



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Organic Spectroscopy

4023561-3
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: Organic Spectroscopy / 4023561-3			
2. Credit hours: 3 hrs (2 theoretical + 1 Tutorial)			
3. Program(s) in which the course is offered. Chemistry and Industrial Chemistry			
4. Name of faculty member responsible for the course: Dr.Hossa fahad alshareef			
5. Level/year at which this course is offered: 5th level/3rd year			
6. Pre-requisites for this course (if any): Physical Organic Chemistry and Stereochemistry			
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="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 compounds analysis by (UV-Spectroscopy , Infra-Red Spectroscopy ,NMR-Spectroscopy,Mass Spectroscopy)
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 training to using data base services, and/or websites to improving interpretation of compounds with spectroscopy

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- Principals of spectroscopy and index of hydrogen deficiency.	1	2
2- UV Spectroscopy: ground and excited states, molar absorptivity, an calculation of A max to the possible structure.	2	4
3- Applications and solving problems.	1	2
4- Factors affecting absorption frequency, experimental aspects of IR spectroscopy.	1	2
5- Interpretation of IR charts.	1	2
6- The nature of NMR absorption instrumentation; chemical shifts in ¹ H NMR spectroscopy.	1	2
7- Shielding and de shielding effect magnetic anisotropy, spin-spin coupling in ¹ H NMR spectroscopy.	2	4
8- ¹³ C NMR spectroscopy (chemical shift);more complex spin-spin splitting patterns.	1	2
9- Mass Spectrometry (MS): ionization process and instrumentation.	1	2
10- Examples of common types of fragmentation processes.	1	2
11- Applications and solving problems.	1	2
12- Apply all Spectra.	1	2



Tutorial Part:



1- interpretation and confirmation of compounds of the following

- a. interpretation of IR charts
- b. interpretation of ^1H NMR chart
- c. interpretation of ^{13}C NMR chart
- d. interpretation of Mass(MS) chart



2- applications and solving problems contain all spectra.

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. 4hr

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 general Principals of different spectroscopy.	<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	Know position the functional groups in infra red		
1.3	Describe the compounds with spectroscopy		
1.4	Familiar with the factors affecting absorption frequency		
1.5	Determine the type and numbers of signals for NMR spectra in the different compounds		
1.6	Identify the examples of common types of fragmentation processes		
2.0	Cognitive Skills		
2.1	Apply the spectroscopy steps for all compounds .	<ul style="list-style-type: none"> • Scientific discussion 	<ul style="list-style-type: none"> • Exams • web-based student performance systems
2.2	Predict the structure of compounds with study spectroscopy		



2.3	Compare between methods spectroscopy .	<ul style="list-style-type: none"> • Library visits • Web-based study 	<ul style="list-style-type: none"> • portfolios • posters • individual and group presentations • video analysis • lap manuals
2.4	Explain the different Benefits for study organic spectroscopy		
2.5	Summarize the spectroscopy of organic compounds		
2.6	development Reverse thinking skill (back thinking)		
3.0	Interpersonal Skills & Responsibility		
	<ul style="list-style-type: none"> • Use the spectroscopy for Discovers the structure of compound . • justify the structure of compound according to spectroscopy • Ability to communicate results of work to classmates. • Ability to work in a team to perform a specific task. 	<ul style="list-style-type: none"> • Library visits • Scientific discussion • Web-based study 	<ul style="list-style-type: none"> • web-based student performance systems • individual and group presentations
4.0	Communication, Information Technology, Numerical		
	<ul style="list-style-type: none"> • Demonstrate structure for organic compounds with spectroscopy • Use information and communication technology. • The ability to use e-mail to communicate with the instructor and other students. • Scientific writing. • Use his/her observations to solve problems. 	<ul style="list-style-type: none"> • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • web-based student performance systems • individual and group presentations
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	Midterm Exam.	8	20 %
3	Practical Exam.	14	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

- Pavia, D.; Lampman, G.M.; Kriz, G.S.; Vyvyan, J.R. Introduction to Spectroscopy, 4th edition, 2009, Belmont : Brooks/Cole, Cengage Learning.
- Silverstein, R.M.; Webster, F.X.; Kiemle, D.J. Spectrometric Identification of Organic Compounds. 7th edition, 2005, N.Y. : John Wiley & Sons, Inc.
- Prof.Dr.AbdullahM.Asiri,MahaM.Al-Otaibi "*Spectroscopic Methods in Organic Chemistry, 1st Edition*, 2012.

2. List Essential References Materials (Journals, Reports, etc.)

Prof.Dr.Abdullah M.Asiri,Dr.Abood Bahajaj " *Principles of Spectroscopic Analysis of Organic Compounds*"

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

- R.T.Morrison ,R.N.Boyd,S.K.Bhattacharjee " *Organic Chemistry*" 7th2011,

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

- <http://www.chemweb.com>
- <http://www.sciencedirect.com>
- <http://www.rsc.org>
- <http://stream.hebust.edu>.

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.)



<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. Hossa Fahad Alshareef

Signature:

Date Report Completed: 12/1/2019

Received by: Dr Ismail I. Althagafi Department Head

Signature:

Date: 20/1/2019

