



Course Specifications

Course Title:	Organic Synthesis
Course Code:	464 CHEM-2
Program:	Bachelor of Science in Chemistry
Department:	Chemistry
College:	Science
Institution:	King Khalid University

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A. Course Identification

1. Credit hours: 2
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Level 7/Year 4
4. Pre-requisites for this course (if any): 213Chem-4
5. Co-requisites for this course (if any): No co-requisite

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	0	0
2	Blended	0	0 %
3	E-learning	0	0 %
4	Correspondence	0	0 %
5	Other (Practical)	2	100 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	0
2	Laboratory/Studio	60
3	Tutorial	0
4	Others (specify)	0
	Total	60
Other Learning Hours*		
1	Study	20
2	Assignments	10
3	Library	0
4	Projects/Research Essays/Theses	0
5	Others (specify)	0
	Total	30

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces the essential principles for Preparation of some organic compounds and the study of the physical and chemical properties of the compounds prepared and calculate the resulting theoretical and practical compared to output and calculate the percentage yield centennial and try to prove the structures of these compounds prepared using different spectrum devices if possible.

2. Course Main Objective

The main purpose of this course is to demonstrate to students the principles to Learn the skill of the installation of the equipment and tools needed for the preparation of organic compounds.

After teaching of that course the students will able to:

- Learn a skill to identify the degree of purity of the solid organic compounds.
- Learn a skill to identify the degree of purity of the solid organic compounds.
- Learn a skill to identify the degree of purity of the solid organic compounds.
- Learn to set the melting point of the organic compound solid.
- Learn the mechanical interactions of Compounds that are being prepared.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	<ul style="list-style-type: none"> To Carry out a chemical reaction under condenser. To Learn the skill of the preparation of azodyes. To Learn the skill of purification of organic compounds. 	K1 & K3
1.2	<ul style="list-style-type: none"> To Teach how to conduct interactions sensitive to oxygen and water vapor, such as interaction Grignard reaction. To Learn the skill of using thin-layer chromatography in the separation of compounds prepared. 	K1 & K3
2	Skills :	
2.1	To teach Scientific and Practical skills. And teach students ability to overcome problems faced during the preparation of organic compounds.	S1 & S3
2.2	<ul style="list-style-type: none"> To teach students the ability to follow up the progress of chemical reactions as well as how to calculate the degree of purity of some Organic compounds. 	S1 & S4
2.3	To use basic glassware, equipment, and instrumentation for chemical experiments.	S1 & S3
3	Competence:	
3.1	<ul style="list-style-type: none"> To learn responsibility towards themselves and towards others. 	C2 & C4
3.2	<ul style="list-style-type: none"> To learning ethics of dealing with his colleagues in the laboratory. 	C1, C3 & C5
3.3	<ul style="list-style-type: none"> To use of communications technology and the search for information and view reports. 	C3 & C4
3.4	<ul style="list-style-type: none"> To use of computer programs like ChemDraw, ISIS/Draw. 	C4

C. Course Content

No	List of Topics	Contact Hours
1	<ul style="list-style-type: none"> Introduce students to the rules of public (Familiarize students with the vocabulary decision and clarify the objectives and study plan during the semester. Explain and illustrate How to write a report for the practical experience properly. Acquaint students with references that can be tapped through the study. Safety in the laboratory Thin layer chromatography 	4
2	<ul style="list-style-type: none"> Synthesis of Aspirin And the separation of pure aspirin from Commercial aspirin. 	4
3	<ul style="list-style-type: none"> Synthesis of Acetanilide 	4

4	<ul style="list-style-type: none"> Synthesis of p- bromo aniline and p-bromo acetanilide from Acetanilide. 	4
5	<ul style="list-style-type: none"> Synthesis of p-nitro aniline. Synthesis of m-nitro methyl benzoate. 	4
6	<ul style="list-style-type: none"> Synthesis of iodoform (Electrophilic Substitution Reaction). 	4
7	<ul style="list-style-type: none"> Synthesis of phthalyl glycine. Synthesis of ortho chloro benzoic acid by Sandmeyer reaction. 	4
8	<ul style="list-style-type: none"> Midterm exam (practical and theoretical). 	4
9	<ul style="list-style-type: none"> Synthesis of parared And its use in dye Cloth. 	4
10	<ul style="list-style-type: none"> Synthesis of Dibenzal acetone. (Claisen Schmidt reaction). 	4
11	<ul style="list-style-type: none"> Synthesis of methyl orange and its test as indicator. 	4
12	<ul style="list-style-type: none"> Synthesis of soap by Using different Oils. 	4
13	<ul style="list-style-type: none"> Synthesis of Triphenylcarbinol by Grignard reaction. 	4
14	<ul style="list-style-type: none"> Revision. 	4
15	<ul style="list-style-type: none"> Final exam (practical and theoretical). 	4
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	To carry out a chemical reaction under condenser, teach the skill of the preparation of azodyes and purification of organic compounds.	Lectures, Laboratory experiments, Classroom discussion, Team learning and tutorials.	Quizzes, Laboratory work and reports, Classical examination. Oral and written exams, Discussion.
1.2	To teach how to conduct interactions sensitive to oxygen and water vapor, such as Grignard reaction and to learn the skill of using thin-layer chromatography.	Lectures, Laboratory experiments, Classroom discussion, Team learning and tutorials.	Class tests, Quizzes, Laboratory work and reports, Homework's and Classical examinations
2.0	Skills		
2.1	To teach Scientific and Practical skills. And teach students ability to overcome problems faced during the preparation of organic compounds.	Classical lectures, Problem solving, Classroom discussion and Laboratory experiment.	Oral questions, Class tests, Quizzes, Laboratory work and reports, Homework and Classical examinations.
2.2	To teach students the ability to follow up the progress of chemical reactions as well as how to calculate the degree	Classical lectures, Problem solving, Classroom discussion	Oral questions, Class tests, Quizzes, Laboratory work and

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	of purity of some organic compounds.	and Laboratory experiment.	reports, Homework and Classical examinations.
2.3	To use basic glassware, equipment, and instrumentation for chemical experiments	Classical lectures and Laboratory experiments	Class tests, Laboratory work and reports and Classical examinations
3.0	Competence		
3.1	To learn responsibility towards themselves and towards others	Team learning, Tutorials, Personal work and Classroom discussion	Oral questions, Presentation and Short answer questions
3.2	To learning ethics of dealing with his colleagues in the laboratory	Team learning, Tutorials, Personal work and Classroom discussion	Oral questions, Presentation and Short answer questions
3.3	To use of communications technology and the search for information and view reports	Team learning, Tutorials, Personal work and Classroom discussion	Class activities and presentation
3.4	To use of computer programs like ChemDraw, ISIS/Draw	Classical lectures, Team learning, tutorial and personal work.	Class activities and presentation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm theoretical exam	8 th	10%
2	Midterm practical exam	8 th	20%
3	Final theoretical exam	15 th	15%
4	Final practical exam	15 th	35%
5	evaluation	continuous	5%
6	Reports and quizzes	continuous	15%
	Total		100 %

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

& separated from theory lecture with independent lecturer

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- *The faculty member has 10 Office hours per week for the students.
- *Continuous contact via email is effective.

F. Learning Resources and Facilities

1. Learning Resources

<p>Required Textbooks</p>	<p>-John Leonard, Barry Lygo, Advanced Practical Organic Chemistry.</p> <p>Garry Procter. 2013. 3rd ed. CRC Press. ISBN: 978-1439860977.</p> <p>-Caron, Stéphane, Practical synthetic organic chemistry: reactions, principles, and techniques 547.2 P S P, 2011.</p> <p>- الكيمياء العضوية التجريبية المعاصرة . د صالح بن طاهر ازمرلى , د احمد سامى عبدالشكور . الطباعة الثانية 1994</p> <p>- Dr. Saleh bin Tahir Azmarly, Dr. Ahmed Sami Abdel Shakour, Contemporary Experimental Organic Chemistry Second print 1994</p> <p>- مبادئ الكيمياء العضوية العملية. تأليف : عادل احمد جرار , عدنان محمود جميل الحمد , سبيم طرب دار الضياء للطباعة والنشر والتوزيع 1999</p> <p>-Adel Ahmed Jarrar. Adnan Mahmoud Spim. Tarab Gmail elhamed. Principles of practical organic chemistry. Dar Al-Diaa for Printing, Publishing and Distribution, 1999.</p>
<p>Essential References Materials</p>	<ul style="list-style-type: none"> - Miroslav Vecera. Detection and Identification of Organic Compounds. 2013. Springer. ISBN: 978- 1468418354. - Frederick George, Practical organic chemistry 4th ed, Mann, 547(92397.1), 2009 - Daniel R Palleros. Experimental Organic Chemistry. 2000. 1st ed. Wiley. ISBN: 978-0471282501 - Jr Clark F Most, Experimental Organic Chemistry. 1988. Wiley. ISBN: 978- 0471820437
<p>Electronic Materials</p>	<ul style="list-style-type: none"> - Blackboard: E-Learning Deanship (http://elc.kku.edu.sa/). - YouTube. - www.orgsyn.org
<p>Other Learning Materials</p>	<p>ISIS Draw, Chem Draw</p>

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Organic Chemistry Laboratory. - Classroom and computer lab
Technology Resources (AV, data show, Smart Board, software, etc.)	- Accessible databases Endnote software package Authenticate software package -Smart board , software ex Chem Draw
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	- Suction fans with high efficiency -Magnetic stirrers with hotplate.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course delivery (teaching methods and assessment methods)	Departmental Plan and curriculum committee; external reviewers Program Leader	Reports and workshops Meetings
Course contents (update)	Departmental Plan and curriculum committee; external reviewers	Reports and workshops
Teaching materials	Faculty	Meeting
Quality of learning resources	External reviewers	Reports

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department counsel
Reference No.	1/22/142
Date	15-9-1442