المركز الوطني للتقويم والاعتماد الاكاديمي
National Center for Academic Accreditation and Evaluation

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)

General Chemistry 1

CHEM 201

First Semester 1441 – 2019 / 2020

Course Specifications

Institution **University college of Umluj**	Date of Report**: 08-10-2019**
College/Department: **Faculty of Science / Department of Biology**	

A. Course Identification and General Information

1. Course title and code: **General chemistry - 1 (CHEM 201)**
2. Credit hours : **4 (3+1) Hours**
3. Program(s) in which the course is offered. **(Chemistry)**
4. Name of faculty member responsible for the course**: Sonoud K. AlZahrani**
5. Level/year at which this course is offered: **3th level / second Year**
6. Pre-requisites for this course (if any) :**N/A**
7. Co-requisites for this course (if any): **N/A**
8. Location if not on main campus **: Chemistry Department Main Campus (Male student)**
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	√	What percentage?	**75%**
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other	√	What percentage?	**25%**

Comments:

B Objectives

1. What is the main purpose for this course?

Upon the completion of this course the student will be able to:

- **Understand the chemical terminology, nomenclature, units and concepts related to the states of the matter, atomic structure and chemical bonding.**
- **Know the atomic structure, quantum numbers and the underlying theories.**
- **Explain the characteristic properties of the elements including group relationships and trends in the periodic table.**
- **Define the chemical bonding and geometrical structural features of elements and their compounds as well as the relevant theories.**
- **Define and explain the characteristics of different states of the matter and the relevant laws.**
- **Understand the principles and procedures used in qualitative analysis of inorganic compounds (acidic and basic radicals).**
- **Recognize the properties of elements and compounds based on atomic structure, chemical bonding.**
- **Solve problems related to chemical calculations, and parameters of the gases.**
- **Analyze chemical information to identify the properties of elements, the nature of bonding in compounds and their properties.**
- **Differentiate between the ideal and real gases, different states of the matter, elements and compounds.**

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)

- **There is a plan for changing the experimental part with more advanced experiments.**
- **New and updated text books.**
- **Related Web Sites.**
- **Provide time for tutorial.**
- **Reduce number of student in class.**

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

1. Topics to be covered

List of Topics	No of Weeks	Contact hours

1- Introduction, Measurements, units .Significant figures and calculations	2	6
2- Nature of Light.	2	6
3- Atomic Structure (History – Thomson –Rutherford –Bohr – Quantum Mechanics Models).	3	9
4- Quantum Numbers& Electronic Configuration.	2	6
5- General Properties of the Elements.	1	3
6- Gasses law.	1	3
7- Chemical equilibrium	1	3
8- Ionic equilibrium	1	3
9- Liquid state	1	3
10- Electrochemistry.	1	3

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	**45**	**NA**	**NA**	**45**	**NA**	**90**
Credit	**45**	**-**	**-**	**15**	**NA**	**60**

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

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

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The ***National Qualification Framework*** provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

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. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.

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	**Knowledge**		
1.1	Define the chemical terminology, nomenclature, units and concepts related to the states of the matter, atomic structure and chemical bonding.	• Lectures. • Discussion • Practical experiments	• In class – quizzes and homework.
1.2	Know the atomic structure, quantum numbers and the underlying theories	• Lectures. • Discussion • Practical experiments	• Mid-term and final exams, quizzes
1.3	Define and Explain the characteristic properties of the elements including group relationships and trends in the periodic table.	• Lectures. • Discussion • assignments	• Mid-term and final exams, quizzes
1.4	Able to explain the chemical bonding and geometrical structural features of elements and their compounds as well as the relevant theories	• Lectures. • Discussion	• Mid-term and final exams, quizzes
1.5	Define and Explain the characteristics of different states of the matter and the relevant laws.	• Lectures. • Discussion • assignments	• Mid-term and final exams, quizzes
1.6	Understand the principles and procedures used in qualitative analysis of inorganic compounds (acidic and basic radicals).	• Lectures. • Solve problems • assignments	• Mid-term and final exams, quizzes
1.7	Recognize the properties of elements and compounds based on atomic structure, chemical bonding	• Lectures. • Discussion	• Mid-term and final exams, quizzes

		• assignments	
1.8	Able to explain ionic and chemical equilibrium	• Lectures.	• Mid-term and final exams, quizzes
2.0	**Cognitive Skills**		
2.1	• Calculate λ , E of electromagnetic radiation	• Problems solving.	• In-class quizzes
2.2	• Calculate P , V for ideal gases.	• Problems solving.	• Mid-term and final exams.
2.3	• Differentiate between the ideal and real gases, different states of the matter, elements and compounds	• discussion	• Performance in discussions during lectures, exams and quizzes.
3.0	**Interpersonal Skills & Responsibility**		
3.1	• Work as team in the classroom..	• Assignments and practical classes	• Evaluating assignments.
3.2	• Able to carry responsibility	• assignments	• Evaluating assignments.
4.0	**Communication, Information Technology, Numerical**		
4.1	• Able to express himself,	• Oral representation	• observation
4.2	• can use math for chemical problems	• problem solving	• quizzes and exams
4.3	• using computational tool	• Assignments	• Homework assignments.
5.0	**Psychomotor**		
5.1	Able to deal with glasswares and chemicals.	Practical class	• Observation
5.2	Able to deal with instruments	Practical class	• Observation

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
	estimate, explain, summarize, write, compare, contrast, diagram,

Cognitive Skills	subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
Psychomotor	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested ***verbs not to use*** when writing measurable and assessable learning outcomes are as follows:

Consider	Maximize	Continue	Review	Ensure	Enlarge	Understand
Maintain	Reflect	Examine	Strengthen	Explore	Encourage	Deepen

Some of these verbs can be used if tied to specific actions or quantification.

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

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	**Quiz 1**	**Week 4**	**5%**
2	**First Mid-term exam**.	**Week 7**	**25%**
3	**Quiz 2**	**Week 10**	**5%**
5	**Practical exam**	**Week13**	**25%**
	Final exam	**Week 17**	**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)

- **Academic advices as needed by the students**
- **Office hours (10 hrs. per week for all students)**

E. Learning Resources

1. List Required Textbooks

- **General Chemistry , Donald A . McQuarrie, Peter A. Rock, and Ethan Gallogly, Edition-4, University Science Books,2010.**

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

- **General Chemistry (Principles and Structure), James E. Brady and Gerard E. Humiston, Edition-2, John Wiley & Sons1990**
- **General Chemistry, Raymond Chang, Edition-9, MacGraw-Hill 2007**

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

- **American Journal of Chemistry**

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

- **http//:learn.genetics.utah.edu/content/labs/gel/animation.**
- **Wikipedia.**
- **www.youtube.com/watch**

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

- **Handouts.**
- **Data show presentations.**
- **Multimedia associated with textbook.**

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.)

Classroom with 25 seats.

2. Computing resources (AV, data show, Smart Board, software, etc.)

- **Simulated education programs if available.**
- **Data Show.**
- **AV Presentations**
- **Molecular models.**

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

- **Scientific calculators**
- **Glass wares like Test tubes, beakers, glass rode and conical flasks &Burners.**
- **Chemicals**

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- **Course evaluation by students.**

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor

- **Peer consultation on teaching.**
- **Departmental council meetings.**
- **Discussion with department group.**

3 Processes for Improvement of Teaching

- **Conducting workshops presented by experts on the teaching methodologies.**
- **Departmental versions on its methods at teaching.**

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)

- **Assigning group of members teaching the same course to grade same questions for various students.**
- **Conducting standard exams.**
- **Faculty member from other universities to review and evaluate the accuracy of grading policy.**

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5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
• **The chairman of the department and faculty council take the responsibility.** • **The course material should be reviewed by departmental, faculty and higher council.**

Faculty or Teaching Staff: : Sonoud K. AlZahrani

Signature:_____

Date Report Completed: 08-10-2019

Received by:_____

Dean/Department Head

Signature:_____ **Date:** _____