



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Organic Reactions and Preparations

4023565-3
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 Reactions and Preparations/ 4023565-3	
2. Credit hours: 3 hrs (2 theoretical + 1 practical)	
3. Program(s) in which the course is offered. Chemistry program	
4. Name of faculty member responsible for the course: Dr. Essam M. Hussein	
5. Level/year at which this course is offered: 6st level / 3th 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)	<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

1. What is the main purpose for this course? The course is designed to theoretical and practical study of the different reactions to synthesis of different classes of organic 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
a. Introduction to organic synthesis	1	2
b. Chemistry of functional groups: carbonyl compounds, carboxylic acids/their derivatives, amines, nitriles, and sulfides/sulfoxides.	2	4
c. Named reactions: Aldol condensation - Claisen condensation – Claisen rearrangement - Friedel–Crafts acylation – Grignard reaction – Michael reaction – Wittig reaction – Suzuki coupling – Diels-Alder reaction.	2	4
d. Protection and deprotection of function groups: Hydroxyl group, carbonyl group, carboxylic group, and amino group	1	2
e. Redox reactions and selectivity	1	2
f. C-C bond formation: free radicals, enolates, coupling reaction	2	4
g. Pericyclic reactions	2	4
h. Retrosynthetic approach	2	4
i. Chemoselectivity	1	2





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. 2hr

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	Identify the different classes of organic compounds depending on the functional groups	<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	Recognize the different methods used in the preparation of various organic compounds		
1.3	Write the products of chemical reaction correctly		
1.4	Determine the type of mechanism and intermediates in different organic reactions		
1.5	Familiar with the basic knowledge about the properties and importance of various organic compounds and reagents		
1.6	Understand the rules of retrosynthetic approach		
1.7	Understand the meaning of chemoselectivity		
1.8	Know the different methods used in the preparation of various organic compounds		
2.0	Cognitive Skills		
2.1	Explain the outputs of organic chemical reactions	<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 • demonstrations
2.2	Compare between different methods to synthesis different organic compounds		
2.3	Explain the reaction mechanisms for different organic reactions		
2.4	Predict the products of different organic reactions		
2.5	Design the different ways to prepare the functional groups of organic compounds		
2.6	Summarize the different methods of organic synthesis		



2.7	Apply the different laboratory techniques to purify the organic molecules		
3.0	Interpersonal Skills & Responsibility		
	<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"> • Evaluate the different methods of preparation of organic compounds • Demonstrate a synthetic pathways for synthesis of organic compounds • Use the internet as a means of communication and a source of information. • Encourage students to use internet for searching certain electronic journals regarding topics of the course. • Scientific writing. • Use his/her observations to solve problems. • Doing research and conduct searches for restoring information. • Able to calculate and discuss the facts and logical propose methods to solve the difficulties. 	<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
5.0	Psychomotor		
	Laboratory practice . including 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.Pipette accurately at all times 5. Titrate and weight efficiently in right way 6.Dispose the hazardous solution in right way	Practical session should include both demonstration and experiments .	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	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

- T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder "*Organic Chemistry, 11th Edition, International Student Version*" 2013, John Wiley & Sons.
- J. McMurry "*Organic Chemistry, 8th edition, International Edition*" 2011, Brooks/Cole

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

- Lecture Hand outs available on the coordinator website

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

- Stuart Warren, Paul Wyatt "*Organic Synthesis: The Disconnection Approach, 2nd Edition*" 2008, Wiley-Blackwell.



<ul style="list-style-type: none">• P.G.M. Wuts “<i>Green's Protective Groups in Organic Synthesis</i>”, 2007, Wiley.• P. Wyatt and S. Warren “<i>Organic Synthesis: Strategy & Control</i>”, 2007, Wiley.
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.**
- **Eexchange 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. Essam M. Hussein**

Signature:

Date Report Completed: 12/1/2019

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

Signature:

Date: 20/1/2019

