هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Chemistry and Processing of Detergents and Pesticides
Course Code:	ICHM462-2
Program:	Bachelor of Science in Industrial Chemistry
Department:	Department of Physical Sciences
College:	College of Science
Institution:	Jazan University
Version:	TP-153 (2024)
Last Revision Date:	15 February 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (2hrs)

2. Course type

A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐Required		☒ Elective		

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

4. Course general Description:

Course title	Course code	Contact Hours			Credit Hours	Year	Level	Prerequisite	Corequisite
		Lec	Tut	Lab					
Chemistry and processing of detergents and pesticides	ICHM 462-2	2	0	0	2	4th	8th	CHEM336-2	-

This course aims to provide students with a comprehensive understanding of the chemistry, composition, manufacturing processes, uses, and environmental impacts of detergents and pesticides. Students will also learn about the safety precautions associated with the use of detergents and pesticides.

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

CHEM336-2

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

none

7. Course Main Objective(s):

This course has been designed to provide students with the following concepts:

1. Recognizing the chemistry and uses of detergents and pesticides.
2. Identify the different types of detergents and pesticides and their uses.
3. Analyze the manufacturing processes and formulation of detergents and pesticides.
4. Understand the regulations and safety precautions associated with the use of detergents and pesticides.
5. Evaluate the environmental impact of detergents and pesticides.
6. Evaluate the effectiveness and efficiency of detergent and pesticide formulations.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	$2 \times 15 = 30$
2.	**Field**	
3.	**Tutorial**	
4.	**Others (specify)**	
Total		30

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding;** *Upon completion of the course, students are able to:*			
1.1	**Demonstrate a broad knowledge and understanding of the different types of detergents and pesticides available in the market. (M)**	**K1**	**lecture/ discussion Seminars/presentation**	**Objective question**
1.2	**Explain the basic concepts of detergents and pesticides, including their chemical composition and structure. (M)**	**K2**	**lecture / discussion /**	**Essay question**
2.0	**Skills;** *Upon completion of the course, students are able to:*			
2.1	**Demonstrate ability in critical thinking, analyzing the effectiveness and efficiency of detergent and pesticide formulations. (M)**	**S1**	**lecture / discussion / Seminars /Individual presentation**	**Solving Problems & Essay question**

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Communicate scientific information and research findings effectively in writing research papers, or orally, using clear and concise scientific language. (M)	S5	Research /Seminars /Individual presentation	Interactive Discussions/Rubric
3.0	**Values, autonomy, and responsibility;** *Upon completion of the course, students are able to:*			
3.1	Recognize a chemist's ethical and scientific responsibilities.	V2	Research project or presentation	group work Rubric

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Detergents and Pesticides. Definition and classification of detergents and pesticides. Chemical composition and structure.	2
2.	Types of Detergents. Anionic, cationic, nonionic, and amphoteric detergents. Properties and applications.	2
3.	Types of Pesticides. Insecticides, herbicides, fungicides, and rodenticides. Mechanism of action and selectivity.	2
4.	Manufacturing Processes of Detergents. Batch and continuous processes. Raw materials and their properties.	4
5	Manufacturing Processes of Pesticides. Synthesis and formulation processes. Quality control and testing.	4
6.	Environmental Impact and Regulations. Fate and transport of detergents and pesticides in the environment. Environmental regulations and guidelines.	3
7.	Safety Precautions and Guidelines. Proper handling and storage of detergents and pesticides. Personal protective equipment (PPE) requirements.	2
8.	Sustainable Production and Environmental Impact: Consideration of the Formulation and Performance Evaluation. Factors affecting detergent and pesticide performance. Laboratory testing and evaluation methods.	3
9.	Sustainable Production and Environmental Impact: Consideration of the Case Studies: Application of Detergents. Industrial cleaning applications. Household and personal care products.	2
10.	Case Studies: Application of Pesticides. Agricultural and horticultural applications. Pest control in public health.	2
11.	Problem-Solving. Problem-solving exercises.	2
12.	Course Review. Comprehensive assessment of course materials. Review of key concepts.	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	*Periodic Exams*	*6-8*	*20%*
2.	*Assignments & Classroom activities*	*During semester*	*30%*
3.	*Final Exam*	*16-17*	*50%*
	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	1. P. K. Chattopadhyay. Modern Technology of Soaps, Detergents & Toiletries (with Formulae & Project Profiles) 3rd Edition. Niir Project, (2015). 2. K.L. Heong, K.H. Tan, C.P.F. Garcia, L.T. Fabellar, and Z. Lu. Research Methods in Toxicology and Insecticide Resistance Monitoring of Rice Planthoppers. Copyright International Rice Research Institute (2011).
Supportive References	1. Chemistry of Detergents" by Heinz-Jürgen Bertram 2. Pesticides: Chemistry, Applications and Benefits" by Margarita Stoytcheva.
Electronic Materials	• https://en.wikipedia.org/wiki/Chemical_industry • http://www.rsc.org/learn-chemistry • https://www.khanacademy.org/science/organic-chemistry • https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/intro1.htm • https://chem.libretexts.org/
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room(s) for groups of 50 students
Technology equipment (projector, smart board, software)	Smart board, Data show, Black board, internet
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Likert-type Survey CES) Indirect
Effectiveness of Students' assessment	Instructor & Course coordinator	Class room evaluation (direct & indirect
Quality of learning resources	Program coordinator	Indirect
The extent to which CLOs have been achieved	Assessment committee	Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Physical Sciences Department Council
REFERENCE NO.	Meeting (3)
DATE	12/03/2024 -02/09/1445