



Course Specification

(Bachelor)

Course Title: **Photochemistry**

Course Code: **CEM 407**

Program: **Chemistry**

Department: **Chemistry**

College: **College of Sciences Al Zulfi**

Institution: **Majmaah university**

Version: **TP-153**

Last Revision Date: **13 December 2024**



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A. General information about the course:

1. Course Identification

1. Credit hours: (2)

2. Course type

A. University College Department Track Others
B. Required Elective

3. Level/year at which this course is offered: (8Th/4 year)

4. Course General Description:

Introduction to photochemistry, properties of light, photon. The laws of photochemistry. Electron structure, Electronic transitions and electronically excited states. Basic photochemical reaction. Light sensitive polymers and their applications. Classical silver halide photography. Photo degradation and photo stabilization of materials. Photochemistry of solid state systems. applications Supramolecular photochemistry, photochemical supramolecular devices. Fluorescence, Phosphorescence. Laser , types of Laser and Sun radiation Selected photochemical processes in living systems, nature and environment

5. Pre-requirements for this course (if any):

CEM 243

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

- Know the nature of light
- To identify the photochemistry laws
- Recognize the basics of Photochemistry and its applications
- To know Light sensitive polymers and their applications and Classical silver halide photography
- Studying some selected photochemical processes in living systems, nature and environment

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		



No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize the fundamental concepts, basic principles and theories of photochemistry	K.1	-Lectures -Discussion -questions during class	-Theoretical tests (Quarterly and final) - Short tests -Quizzes. - Homework - Class exercises - Evaluation of research
1.3	Explain the law and rules of photochemistry to apply them in industrial chemistry	K.3		





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.0	Skills			
2.2	Communicate effectively orally and written using appropriate presentation formats for different issues with recipients of different types.	S.2	-Lecture -Group discussions -Brainstorming	- Final exam - Midterm exam - Short tests -Quizzes. - Homework - Class exercises - Evaluation of research
2.3	Demonstrate some selected photochemical processes in living systems, nature and environment	S.3		
3.0	Values, autonomy, and responsibility			
3.1	Apply standards of integrity, transparency and ethical behavior in various academic and professional fields	V.1	-Simulation programs -Cooperative work	- Research papers

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to photochemistry, properties of light, photon. The laws of photochemistry:	3
2.	Electron structure, Electronic transitions and electronically excited states. Basic photochemical reaction.	6
3-	Light sensitive polymers and their applications. Classical silver halide photography.	3





4.	Photo degradation and photo stabilization of materials. Photochemistry of solid state systems..	3
5.	applications Supramolecular photochemistry, photochemical supramolecular devices.	3
6.	Fluorescence, Phosphorescence.	3
7.	Laser, types of Laser.	3
8.	Some selected photochemical processes	3
9.	Introduction to photochemistry, properties of light, photon. The laws of photochemistry:	3
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	1st Mid-term exam	7th	15%
2.	2nd Mid-term exam	12th	15%
3.	Homeworks and Quizzes	Continuous	10%
4.	Presentation	One/semester	10%
5.	Electronic exam	15th	10%
7.	Final Theoretical exam	End of term	40%
Total			100%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	- Principles and Applications of Photochemistry. Brian Wardle A John Wiley & Sons, 2010 - Principles of Molecular Photochemistry: An Introduction. Nicholas J. Turro, J. C. University Science Books. 2008
Supportive References	-Fundamentals of Photochemistry. K. Rohatgi New Age International.2013
Electronic Materials	http://www.chemistry.ohio-state.edu
Other Learning Materials	Bb, power point

2. Required Facilities and equipment



Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Class rooms are available with smart boards and internet
Technology equipment (projector, smart board, software)	Computers and internet are available for online study and video tutorials.
Other equipment (depending on the nature of the specialty)	NA

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Course Evaluation Survey Quality of Exam Survey
Effectiveness of Students assessment	Faculty	CLO Mapping with teaching & assessment. Course Blueprinting Grade Analysis Psychometric Analysis
Quality of learning resources	Peers	Grade Verification
The extent to which CLOs have been achieved	Faculty member / Quality assurance committee	Direct assessment outcome analysis Course report preparation
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	CHEMISTRY
REFERENCE NO.	17
DATE	15/12/2024

