



Course Specifications

Institution:	Majmaah University.
Academic Department :	Department of chemistry
Programme :	Bachelor degree of chemistry
Course :	Quantum Chemistry (1)
Course Coordinator :	Ibtehag ELhassan
Programme Coordinator :	Dr.Gehan Laaemary.
Course Specification Approved Date :	28/12 / 1436 H



A. Course Identification and General Information

1 - Course title : Quantum Chemistry (1)	Course Code: Chem 222
2. Credit hours : 2	
3 - Program(s) in which the course is offered: Chemistry	
4 – Course Language : Arabic	
5 - Name of faculty member responsible for the course: Ibtehag ELhassan	
6 - Level/year at which this course is offered : forth Level	
7 - Pre-requisites for this course (if any) : • General chemistry	
8 - Co-requisites for this course (if any) : __	
9 - Location if not on main campus :(faculty of education Zulfi)	
10 - Mode of Instruction (mark all that apply)	
A - Traditional classroom <input type="checkbox"/>	<input checked="" type="checkbox"/> What percentage? <input type="checkbox"/> 30 % <input type="checkbox"/>
B - Blended (traditional and online) <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/> 0 % <input type="checkbox"/>
D - e-learning <input type="checkbox"/>	<input checked="" type="checkbox"/> What percentage? <input type="checkbox"/> 70 % <input type="checkbox"/>
E – Correspondence <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/> 0 % <input type="checkbox"/>
F - Other <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/> 0 % <input type="checkbox"/>
Comments : <input type="checkbox"/>	

B Objectives

What is the main purpose for this course? Definition for students the most important theories in the twentieth century, a theory of quantum based on the probability principle. This theory led to the quantization of energy and momentum and tied the wave movement and particle , A description for movement of fine particles to prepare for the study of the movement of particles and molecules <input type="checkbox"/>
Briefly describe any plans for developing and improving the course that are being implemented : The use of interactive whiteboard teaching instead of the chalkboard. use of the Web in modern additions to the course . <input type="checkbox"/>



C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to failure of classical mechanics and Electromagnetic theory to explanation of some physical and chemical phenomena (Photoelectric effect)	1	2
the initial principle to quantum theory	1	2
Principle of quantization of angular momentum	1	2
Planck's constant and his physical interpretation as a representative to quantum	1	2
Principle of quantization Wilson , A free particle in one dimension	1	2
dual property of the particle and the wave, Wavelength of Dbrolli	1	2
The Uncertainty Principle	1	2
Wave function associated with the movement of the particle	1	2
3 factors influence in quantum mechanic	1	2
Self Wave function	1	2
Average value, Linear combination of self functions	1	2
Condition of orthogonality, The consistency condition of functions	1	2
Independent Schrodinger Equation and time-dependen	1	2
a free particle in one dimension	1	2
Simple harmonic motion, movement of particle in a peaceful effor	1	2
particle in three dimensions	1	2



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

<input type="checkbox"/>	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	---	--	---	---	30
Credit	30	---	---	---	---	30

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

2

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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	Study the course of quantum chemistry (1) by using methods for resolving chemical systems atomic and molecular	lecture discussion, mutual dialogue	Oral tests at the beginning of each lecture, Written tests, final examination
1.2	Students gain more information about the old quantum theory and the emergence of modern quantum theory of waves through the material		
2.0	Cognitive Skills		
2.1	Application of The Chemical Operation To Link between The Theoretical and Workable Material	problems, Laboratory study Open	Continuous questions- duties - practical test





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		discussions	
3.0	Interpersonal Skills & Responsibility		
3.1	Dealing with team spirit in experiments	Working in groups within the lab Collective seminars	Oral questions, Correct experimental results
3.2	Creating constructive competitive spirit		
3.3	Encourage communication between students		
4.0	Communication, Information Technology, Numerical		
4.1	Development of communication skills	Proplems research, study discussion	Oral and written exercises Follow-up practical books,
4.2	Development of numerical skills		
4.3	Use chemical Internet sites and doing some calculation		
5.0	Psychomotor		
5.1			

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	Questions and exercises	4-5	10%
2	First Theoretical midterm exam	6	15%
3	Second Theoretical midterm exam	8	15%
4	Final Theoretical exam	Last week	60%
5	Questions and exercises	4-5	10%

D. Student Academic Counseling and Support



Two hours of weekly academic guidance

E. Learning Resources

1. List Required Textbooks :

Quantum chemistry, Rashed Abdul -Aziz Al-Mubarak

2. List Essential References Materials :

- Foundations of physical chemistry, Adel Ahmed Jrare
- The principles of quantum chemistry, D / Salem Mohammed Khalil
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3. List Recommended Textbooks and Reference Material :

Introduction to Quantum Chemistry , D / Abdel Moneim al aaser

4. List Electronic Materials :

- [Wikipedia](#)
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5. Other learning material :

- [Power point - CD show](#)



F. Facilities Required

1. Accommodation

- Prepared Classroom with Interactive whiteboard
- 40 chair.

2. Computing resources

- Laptop special for Professor only
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3. Other resources

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G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Meeting with the students academic excellence and the stumble
- Identification of evaluation for the course form students

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



- Benefit from the expertise of the members of the section
- Identify assessment for teachers
- Report of the expert from College matchups

3 Processes for Improvement of Teaching :

- Courses for Faculty members
- Workshop to improve methods of evaluation
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4. Processes for Verifying Standards of Student Achievement

- The patch is checked by faculty member

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

- discussion the members section regularly to improve the course
- feedback processes for course quality

Course Specification Approved

Department Official Meeting No (3) Date 28 / 12 / 1436 H

Course's Coordinator ☐

Department Head ☐

Name : ☐ Ibtehag Elhassan ☐

Name : ☐ ☐

Signature : ☐ ☐

Signature : ☐ ☐

Date : ☐ 28/ 12 / 1436 H ☐

Date : ☐ / ... / H

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