

ATTACHMENT 5.

Kingdom of Saudi Arabia
**The National Commission for Academic Accreditation &
Assessment**

T6. Course Specifications
(CS)

Natural Products

(402732-2)



Course Specifications

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

A. Course Identification and General Information

1. Course title and code: Natural Products / 402732-2			
2. Credit hours: 2 hrs. (theoretical)			
3. Program(s) in which the course is offered: Ph. D. in Chemistry			
4. Name of faculty member responsible for the course: Dr. Essam M. Hussein			
5. Level/year at which this course is offered: 2nd / 1st			
6. Pre-requisites for this course (if any): not applicable			
7. Co-requisites for this course (if any): not applicable			
8. Location if not on main campus: El-Abedyah, El-Azizya, and El-Zaher			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
b. blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="80%"/>
c. e-learning	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="20%"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
Comments:			

B Objectives

<p>1. What is the main purpose for this course?</p> <p>The aim of this course is to get a detailed knowledge of the great potential of natural products, with focus to their sources, structures elucidation, synthesis, as well as their biological and medical importance.</p>
<p>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):</p> <ul style="list-style-type: none"> • Changes in content as a result of new research in the field. • Increased use of IT or web based reference material. • Encourage students to carry out research reports in natural products field using the library, data base services, and/or websites. • The use of smart teaching halls for lectures.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
<p>1- <u>Anthocyanins and Flavones</u></p> <p>a- General nature of Anthocyanins</p> <p>b- Structure and synthesis of Anthocyanins</p> <p>c- Structure and synthesis of Flavones and <i>iso</i>-Flavones</p> <p>d- Structure and synthesis of <i>iso</i>-Flavones</p> <p>e- Structure and synthesis of Depsides</p>	3	6



2- <u>Purines</u> a- Uric acid (structure and synthesis) b- Structure and synthesis of Purine derivatives c- Structure and synthesis of Xanthine bases	2	4
3- <u>Structure, synthesis and importance of Vitamins</u>	2	4
4- <u>Hemoglobin, chlorophyll, and Phthalocyanines</u> a- Structure of Hemoglobin b- Synthesis of Porphyrin c- Synthesis of Haemin d- Biosynthesis of Porphyrin e- Structure of Chlorophyll f- Structure and preparation of Phthalocyanines	3	6
5- <u>Chemotherapy</u> a- Structure and synthesis of Sulfa drugs b- Synthesis of Antimalarials c- Arsenical drugs d- Structure and synthesis of Antibiotics e- Synthesis of Patulin f- Structure and synthesis of Chloramphenicol	3	6



2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	26	--	--	--	--	26
Credit	2	--	--	--	--	2

3. Additional private study/learning hours expected for students per week.	2
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Identify the chemical structure of different classes of natural products	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Web-based study • Library visits 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • long and short essays • posters
1.2	Recognize the natural abundance of natural products		
1.3	Name different natural products classes		
1.4	Identify the biological activity of natural products		
1.5	Recognize the different classes of natural products		
1.6	Write the chemical structure of natural products correctly		
1.7	Recognize the different methods to elucidate the chemical structure of natural products		
1.8	Familiar with the basic knowledge about the		

	importance of natural products		
1.9	Outline the different uses of natural products		
1.10	Familiar with the general properties of different natural products and their relation with the structure		
1.11	Familiar with the importance of natural products in medical field		
1.12	Identify the different classes of chemotherapeutic agents		
1.13	Recognize the different methods used in the preparation of various chemotherapeutic agents		
1.14	Memorize different name of natural products with general structures		
1.15	Memorize different name of chemotherapeutic agents with general structures		
2.0	Cognitive Skills		
2.1	Compare each class of natural products through its structure	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Web-based study • Library visits 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • long and short essays • posters • demonstrations
2.2	Design of different strategies for preparation of natural products		
2.3	Predict the benefits and harms of various natural products		
2.4	Summarize the different methods for the preparation of various natural products		
2.5	Compare between the action of different chemotherapeutic agents		
2.6	Summarize the different methods for the		

	preparation of various chemotherapeutic agents		
3.0	Interpersonal Skills & Responsibility		
3.1	Use the basic knowledge of organic chemistry to synthesis of different types of natural products	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Web-based study 	<ul style="list-style-type: none"> • Exams • web-based student performance systems
3.2	Use the basic knowledge of organic chemistry to elucidate the chemical structure of different types of natural products		
3.3	Use the basic knowledge of organic chemistry to elucidate the chemical structure of various chemotherapeutic agents		
3.4	Use the basic knowledge of organic chemistry to synthesis of different types of chemotherapeutic agents		
4.0	Communication, Information Technology, Numerical		
4.1	Evaluate the different methods to synthesis of natural products	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • web-based student performance systems • individual and group presentations
4.2	Demonstrate a synthetic pathways for synthesis of natural products		
4.3	Demonstrate the different applications of natural products		
4.5	Evaluate the different methods to synthesis of various chemotherapeutic agents		
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	Mid-term exam	8	30%
2	Assignments and activities		10%
3	Final Exam	15-16	60%

D. Student Academic Counseling and Support

<p>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)</p> <ul style="list-style-type: none"> We have faculty members to provide counseling and advice. Office hours: During the working hours weekly. Academic Advising for students.

E Learning Resources

<p>1. List Required Textbooks.</p> <ol style="list-style-type: none"> S. V. Bhat, B. A. Naga Sampagi, M. Shivakuman, <i>Chemistry of Natural Products-revised edition</i>, Narosa Publishing House Pvt. Ltd., New Delhi, 2013. I. L. Finar, <i>Organic Chemistry volume 2</i>, 3rd Edition, Longmans, Green and CO LTD, London, 1964.
<p>2. List Essential References Materials (Journals, Reports, etc.)</p> <ul style="list-style-type: none"> Lecture handouts available on the coordinator website
<p>3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)</p> <ol style="list-style-type: none"> Th. L. Lemke, D. A. Williams, V. F. Roche, S. W. Zito, <i>Foye's Principles of Medicinal Chemistry, 7th Edition</i>, Lippincott Williams & Wilkins, 2012, Lippincott Williams & Wilkins.

4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

- <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.

- [ChemDraw Ultra 11.0](#)

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.)

- Classrooms capacity (10) students.
- Providing hall of teaching aids including computers and projector.

2. Computing resources (AV, data show, Smart Board, software, etc.)

- Room equipped with computer, projector and TV.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list): No other requirements.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Questionnaires can be used to collect student feedback.
- Student representation on staff-student committees and institutional bodies.

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- 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

- 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)

- 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.

- 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.

Name of Instructor: **Dr. Essam M. Hussein**

Signature:

Date Report Completed: **2017**

Name of Field Experience Teaching Staff:

Program Coordinator:

Signature: _____

Date Received: **2017**

