2023
TP-153

Course Specification
(Bachelor)

Course Title:	Chemistry of Natural Products
Course Code:	CHEM434-2
Program:	Bachelor of Science in Chemistry
Department:	Department of Physical Sciences
College:	College of Science
Institution:	Jazan University
Version:	TP-153 (2024)
Last Revision Date:	31 January 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: (7th Level/ 4th Year.)

4. Course general Description:

Course title	Course code	Contact Hours			Credit Hours	Year	Level	Prerequisite	Corequisite
		Lec	Tut	Lab					
Chemistry of Natural Products	CHEM 434-2	2	0	0	2	4th	7th	CHEM 234-3	---

This course aims to provide the students with basic knowledge about different classes of natural products, means of extraction, isolation and chemical characterizations.

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

CHEM 234-3

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. **The basic knowledge about the main classes of natural products with emphasis on secondary metabolism**
2. **General means of extraction, isolation and biosynthesis of secondary metabolites.**
3. **Identifying the general chemical and spectral methods for characterization of natural products**
4. **Understanding the chemistry of terpenoids, alkaloids and phenolic compounds, methods of extraction, isolation and chemical characterization**

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	(2×15)	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning	0	0%

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		....

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 principles of natural product chemistry, concepts and terminology related to secondary metabolites including terpenes, alkaloids, phenols, and steroids. (M)**	**K1**	**Lectures, directed reading, group discussion and assignments**	**Objective question, Essay question**
1.2	**Know the different strategies for extraction and isolation of secondary metabolites from their sources and outline the importance and uses of these compounds. (M)**	**K2**	**Lectures, directed reading, group discussion and assignments**	**Objective question, Essay question**
2.0	**Skills;** *Upon completion of the course, students are able to:*			
2.1	**Demonstrate knowledge and ability to distinguish and compare between different types of secondary metabolites and how to isolate and elucidate the structure of these compounds by the different methods. (M)**	**S1**	**Lectures, directed reading, group discussion and assignments**	**Objective question, Essay question, Solving Problems**
2.2	**Make effective use of communication, and online**	**S5**	**Lecture,**	**Oral**

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	technology about chemistry of natural products in order to improve their basic knowledge in writing (report and paper/ poster) with a good verbal and clear scientific language. (M)		seminars, and presentation	discussion
3.0	**Values, autonomy, and responsibility;** *Upon completion of the course, students are able to:*			
3.1	Act with integrity and good ethics in chemistry profession and their obligation to society. (M)	V2	Research activities	Plagiarism detection

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to natural products, classification, extractions, isolation, and structure elucidation	4
2.	Terpenoid; importance, classification, extraction, isolation, and structure elucidation	8
3.	Alkaloids; importance, classification, extraction, isolation, and structure elucidation.	8
4.	Natural phenolic compounds; classification, extraction, isolation, and structure elucidation.	6
5.	Miscellaneous natural products	4
Total		$2 \times 15w = 30$

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	***Periodic Exams***	***During Semester***	***30%***
2.	***Assignments & Classroom Activities***	***During Semester***	***20%***
6.	***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	- كيمياء المنتجات الطبيعية. د. طاهر حسن – جامعة البعث – مديرية الكتب والمطبوعات الجامعية – 2008 **-Chemistry of Natural Products, S.V. Bhat, B.A. Nagasampagi, S. Minakshi, Springer, 2005**
Supportive References	**- Chemistry of Natural Products, Ayodhya Singh, Campus Books International, 2004** **- Natural Products Isolation, S. D. Saker, Z. Latif, A. I. Gray, 2nd ed., Humana Press, Totowa, New Jersey, 2006.**
Electronic Materials	**https://chem.libretexts.org** **https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Book**
Other Learning Materials	**www.wikipedia.org**

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room for groups of 30 students.
Technology equipment (projector, smart board, software)	Data show, smart Board, Chem Draw and power point.
Other equipment (depending on the nature of the specialty)	*None*

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 Reviewers, 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