieve students the standards.** • **Iindependent advice of the duties and tasks.**
3 Processes for Improvement of Teaching • **Workshops for teaching methods.** • **Continuous training of member staff.** • **Review of strategies proposed.** • **Providing new tools for learning.** • **The application of e-learning.** • **Eexchange of experiences internal and external.**

2016

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)

- **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.**

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- **Periodic Review of the contents of the syllabus and modify the negatives.**
- **Consult other staff of the course.**
- **Hosting a visiting staff to evaluate of the course.**
- **Workshops for teachers of the course.**

Faculty or Teaching Staff: __Mohamed Ismail Awad _____

Signature: _____ Date Report Completed: _____

Received by: _____ Dean/Department Head

Signature: _____ Date: _____