

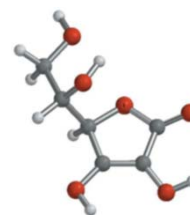
**CHEM 445** (ELECTIVE COURSE)

## CHEMISTRY OF NATURAL PRODUCTS

FOR CHEMISTRY' STUDENTS, COLLEGE OF SCIENCE

PRE-REQUISITES COURSE; CHEM 341

CREDIT HOURS; 3 (2+1)



**Prof. Mohamed El-Newehy**

Chemistry Department, College of Science, King Saud University

<http://fac.ksu.edu.sa/melnewehy/home>

1

## COURSE OBJECTIVES

After completion of the course the student should be able to:

- **Know** the chemistry of many natural products; *terpenoids*, *steroids*, *alkaloids* and *flavonoids*.
- **Know** how to *isolate* and *prepare* the natural products.
- **Know** the method of *identification*, *analysis*, and *separation techniques*.
- **Apply** their knowledge and skills to *interpret* how to *analyze* and *identify* unknown.
- **Develop** in the ability of the students to express their idea.

2

## TOPICS TO BE COVERED

- Introduction (Lectures; 4)  
Definition of natural products, classification methods, drawn from original sources, separated and identified on the construction.
- Terpenoids (Lectures; 6)  
Classification, natural isoprene rule.
- Steroids (Lectures; 6)  
Biological importance, classification and biosynthesis.
- Alkaloids (Lectures 4)  
Identify Alkaloids, classification and examples on some alkaloidal compounds of various classes.
- Natural phenols and examples (Lectures 10)  
Flavonoids, xanthones, coumarins and quinines.

3

## REFERENCES

- **Chemistry of Natural Products**  
Sujata V. Bhat, Bhimsen A. Nagasampagi, Meenakshi Sivakumar.  
First Edition – 2005  
ISBN: 3-540-40669-7  
Springer, Berlin
- **Total Synthesis of Natural Products.**  
Jie Jack Li, E.J. Corey, First Edition 2012.
- **Chemistry of Natural Products**  
Prof. Hassan El Hazmi (**Arabic Edition**)  
Natural products Isolation, Richard J. P. Cannell. Springer.2002

4

## SCHEDULE OF ASSESSMENT TASKS DURING THE SEMESTER

Assessment task	Week Due	Proportion of Total Assessment
1. Projects	All weeks	5 %
2. Homework	4, 9	5%
3. Quizzes	6, 8	10 %
4. 1 <sup>st</sup> Midterm exam	7	20 %
5. 2 <sup>nd</sup> Midterm exam	12	20 %
6. Final exam	16	40 %

5

## COURSE LEARNING OUTCOMES

### 1. Knowledge

- 1.1 Recall the principles and core concepts of the chemistry, significance and sources of natural products, Isolation, purification and identifications .
- 1.2 Recognize to isolated and characterized natural products.
- 1.3 Recognize to determine the structure of terpenoids.

### 2.0 Skills

- 2.1 Analyze and explain the essential facts, concepts, principles and applications relating to the Natural products.
- 2.2 Recognize and characterized the different natural products .
- 2.3 Explain the scientific data both orally and written in Scholarly manner.

### 3.0 Competence

- 3.1 Show to questioning Short seminar and group discussion.
- 3.2 Write report and Science communication.
- 3.3 Appraise ideas, principles and information by oral, written and presentation.

6