



Course Specifications

Course Title:	Identification of Organic Compounds
Course Code:	362CHEM -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: 0 + 2 (Practical)
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 5/ year 3
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)	4	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	25
2	Assignments	5
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 aims to provide the student with good knowledge to study the various types of aliphatic and aromatic compounds and also identification of S1, S2, A1, A2, N1 and N2 types of organic compounds by using their confirmation chemical reactions. The students will also train to detect heteroatoms (nitrogen and sulfur) and halogens. They will also get the skills of handling the sensitive chemicals. The students are also taught the necessary knowledge needed for the separation of different types of two component organic mixtures.

2. Course Main Objective

This practical organic chemistry course is a four-contact hour's course and it is offered in the fifth semester of the third year of the bachelor curriculum. The goal of this course is to introduce students to acquire the skills of identifying the organic compounds (aliphatic and aromatic by flame test and nitration test) and classification of organic compounds (S1, S2, A1, A2, N1 and N2) based on their solubility test.

After teaching of that course the students will able to:

- Learn to identify heteroatoms (nitrogen and sulfur) and halogens
- Learn to confirm the given class of organic compounds by different chemical identification (confirmation) tests.
- Learn the skill of handling the sensitive chemicals like sodium metal, concentrated acids and reagents.
- Learn separation of organic mixtures (i.e., acid+acid, acid+base, acid+ neutral, base+neutral and neutral +neutral mixtures).
- Learn the skill to identify the degree of purity of the solid organic compound by melting point method and they will also have trained to find the melting point of the organic compound.

3. Course Learning Outcomes

CLOs		Aligned-PLOs
1	Knowledge:	
1.1	To learn detailed study includes classification, physical and chemical properties and reactions for the aliphatic and aromatic organic compounds within the laboratory.	K1 & K2
1.2	To learn some practical applications of certain aliphatic and aromatic organic compounds.	K1 & K2
2	Skills :	
2.1	To learn Predict the physical and chemical properties of organic compounds according to functional groups.	S1, S3
2.2	To Develop the scientific skills and practical skills and Improve the research skills.	S1 & S4
2.3	To use basic glassware, equipment, and instrumentation for chemical experiments.	S1 & S3

CLOs		Aligned-PLOs
3	Competence:	
3.1	To learn responsibility towards themselves and towards others.	C2 & C4
3.2	To learning ethics of dealing with his colleagues in the laboratory.	C1, C3 & C5
3.3	To use of communications technology and the search for information and view reports.	C3 & C4
3.4	To use of computer programs like ChemDraw, ISIS/Draw.	C4

C. Course Content

No	List of Topics	Contact Hours
1	Explaining to the students about the safety rules in the laboratory of organic chemistry, good laboratory practice and illustrate how to write a report for the practical experience properly.	4
2	Explaining theoretical idea & practical steps for the identification of aliphatic or aromatic compounds by ignition and nitration test. Further, it also explaining how to measure elemental analysis of various organic compounds. Teaching theoretical idea & practical steps for classification of organic compounds based on their solubility as S1, S2, A1, A2, N1, & N2.	4
3	Analysis of unknown organic compound belongs to alcohols, salt of acids & its solubility type is S1 & identifying these compounds by their confirmation chemical reaction tests. Analysis of unknown organic compound belongs to Carboxylic acids, aniline salts, sugars & its solubility type is S2 & knows how to determine these organic compounds by using specific schemes.	4
4	Determination of unknown organic compounds based on its solubility is A1 & identifying these compounds by their specific chemical reaction tests. Repeat the same steps with few more organic compounds from the same solubility class & identifying them by chemical reactions	4
5	Determination of unknown organic compounds like amide or imide based on their solubility is A2 & identification of these compounds by their usual confirmation tests such as hydrolysis or fluorescence.	4
6	Determination of unknown organic compound like anilides, which is belong to N1 solubility type & confirmed by acidic hydrolysis method. Identification of unknown organic compounds like carbonyls compounds, which belongs to N2 solubility type. These compounds will be identified by 2,4-DNP reaction, which gives yellow or orange PPT of hydrazone.	4
7	Practical exercises to identify some unknown organic compounds	4
8	Mid semester exam (theory & practical)	4
9	Separation of acid + acid (A + A) and acid + base (A + B) mixtures.	4
10	Separation of acid + phenol (A + Ph) mixtures	4
11	Separation of acid + neutral (A + N) mixtures	4

12	Separation base + phenol (B + Ph) mixtures	4
13	Separation base + neutral (B + N) mixtures	4
14	Separation neutral + neutral (N + N) mixtures	4
15	Final exam (theory + practical)	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 learn detailed study includes classification, physical and chemical properties and reactions for the aliphatic and aromatic organic compounds within the laboratory.	Lectures, Laboratory experiments, Classroom discussion, Team learning, Tutorial, Personal work.	Quizzes, Laboratory work and reports, Classical examination, Oral and written exams, Discussion.
1.2	To learn some practical applications of certain aliphatic and aromatic organic compounds.	Lectures, Laboratory experiments, Classroom discussion, Team learning, Tutorial, Personal work.	Class testes, Quizzes, Laboratory work and reports, Homework's, Classical examination
2.0	Skills		
2.1	To learn Predict the physical and chemical properties of organic compounds according to functional groups.	Classical lectures, Problem solving, Classroom discussion, Laboratory experiment.	Oral questions, Class testes, Quizzes, Laboratory work and reports, Homework's, Classical examination
2.2	To Develop the scientific skills and practical skills and Improve the research skills	Classical lectures, Problem solving, Classroom discussion, Laboratory experiments.	Oral questions, Class testes, Quizzes, Laboratory work and reports, Homework's, Classical examination.
3.0	Competence		
3.1	To learn responsibility towards themselves and towards others.	Team learning, Tutorial, Personal work, Classroom discussion.	Oral questions, Presentation, Short answer questions.
3.2	To learning ethics of dealing with his colleagues in the laboratory.	Team learning, Tutorial, Personal work, Classroom discussion.	Oral questions, Presentation, Short answer questions.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.3	To use of communications technology and the search for information and view reports.	Team learning, Tutorial, Personal work, Classroom discussion.	Class activities, presentation.
3.4	To use of computer programs like ChemDraw, ISIS/Draw.	Classical lectures, Team learning, tutorial and personal work	Class activities, 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.)

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

Required Textbooks	<ol style="list-style-type: none">1- Furniss, B. S.; Hannaford, A. J.; Smith, P. W. G.; Tatchell, Vogel's Textbook of Practical Organic Chemistry 5th Edition: A. R. Longman Scientific & Technical Group UK limited 1989.2- Ahluwalia, V. K.; Dhingra, Comprehensive Practical Organic Chemistry: Qualitative Analysis: S. Universities Press, 2004.3- Singh, P. R.; Gupta, D. S.; Bajpai, K. S., Experimental Organic Chemistry, Volume 2: Tata McGraw-Hill, 1981.4- Mann, F. G.; Saunders, Practical Organic Chemistry 4th Edition: B. C. Longman Group limited London 1960.5- Leonard, J.; Lygo, B.; Procter, Advanced Practical Organic Chemistry, Second Edition: G. Stanley Thornes Ltd. 1998.6- Gosney, I.; Rowley, Practical Organic Chemistry: A Student Handbook of Techniques: A. G. Chapman and Hall, 19897- Practical Organic Chemistry: A student handbook of techniques: Sharp, J. T. Springer Science & Business Media, 2012
Essential References Materials	Basic Organic Chemistry Laboratory Course: Identification Reactions and Qualitative Analysis University of Helsinki 2007.
Electronic Materials	<ol style="list-style-type: none">1. Any website related to subjects listed in the experiments.2. www.orgsyn.org3. Blackboard: E-Learning Deanship (http://elc.kku.edu.sa/).4. YouTube
Other Learning Materials	ISIS Draw, Chem Draw

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 chemdraw
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)	Student	Questionnaire
	Departmental Plan and curriculum committee; external reviewers	Reports and workshops
	Program Leader	Meetings
Course contents (update)	Departmental Plan and curriculum committee; external reviewers	Reports and workshops
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