

المملكـة العربيـة السعوديـة الهيئــة الوطنيــة التقويـم والاعــــمــاد الأكــاديـمـــى

ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

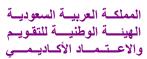
The National Commission for Academic Accreditation & Assessment

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 C	_		
A. Course Identification and General Information	n		
1. Course title and code: Organic Reactions and 1	Preparations/ 4023565-3		
2. Credit hours: 3 hrs (2 theoretical + 1 practical			
3. Program(s) in which the course is offered. Cher			
4. Name of faculty member responsible for the cou	urse: Dr. Essam M. Hussein		
5. Level/year at which this course is offered: 6st le	vel / 3 th year		
6. Pre-requisites for this course (if any): Heterocy	clic Chemistry		
7. Co-requisites for this course (if any)			
8. Location if not on main campus: both on El-Ab	dyah and El-Zaher		
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	What percentage? 100%		
b. Blended (traditional and online)	What percentage?		
c. e-learning	What percentage?		
d. Correspondence	What percentage?		
f. Other	What percentage?		
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. Topi	cs 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	• Lectures • Scientific	• Exams • web-based	
1.2	Recognize the different methods used in the preparation of various organic compounds	discussion • Library visits	student performance	
1.3	Write the products of chemical reaction correctly	Web-based study	systems	
1.4	Determine the type of mechanism and intermediates in different organic reactions		portfolioslong and short essays	
1.5	Familiar with the basic knowledge about the properties and importance of various organic compounds and reagents		• posters lab	
1.6	Understand the rules of retrosynthetic approach		manuais	
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	• Lectures	• Exams	
2.2	Compare between different methods to synthesis different organic compounds	Scientific discussion	• web-based student	
2.3	Explain the reaction mechanisms for different organic reactions	 Library visits 	performance	
2.4	Predict the products of different organic reactions	 Web-based study 	systems	
2.5	Design the different ways to prepare the functional groups of organic compounds		portfoliospostersdemonstrations	
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					
AbAb	ility to work in a team to perform a specific experimental tasks. ility to work independently to handle chemicals ility to communicate results of work to classmate and participation ss or laboratory discussions	Class discussionsResearch activities	 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		,			
•	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.	 Lectures Scientific discussion Library visits Web-based study 	web-based student performance systems individual and group presentations			
5.0						
	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			



5. S	5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project,	Week	Proportion of Total	
	examination, speech, oral presentation, etc.)	Due	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 %		

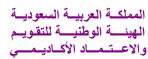
D. Student Academic Counseling and Support

- 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.





- P.G.M. Wuts "Green's Protective Groups in Organic Synthsis", 2007, Wiley.
- P. Wyatt and S. Warren "Organic Synthesis: Strategy & Control", 2007, Wiley.
- 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.)

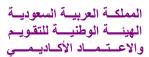
- 1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
 - Classrooms capacity (30) students.
 - Providing hall of teaching aids including computers and projector.
- 2. Computing resources (AV, data show, Smart Board, software, etc.)
 - Room equipped with computer and projector 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.
 - Iindependent 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.
- 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