



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Chemistry of Aromatic Compounds

4022142-3
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 Aromatic Compounds /4022142-3			
2. Credit hours: 3 hrs (2 theoretical + 1 practical)			
3. Program(s) in which the course is offered. Chemistry and Industrial Chemistry			
4. Name of faculty member responsible for the course: Dr. Heba Abd Elhady Mohamed			
5. Level/year at which this course is offered: 4rd level / 2st year			
6. Pre-requisites for this course (if any): -Chemistry of Aliphatic Compounds			
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)	<input type="checkbox"/>	What percentage?	
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			



B Objectives

<p>1. What is the main purpose for this course? By the end of this course student will be familiar with basic concepts in aromatic chemistry including dividing, naming, preparation, physical and chemical properties.</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"> • simulating evolution in the science of chemistry by trying to add new items on some points of the course • diversify of learning sources for the course to benefit from more than one reference • comparison of contents with that introduced in deferent local and international departments • use of smart classes for lectures • Encouragement of students to make reports in aromatic chemistry from libraries or by using internet (Self-study)

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
1. Aromaticity: Huckelrule and annulenes	1	2
2. Benzene: molecular orbital theory point of view, stability and resonance		
3. Chemical properties of benzene: friedel-crafts reactions and their applications in organic syntheses	1	2
4. Electrophilic substitution reactions	1	2
5. Reactivity and orientation in benzene ring – second electrophilic substitution	1	2
6. Reactivity and orientation in benzene alkyl derivatives	2	4
7. Aromatic amines and their derivatives.	1	2
8. Sulfonic acids and their derivatives.	1	2
9. Phenols and their derivatives.	1	2
10. Aromatic aldehydes and ketones.	1	2
11. Aromatic carboxylic acids and their derivatives.	1	2
12. Poly nuclear aromatic hydrocarbons – diphenyl benzedene derivatives.	1	2
13. Condensed aromatic hydrocarbons - Cancer-causing hydrocarbons.	2	4

Laboratory Part:

I- Investigation and identification of the following

- Aromatic hydrocarbons
- Aromatic amines





- c. Phenols
- d. Aromatic aldehydes and ketones
- e. Aromatic carboxylic acids
- f. Sulfonic acids



II-General scheme for identification of organic aromatic unknown

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	28	-		42		70
Credit	2	-		1		3

3. Additional private study/learning hours expected for students per week.
Two hours for preparing and discussion of reports and solving home works in addition to the main time of lectures

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	Define aromatic compounds and aromaticity	<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 • long and short essays • providing various posters
1.2	Name different organic classes using common and IUPAC system		
1.3	classify different aromatic families		
1.4	Describe the different methods of preparations of aromatic compounds		
1.5	Familiar with the physical properties of different aromatic compounds and their relation with the structure		
1.6	Select the proper method of conversions among different aromatic compounds		
	Recognize the chemical properties of aromatic compounds		
1.7	Write a mechanism of electrophilic aromatic substitution reactions.		
1.8	Explain the products of different aromatic reactions		
1.9	Recognize the industrial use of most famous organic molecules		
2.0	Cognitive Skills		



2.1	Train to choose the suitable method for the preparation of aromatic compounds		
2.2	Apply the IUPAC rules for all aromatic families	<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 • posters • demonstrations
2.3	Choose the suitable mechanism for reactions		
2.4	Explain the different strategies for preparation of aromatic compounds		
2.5	Analyze the reasons for the unique physical properties in some organic compounds		
2.6	Predict the expected product in different aromatic reactions according to the functional group		
2.7	Summarize the different reactions of aromatic compounds		
3.0	Interpersonal Skills & Responsibility		
	Have the following skills <ul style="list-style-type: none"> • Ability to work in a team to perform a specific experimental tasks. • Ability to work independently to handle chemicals • Ability to communicate results of work to classmate and participation in class or laboratory discussions 	<ul style="list-style-type: none"> • Class discussions • Research activities 	<ul style="list-style-type: none"> • Performance on in-practical exams. • Work on research activity. • Overall student performance in Lab. discussions • Cross questions after finishing laboratory work
4.0	Communication, Information Technology, Numerical		
	<ul style="list-style-type: none"> • Research using computer to collect the data used in writing reports • Illustrate sources of new researches which are related to the course by researching in the internet • Able to calculate and discuss the facts and logical propose methods to solve the difficulties. • Ability to work in a team to perform a specific task. 	<ul style="list-style-type: none"> • Using computers lab • Research centers visit • Library visits • Web-based study 	<ul style="list-style-type: none"> • web-based student performance systems • individual and group presentations
5.0	Psychomotor		
	NOT APPLICABLE		
	Laboratory practice . including <ol style="list-style-type: none"> 1.Locate Materials Safety Data Sheets, chemicals carcinogens list, and hazardous chemicals list. 2. Handle chemicals safely with a proper PPE 3.Dilute solutions, repeat analysis and calculate true result for all procedures performed as required. 4.Dispose the hazardous solution in right way 	Practical session should include both demonstration and experiments .	<ol style="list-style-type: none"> 1.Repetition of the experiments , to reproduce the results 2.Written report of chart and procedures. 3.The students should be able to correlate their results with experimental conditions



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	Homeworks and activities.	All the term	10 %
2	Midterm Exam.	8 or 9	20 %
3	Activity in lab and practical Exam	All the term and the final exam at the 15 th week	30 %
4	Final Exam.(2 hours exam)	16	40 %
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

- John McMurry's "*Organic Chemistry, 8th edition, International Edition*" **2011**, Brooks/Cole

2. List Essential References Materials.

1. Amit Arora "*Introductory Organic Chemistry*" **2006**, [Discovery](#) Publishing House New Delhi
2. John McMurry's "*Organic Chemistry, 8th edition, International Edition*" **2011**, Brooks/Cole
3. T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder "*Organic Chemistry, 11th Edition, International Student Version*" **2013**, [John Wiley & Sons](#).

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, 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.

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 (30) students.**
- **Providing hall of teaching aids including computers and projector.**

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

- **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)

- **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

- **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.**

Faculty or Teaching Staff: **Dr. Heba Abd Elhady Mohamed**

Signature:

Date Report Completed: **12/1/2019**

Received by: **Dr. Ismail Althagafi** Department Head

Signature:

Date: **20/1/2019**

