

**Kingdom of Saudi Arabia**

**The National Commission for**

**Academic Accreditation & Assessment**



**Course Specifications**

**Chemistry of Aliphatic Compounds**

**402131**

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### Course Specifications

Institution: <b>Umm Al-qura University</b>	Date of Report: <b>2016</b>
College/Department : <b>Faculty of Applied Science/ department of chemistry</b>	

#### A. Course Identification and General Information

1. Course title and code: <b>Chemistry of Aliphatic Compounds/ 402131</b>			
2. Credit hours: <b>4 (3+1)</b>			
3. Program(s) in which the course is offered. <b>Chemistry program</b>			
4. Name of faculty member responsible for the course: <b>Dr. Heba Abd Elhady Mohamed</b>			
5. Level/year at which this course is offered: <b>2<sup>nd</sup> level/1<sup>st</sup> year</b>			
6. Pre-requisites for this course (if any): -			
7. Co-requisites for this course (if any)---			
8. Location if not on main campus			
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?	<b>100%</b>
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:			

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## B Objectives

1. What is the main purpose for this course?

**By the end of this course student will be familiar with nomenclature, chemical properties and synthesis of aliphatic compounds**

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
Nomenclature of Hydrocarbons	1	3
Alkanes (Preparation, physical properties, chemical reactions cycloalkanes, conformations in cycloalkanes)	1	3
Alkenes (Preparation, physical properties, chemical reactions conjugated dienes, free radical addition, Diels alder reaction, and 1,4 cycloadditions in dienes	1	3
Alkynes (Preparation, Acidity of terminal alkynes, chemical reactions, industrial uses of alkynes)	1	3
Alkyl halides and dihalides (nomenclature, preparations and reactions)	1	3
Alcohols and dihydric and trihydric alcohols (nomenclature, chemical properties) and thioalcohols	1	3
Ethers (nomenclature, preparations and chemical properties) and thioethers	1	3
Organometallic compounds and Grignard reagents	1	3
Carbonyl compounds (nomenclature, preparation and chemical properties	1	3
Carboxylic acids and their derivatives (nomenclature, preparation and chemical properties)	1	3
Amines (nomenclature, preparation and chemical properties)	1	3
Inductive effect, resonance effect and stereochemistry	1	3

## Practical Part:

### I-Identification and investigation tests of the following

- Alcohols
- Aldehydes and ketones
- Carboxylic acids
- Salts of carboxylic acids

## II-General scheme for identification of organic aliphatic unknown

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	36	-		36		72
Credit	3	-		1		4

3. Additional private study/learning hours expected for students per week.	<input type="text"/>
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
<b>1.0</b>	<b>Knowledge</b>		
1.1	Recognize the general IUPAC rules for nomenclature of different organic classes	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Scientific discussion</li> <li>• Library visits</li> <li>• Web-based study</li> </ul>	<ul style="list-style-type: none"> <li>• Exams</li> <li>• web-based student performance systems</li> <li>• portfolios</li> <li>• long and short essays</li> <li>• posters lab manuals</li> </ul>
1.2	Name different organic classes and organometallic compounds using common and IUPAC system		
1.3	Know the classifications in different organic families		
1.4	Describe the different methods of preparations of organic compounds		
1.5	Familiar with the physical properties of different organic molecules and their relation with the structure		
1.6	Select the proper method of preparation of an organic molecule		
1.7	Identify the different conformations of alkanes and cycloalkanes		
1.8	Write a mechanism for a chemical organic transformation		
1.9	Determine the type of mechanism and intermediates in different organic reactions		
1.10	Recognize the industrial use of most famous organic molecules		
1.11	Memorize different name reactions in organic chemistry		
1.12	Outline the different uses of organometallic compounds		
1.13	Define inductive and resonance effect		
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1	Apply the IUPAC rules for all organic families	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Scientific discussion</li> <li>• Library visits</li> <li>• Web-based</li> </ul>	<ul style="list-style-type: none"> <li>• Exams</li> <li>• web-based student performance systems</li> <li>• portfolios</li> </ul>
2.2	Compare between IUPAC nomenclature and common nomenclature for organic compounds		
2.3	Explain the different strategies for preparation of organic compounds		
2.4	Analyze the reasons for the unique physical properties in some		

	organic compounds	study	<ul style="list-style-type: none"><li>• posters</li><li>• demonstrations</li></ul>
2.5	Predict the most stable conformation of alkanes and cycloalkanes		
2.6	Summarize the different reactions of organic compounds		
2.7	Account for the acidity and basicity of different organic compounds		
3.0	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	Use the IUPAC rules for all organic families	<ul style="list-style-type: none"><li>• Lectures</li><li>• Scientific discussion</li><li>• Web-based study</li></ul>	<ul style="list-style-type: none"><li>• Exams</li><li>• web-based student performance systems</li></ul>
3.2	Choose the suitable mechanism for a given reaction		
4.0	<b>Communication, Information Technology, Numerical</b>		
4.1	Evaluate the different methods of preparation of organic compounds	<ul style="list-style-type: none"><li>• Lectures</li><li>• Scientific discussion</li><li>• Library visits</li><li>• Web-based study</li></ul>	<ul style="list-style-type: none"><li>• web-based student performance systems</li><li>• individual and group presentations</li></ul>
4.2	Demonstrate a synthetic pathways for synthesis of organic molecules		
5.0	<b>Psychomotor</b>		
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	Exam	5-14	20%
2	Assignments		10
3	Practical Exam	15	30%
4	Final Exam	16	40%

#### 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"> <li>• T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder "<i>Organic Chemistry, 11<sup>th</sup> Edition, International Student Version</i>" <b>2013</b>, John Wiley &amp; Sons.</li> <li>• John McMurry's "<i>Organic Chemistry, 8<sup>th</sup> edition, International Edition</i>" <b>2011</b>, Brooks/Cole</li> </ul>
2. List Essential References Materials (Journals, Reports, etc.) <ul style="list-style-type: none"> <li>• Lecture Hand outs available on the coordinator website</li> </ul>
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) <ul style="list-style-type: none"> <li>• Amit Arora "<i>Introductory Organic Chemistry</i>" <b>2006</b>, Discovery Publishing House New Delhi</li> <li>• M. Casey, J. Leonard, B. Lygo, G. Procter "<i>Advanced Practical Organic Chemistry</i>" 1990, Springer US</li> </ul>
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) <ul style="list-style-type: none"> <li>• <a href="http://www.chemweb.com">http://www.chemweb.com</a></li> <li>• <a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a></li> <li>• <a href="http://www.rsc.org">http://www.rsc.org</a></li> </ul>
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"> <li>• <b>Classrooms capacity (30) students.</b></li> <li>• <b>Providing hall of teaching aids including computers and projector.</b></li> </ul>
2. Computing resources (AV, data show, Smart Board, software, etc.) <ul style="list-style-type: none"> <li>▪ <b>Room equipped with computer and projector and TV.</b></li> </ul>
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) <ul style="list-style-type: none"> <li>• <b>No other requirements.</b></li> </ul>

## 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"> <li><b>Observations and the assistance of colleagues.</b></li> <li><b>Independent evaluation for extent to achieve students the standards.</b></li> <li><b>Independent advice of the duties and tasks.</b></li> </ul>
3 Processes for Improvement of Teaching <ul style="list-style-type: none"> <li><b>Workshops for teaching methods.</b></li> <li><b>Continuous training of member staff.</b></li> <li><b>Review of strategies proposed.</b></li> <li><b>Providing new tools for learning.</b></li> <li><b>The application of e-learning.</b></li> <li><b>Exchange of experiences internal and external.</b></li> </ul>
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"> <li><b>Check marking of a sample of exam papers, or student work.</b></li> <li><b>Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.</b></li> </ul>
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none"> <li><b>Periodic Review of the contents of the syllabus and modify the negatives.</b></li> <li><b>Consult other staff of the course.</b></li> <li><b>Hosting a visiting staff to evaluate of the course.</b></li> <li><b>Workshops for teachers of the course.</b></li> </ul>

Faculty or Teaching Staff: Heba Abd Elhady Mohamed

Signature: *Heba Abd Elhady*

Date Report Completed: 2016

Received by: \_\_\_\_\_ Department Head

Signature: \_\_\_\_\_ Date: \_\_\_\_\_