



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Chemistry of Natural Products

4024571-2
Course Specifications
(CS)





Course Specifications

Institution: Umm Al-Qura University	Date of Report: 2017
College/Department : Faculty of Applied Science/ department of chemistry	

A. Course Identification and General Information

1. Course title and code: Chemistry of Natural Products/ 4024571-2	
2. Credit hours: 2 hrs (theoretical)	
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Chemistry program	
4. Name of faculty member responsible for the course: Dr. Essam M. Hussein	
5. Level/year at which this course is offered: 6th level / 3rd year	
6. Pre-requisites for this course (if any): Heterocyclic Chemistry	
7. Co-requisites for this course (if any)---	
8. Location if not on main campus: both on El-Abdyah, and El-Zaher	
9. Mode of Instruction (mark all that apply)	
a. Traditional classroom	<input checked="" type="checkbox"/> What percentage? 100%
b. Blended (traditional and online)	What percentage?
c. e-learning	<input type="checkbox"/> What percentage? <input type="checkbox"/>
d. Correspondence	<input type="checkbox"/> What percentage? <input type="checkbox"/>
f. Other	<input type="checkbox"/> What percentage? <input type="checkbox"/>
Comments:	



B Objectives

1. What is the main purpose for this course? By the end of this course student will be familiar with nomenclature, structure elucidation, general properties and methods of preparation of natural products
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) The students will be mentioned to prepare an essay or a report from literature using the library, data base services, and/or websites to follow up and update the new topics of the subject of the course

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
a. Definition, classification, nomenclature and Identification of natural products: Terpenoids – Steroids – Alkaloids	2	4
b. Terpenoids : Introduction and isolation from plants – general structure and nomenclature – classification – general methods of determination of the molecular structures and their preparations, for examples: (Acyclic monoterpenoids (myrcene)- Monocyclic monoterpenoids (limonene)- Bicyclicmonoterpenoids (camphor)- Sesquiterpenoids (farnesol)- Triterpenoids (squalene)- Tetraterpenoids (β -carotene).	4	8





<p>c. Steroids : Introduction and their natural abundance – the difference between steroid compounds – nomenclature – structure elucidation of steroids – methods of preparation of steroids, for examples: Sterols (cholesterol) – Sex hormones (Estrogens (estraiol), Androgenes (testosterone) and Gestogenes (progesterone)- Bile acids (cholanic acid).</p>	4	8
<ul style="list-style-type: none"> Alkaloids : Introduction and methods of extractions – general properties – classification of alkaloids, structure elucidation of alkaloids and methods of their preparation, for examples: Phenyl methyl group (adrenaline)-Pyrrolidine group (hygrine)-Pyridine group (trigonelline)- Pyrrolidine and Pyridine group (nicotine)- Indole group (heptaphylline). 	4	8

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	28	-	-	-	-	28
Credit	2	-	-	-	-	2

3. Additional private study/learning hours expected for students per week. **~ 4 Hours**

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	Recognize the natural abundance of natural products	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • long and short essays • posters lab manuals
1.2	Name different natural products classes		
1.3	Know the methods of isolation from plants of natural products		
1.4	Describe the different methods of extraction of the natural products		
1.5	Familiar with the general properties of different natural products and their relation with the molecular structure		
1.6	Select the proper method of elucidation of structure of an natural products		
1.7	Identify the natural products		
1.8	Write a mechanism for a natural product transformation		
1.9	Recognize the importance of natural products and their impact on the human body		
1.10	Memorize different names of natural products with general structure		
1.11	Outline the different uses of natural products		
2.0	Cognitive Skills		
2.1	Compare each class of natural products through its structure	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • posters • demonstration • individual and group presentations • video analysis
2.2	Explain the different strategies for preparation of natural products		
2.3	Analyze the reasons for the unique properties in some natural products		
2.4	Predict the benefits and harms of various natural products		
2.5	Summarize the different methods for the preparation of various natural products		
3.0	Interpersonal Skills & Responsibility		
	<ul style="list-style-type: none"> • The division of students collectively for teams to make some common reports • Self-reliance and take individual responsibility and the ability to work within the group 	<ul style="list-style-type: none"> • Scientific discussion • Web-based study 	<ul style="list-style-type: none"> • web-based student performance systems
4.0	Communication, Information Technology, Numerical		
4.1	<ul style="list-style-type: none"> • Evaluate the different methods of preparation of 		<ul style="list-style-type: none"> • web-based



4.2	natural products	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	student performance systems <ul style="list-style-type: none"> • individual and group presentations
4.3	<ul style="list-style-type: none"> • Demonstrate a synthetic pathways for synthesis of natural products 		
4.4			
4.5	<ul style="list-style-type: none"> • The ability to conduct a successful style of dealing with data analysis, describing his strategy in the image and draw conclusions from them • use the computer and the internet to search for sources of new researches and collect the researches which help in writing reports on topics related to syllabus. • Interpret chemical data • Present chemical data orally. • Know how to write a report. 		
5.0	Psychomotor		
5.1	NOT APPLICABLE		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Homework or activities.	--	10 %
2	First Periodic Exam.	6	20 %
3	Second Periodic Exam.	12	20 %
4	Final Exam.(2 hours exam)	16	50 %
5	Total		100 %

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- **We have faculty members to provide counseling and advice.**
- **Office hours: During the working hours weekly.**
- **Academic Advising for students.**

E. Learning Resources



1. List Required Textbooks
<ul style="list-style-type: none">• <u>Raymond Cooper, George Nicola</u> " <i>Natural Products Chemistry : Sources, Separations and Structures, 1stEdition</i>" 2014, CRC Press.• <u>Rensheng Xu, Yang Ye, Weimin Zhao</u> " <i>Introduction to Natural Products Chemistry, 1stEdition</i>" 2011, CRC Press• <u>Sujata V. Bhat, B.A. Nagasampagi, Meenakshi Sivakumar</u> " <i>Chemistry of natural products , 1stEdition</i>" 2005, Springer.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
<ul style="list-style-type: none">• <u>P.M. Dewick</u> " <i>Medicinal Natural Products: A Biosynthetic Approach</i>", 2nd Edition, Wiley & Sons, 2002 and 3rd Edition, Wiley & Sons, 2009.• <u>J. R. Hans Editor E. W. Abel</u> " <i>Natural Products : The Secondary Metabolites</i>" Copyright: 2003.Print ISBN: 978-0-85404-490-0
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
<ul style="list-style-type: none">• http://www.chemweb.com• http://www.sciencedirect.com• http://www.rsc.org
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
<ul style="list-style-type: none">• Classrooms capacity (30) students.• Providing hall of teaching aids including computers and projector.
2. Computing resources (AV, data show, Smart Board, software, etc.)
<ul style="list-style-type: none">▪ Room equipped with computer and projector and TV.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
<ul style="list-style-type: none">• No other requirements.

G Course Evaluation and Improvement Processes




1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Complete the questionnaire evaluation of the course in particular.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor <ul style="list-style-type: none">• Observations and the assistance of colleagues.• Independent evaluation for extent to achieve students the standards.• Independent advice of the duties and tasks.
3 Processes for Improvement of Teaching <ul style="list-style-type: none">• Workshops for teaching methods.• Continuous training of member staff.• Review of strategies proposed.• Providing new tools for learning.• The application of e-learning.• Exchange of experiences internal and external.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) <ul style="list-style-type: none">▪ Check marking of a sample of exam papers, or student work.▪ Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none">• Periodic Review of the contents of the syllabus and modify the negatives.• Consult other staff of the course.• Hosting a visiting staff to evaluate of the course.• Workshops for teachers of the course.

Faculty or Teaching Staff: Dr. Essam M. Hussein

Signature: 

Date Report Completed: 12/1/2019

Received by: Dr Ismail I. Althagafi Department Head

Signature: 

Date: 20/1/2019

