



Course Specifications

Course Title:	Organometallic Chemistry
Course Code:	418CHEM-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 8/ Year 4
4. Pre-requisites for this course (if any): 313 Chem
5. Co-requisites for this course (if any): Not found

6. Mode of Instruction (mark all that apply)

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

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	20
2	Laboratory/Studio	---
3	Tutorial	10
4	Others (specify)	---
	Total	30
Other Learning Hours*		
1	Study	10
2	Assignments	10
3	Library	5
4	Projects/Research Essays/Theses	5
5	Others (specify)	---
	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 involves the properties, Synthesis, chemical reactivity, and applications of organometallic compounds based on the elementary and transition metals. The uses of organometallic compounds as catalyst in oxidation, reduction, and coupling reaction were also discussed.

2. Course Main Objective

- The main objectives of this course are that to ensure the ability of the students to know the importance of the organometallic compounds.

- To know the different methods used for organometallic compounds preparation and their properties.
- To recognize the conditions that should be satisfied for the preparation of organometallic compounds
- To recognize and to know the usages of organometallic compounds in the preparation of other organic compounds.
- To know the factors those affect the activity of organometallic compounds.
- To acquire the student`s capability to make decisions in different professional contexts in organometallic compounds.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	To understand the basic principles of organometallic compounds.	K1, K.2
1.2	To describe the physical and chemical properties of different organometallic compounds	K1, K2, K.3
1.3	To know the preparation of different types of organometallic compounds	K2-K3
2	Skills :	
2.1	To use the organometallic compounds as reducing agents, for example, lithium, aluminum and boron compounds.	S1, S2
2.2	To how to prepare the organometallic reagents, for examples, Grignard`s reagents	S3, S4
3	Competence:	
3.1	To present an oral explanation for a subject in the area.	C1, C2
3.2	To interact positively with colleagues in a group work.	C2, C3
3.3	To contribute with colleagues to prepare and deliver a presentation and report of group work	C1, C1
3.4	To summarize the literature and sources for an area in the course.	C1, C2

C. Course Content

No	List of Topics	Contact Hours
1	Basic information: (introduction, chemical bonds, electronegativity of some elements and groups, inductive effect, polar and nonpolar groups, acidity constant K_a , the definition of organometallic compounds).	4
2	Different methods for organometallic compounds preparations.	4
3	Using organometallic compounds of the main group in organic preparations.	2
4	The general usages of organolithium and organomagnesium compounds. First mid-term exam.	4
5	The general usages of organoborn and organoaluminum.	2
6	The general usages of organosilicon. General discussion of the reports (9 th week).	2
7	The properties and importance of organometallic compounds of the transition elements.	2
8	The properties and importance of organocupper and organozinc compounds. Second mid-term exam.	4
9	The properties and importance of organocadmium and organomercury compounds.	2

10	Reactions and applications of the organometallic compounds.	4
Total		30

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 understand the basic principles of organometallic compounds.	Lectures , Interactive teaching sessions	Written exams, electronic quizzes
1.2	To describe the physical and chemical properties of different organometallic compounds	Lectures , Interactive teaching sessions	Written exams, electronic quizzes
1.3	To know the preparation of different types of organometallic compounds	Tutorials, problem solving sessions	Oral discussion and examinations
2.0	Skills		
2.1	To use the organometallic compounds as reducing agents, for example, lithium, aluminum and boron compounds.	Lectures, problem solving sessions	Written exams, oral exams
2.2	To how to prepare the organometallic reagents, for examples, Grignard's reagents	Tutorials, problem solving sessions	Oral discussion, written examinations
3.0	Competence		
3.1	To present an oral explanation for a subject in the area.	opened essays on selected topics	Class activities
3.2	To interact positively with colleagues in a group work.	Interactive teaching sessions	Oral presentation on a group report
3.3	To contribute with colleagues to prepare and deliver a presentation and report of group work	Interactive teaching sessions	Discussion within a group
3.4	To summarize the literature and sources for an area in the course.	Guided reading of books and articles	Written Reports and summaries

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	1 st Mid-term	6	15%
2	2 nd Mid-term	12	15%
3	Review, Tutorials, Report, Discussions, Presentation and HomeWorks	3, 7, 11, 14	20%
4	Practical Section	--	----
5	Final written exam	16	50%

*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 :

10 office hours are offered for students for individual consultations. Communications are available on-site, phone conversations, and chatting by social media.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none">➤ Organometallic chemistry for organic syntheses, Mohamed I. Alhsan, Alkhragy Library, 1407/1987.➤ Organic chemistry, Morrison & Boyd, 2008.
Essential References Materials	Organometallic reagents in synthesis, Jenkin, 1992.
Electronic Materials	http://www.chemguide.co.uk/
Other Learning Materials	<ul style="list-style-type: none">➤ Overhead projector with data show.➤ CD & DVD.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecturer room contain Data Show. Blackboard
Technology Resources (AV, data show, Smart Board, software, etc.)	Hall contains at least 10 computers. Internet access.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	-----

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
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