

**ATTACHMENT 2 (e)**

**Course Specifications**

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation &  
Assessment**

**Course Specifications  
(CS)**

## Course Specifications

Institution: **University of Dammam**

Date: **26/2/2014**

College/Department: **College of Science for Girls/ Chemistry department**

### A. Course Identification and General Information

1. Course title and code: <b>General Chemistry 2. CHEM- 142N</b>			
2. Credit hours: <b>Four credit hours</b>			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) <b>Bachelor of Chemistry</b>			
4. Name of faculty member responsible for the course			
5. Level/year at which this course is offered: <b>level 2/ First year</b>			
6. Pre-requisites for this course (if any) <b>General Chemistry 1. CHEM- 101N</b>			
7. Co-requisites for this course (if any) <b>Does not exist</b>			
8. Location if not on main campus <b>College of Science for Girls/ Dammam</b>			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	*	What percentage?	
70%	<input type="text"/>		<input type="text"/>
b. blended (traditional and online)	<input type="text"/>	What	<input type="text"/>
percentage?	<input type="text"/>	e-learning	<input type="text"/>
c.	<input type="text"/>	e-learning	<input type="text"/>
What percentage?	<input type="text"/>	correspondence	<input type="text"/>
d.	<input type="text"/>	correspondence	<input type="text"/>
What percentage?	<input type="text"/>	correspondence	<input type="text"/>
f. other	<input type="text"/>	What percentage?	<input type="text"/>

## B Objectives

1. What is the main purpose for this course?

- To recognize the states of matter (gas, solid and liquid).
- To study the laws of gases and the kinetic theory of gases.
- To recognize the basics of thermochemistry and its applications.
- To study the chemical and ionic equilibrium.
- To discuss the phase rule and degree of freedom.

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)

- Lecturing and simplifying the information by using different information technology and Internet.
- The use of visual display PowerPoint.
- Linking the lecture content with the presentation of new research materials published recently.
- Discussion, comments and feedback between professor and students.
- Access to modern research and studies related to the topics of decision and take advantage of them.
- Duties assigned to the students and then discussed together.

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

Course Description:

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
The gaseous state, properties of gases, laws of gases, general gases law, Dalton's law of partial pressures, gas density and molar mass, Graham's diffusion law	1	3
Kinetic theory of gases, molecular speed, distribution of molecular speed, deviation of real gases, liquefaction temperature	1	3
Energy and types of energy, energy changes in chemical reactions, enthalpy, thermochemistry equations and enthalpy of reactions	1	3
Specific heat and heat capacity, constant volume and constant pressure calorimeter, standard states, Hess's law	1	3
Solutions, types of solutions, solutions of gases in liquid, Henry's law, solution of gases in solids, solutions of liquid in liquid, ideal and non ideal solutions	1	3
Immiscible liquids, partially miscible liquids, solutions of solid in liquids, colligative properties, electrolytes, Ostwald's dilution law	1	3

Chemical equilibrium, rate of chemical reaction, homogeneous and heterogeneous reactions, equilibrium constant, law of mass conversion	1	3
Relationship between $K_c$ and $K_p$ , Le chatelier's principal, conditions effecting of chemical equilibrium, expecting the direction of chemical reaction	1	3
Ionic equilibrium, acid- base theories, acid-base equilibrium in aqueous solutions, the pH scale.	1	3
Weak and strong acids and bases, pH and pOH of acids and bases, buffer solutions.	1	3
Phase rule and phase equilibria, phase, number of components, degrees of freedom, one component system, water system, two component systems, three component systems	2	6
revision	1	3

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	39	0	0	24	0	63
Credit	3	0	0	1	0	4

3. Additional private study/learning hours expected for students per week	4 hours 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.)

<b>Code</b>	<b>NQF Learning Domains</b>	<b>Course Teaching</b>	<b>Course Assessment</b>
<b>1.0</b>	<b>Knowledge</b>		
1.1	To recognize the states of matter (gas, solid and liquid).	Lecturing with simplifying the information by using illustrative	Questions at the end of each lecture
1.2	To study the laws of gases and the kinetic theory of gases	The using of visual display such as PowerPoint	Participation and positive incentives during the lecture
1.3	To recognize the basics of thermochemistry and its applications	Renewal and exciting during	Sudden oral tests
1.4	To study the chemical and ionic equilibrium	Discussion, comments and asking questions	Quarterly tests
1.5	To discuss the phase rule and degree of freedom	Recent research related to the subject	Evaluation of research and working papers related to the course and its objectives, and assigned to students as an activity and
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1	Remember the difference between ideal and real gases	Deep discussion with the students by asking some diverse and exciting oral questions during the	Ask questions at the end of the lecture
2.2	Understand the principles of chemical equilibrium	Linking between skills and reality and what surrounds us	Evaluation the results of the research done by the students as well as the paper work, and involve them in the evaluation process.
2.3	Recognize the phase rule and degree of freedom	Trying to explain the issues in regular and motivated way in order to increase and improve the focusing of the students during the	Achievement tests include (oral questions, quarterly tests, the final test)
2.4	Remember the energy changes and enthalpy of reaction		
2.5	Differentiate between acids and bases and its types		
2.6	Understand the types of solutions		
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	The ability to form groups and the distribution of tasks	To strengthen the confidence of the students and encourage them to attend lectures,	Request a share presentation in front of the students through discussions
3.2	Skill presentation in front of others	To raise the spirit of cooperation among students	
3.3	Skill constructive criticism, dialogue and discussion with others	Cooperation, tolerance and compassion while dealing with colleagues	Involve and discuss the students during the evaluation of their reports
3.4	Ability to clearly express an opinion and accept the opinions of others	Sharing duties (interactive workshop / joint presentation / report / prepare working	
3.5	The ability to analyze and educate.		
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
4.1	The ability to use e-mail to communicate with the instructor and other students	Request the students to send their home works and research via	Written tests

4.2		Cooperative Education and visit libraries	
	The ability of the students to access useful sites on the Internet, in order to search for specific data and information	Asking the students to exploit some useful sites in the internet associated with the topics of decision for further	Evaluation of research projects and worksheets
		Giving some additional marks (incentives) to the student who supports their research with information from useful sites in the internet	Evaluation of research projects and worksheets
<b>5.0</b>	<b>Psychomotor</b>		
5.1	Not		

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top )

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program)							
	1.1	1.2		2.1		3.2		4.1
1.1	<b>Not applicable</b>							
2.1								

6. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination,	Week Due	Proportion of Total
1	First written exam	7 <sup>th</sup> week	20 %
2	Short report related to the course content	8 <sup>th</sup> week	10 %
3	First practical exam (lab)	10 <sup>th</sup> week	10 %
4	Final practical exam (lab)	13 <sup>th</sup> -14 <sup>th</sup> week	20 %
5	Final written exam	End of semester	40 %

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)

Scheduled office hours between professor and students (4 hours per week).

#### E Learning Resources

1. List Required Textbooks
2. List Essential References Materials (Journals, Reports, etc.)
<del>General Chemistry: Principles and Structure (5<sup>th</sup> Edition) James E. Brady</del> 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.  <b>1- <a href="http://www.wikipedia.org">www.wikipedia.org</a></b> <b>2- <a href="http://www.google.com">www.google.com</a></b>
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.)  Lecture rooms with capacity of 50 student-conditioned and equipped with a display panel and <del>an electronic computer as an integrated unit</del>
2. Computing resources (AV, data show, Smart Board, software, etc.)  <del>A lanton computer used for PowerPoint special lectures remote control and laser pointer</del>
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)  <del>Special library for faculty members</del>

#### G Course Evaluation and Improvement Processes

##### 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

Preparation of a questionnaire to measure the level of achievement of the students in the course,  
and to evaluate the effectiveness of the used teaching method.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Continuous internal and external revision for development.
- Evaluation the performance of the students and professors through the questionnaires.
- Evaluation for the tests and final exam by the students by using questionnaires

### 3 Processes for Improvement of Teaching

- Develop the capacity and skills of the professors by training programs to guide them for using special ways of thinking, brainstorming and collaborative learning.
- Follow-up the new data and information related to the course.
- Implement the recommendations of the study plans commission.
- Implement the instructions rolled by the management department for the development

### 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)

- Correction the exams or assignments with teaching staff of another institution
- Revision the correction of the exams or assignments by independent professors to check

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

- Revision the course Description periodically by the study plans commission.
- Hosting a visiting professor to evaluate the course and its development.
- Schedule Workshops for staff members.
- Update the source of learning for the course with the modern developments.
- Statistical analysis of the results of the outcome of the students and exploit them in