



Course Syllabus
According to JORDAN National Qualification
Framework (JNQF)

Course Name: Organometallic chemistry

Course Number: 11014225

General Course Information:

Course title	Organometallic chemistry
Course number	11014225
Credit hours	3 hours
Education type	Face-to-Face
Prerequisites/corequisites	11012222
Academic Program	BSc
Program code	01
Faculty	Sciences
Department	Chemistry
Level of course	Third year (Chemistry Students)
Academic year /semester	First semester (2022/2023)
Awarded qualification	Bachelor (B.Sc.)
Other department(s) involved in teaching the course	none
Language of instruction	English
Date of production/revision	9/10/2022

Course Coordinator:**Coordinator's Name:** Samer Hasan Ahmad Hussein-Al-Ali

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Instructor's Name:

Office No.: -

Office Phone: -

Office Hours:

Email:

Course Description (English/Arabic):

English	Structures and electronic properties of organometallic compounds; reactions of organometallic compounds; the uses of organometallic compounds in catalysis and in organic chemistry.
Arabic	الخواص الإلكترونية والتركيبية للمركبات الفلزية العضوية ؛ تفاعلات المركبات العضوية المعدنية. استخدامات المركبات العضوية المعدنية في التحفيز وفي الكيمياء العضوية.

Text Book: Author(s), Title, Publisher, Edition, Year, Book website.

D. F. Shriver; P. W. Atkins and C.H. Langford, Inorganic Chemistry , 5 th ed., Freeman : New York, 2010.

References: Author(s), Title, Publisher, Edition, Year, Book website.

Required book (s), assigned reading and audio-visuals:

1. Organic Chemistry, Solomons
2. Organic Chemistry, Morrison and Boyd

➤ Book website:

<https://www.ispatula.com/file/organic-chemistry-7th-edition-2007-by-john-mcmurry-pdf>

Course Educational Objectives (CEOs):

1.	Describe the fundamental principles of organotransition-metal chemistry and know how chemical properties are affected by metals and ligands
2.	use knowledge about structure and bonding issues to understand the stability and reactivity of simple organometallic complexes
3.	use of modern methods to characterize organometallic compounds
4.	understand fundamental reaction types and mechanisms and how to combine these to understand efficient catalytic processes
5.	know important applications of organometallic homogeneous catalysis in the production of large-scale (bulk) and smaller-scale (fine chemicals) production

Intended Learning Outcomes (ILO's):

	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	Descriptors**
A	Knowledge and Understanding:				
A1	Major aspects of structure, reactivity, and mechanism in organometallic chemistry.	1, 2	a	Knowledge	Knowledge
A2	Major aspects of naming of organometallic compounds	3	a, b	Knowledge	Knowledge
A3	Major aspects catalysis in the production of organometallic compounds	2, 4, 5	c	Knowledge	Competency.
B	Intellectual skills:				
B1	Retrosynthesis of organometallic compounds	1,2	b,d	Knowledge	Knowledge
B2					
B3					
C	Subject specific skills:				
C2					
D					
D1					

*Bloom Taxonomy Levels

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (Chemistry) program will demonstrate		Descriptors**
1.	Describe the fundamental scientific principles and theories across the four subfields of chemistry (Organic, inorganic, analytical and physical).	Knowledge
2.	Identify and confirm chemical compounds structures as well as determine chemical composition.	Knowledge
3.	Establish and concludes mechanisms of physical and chemical processes in addition to the ability of mastering qualitative and quantitative determination.	competency
4.	Solve the scientific problems using different mechanisms and procedures based on critical thinking.	skill
5.	Conduct scientific experiments in chemistry.	competency
6.	Commitment and interest in lifelong learning, and collaborate effectively with other people in a team.	competency
7.	Prepare logical, organized and concise written reports, and oral and poster presentations that effectively communicate chemical content to other scientists.	skill
8.	Commitment to the ethical principles of chemical research.	competency
9.	Find information about chemistry through databases and information	skill
10.	Evaluation of calculations in chemistry experiments and information analysis using computer software.	competency
11.	Demonstrate safety laboratory techniques.	skill

** Descriptors according to the national qualifications framework (knowledge, skill, adequacy)

Weekly Schedule (please choose the type of teaching)

√ Face to Face

- ☐ Hybrid (2 Lectures Face – To - Face +1 Lecture Asynchronous)
☐ Hybrid (1 Lectures Face – To - Face +1 Lecture Asynchronous)
☐ Online (2 Lectures Synchronous +1 lecture Asynchronous)

Online (2 Lectures Synchronous + 1 Lecture Asynchronous)						
Week	First Lecture (Face – To - Face)	Second Lecture (Face – To - Face)	Third Lecture (Face – To - Face)	Ach. ILOs	Ach. PLOs	Descriptors**
1	Group 1A: organometallic compounds General Properties, nomenclature, synthesis, and reactions			A1,A2	a	k
2						
3	Group 2A: organometallic compounds General Properties, nomenclature, synthesis, and reactions			A1,A2	b	k
4						
5	Group 13: organometallic compounds General Properties, nomenclature, synthesis, and reactions			A1,A2, B1	A,c	k
6						

7	Organosilicon compounds			
8	General Properties, nomenclature, synthesis, and reactions	A1, A2,A3	A, d	k
9				
10	Organometallic compound of arsenic, antimony, bismuth	A1, A2,A3	a	k
11	General Properties, nomenclature, synthesis, and reactions			
12	Organoxenon compound	A1, A2,A3	d	
13	d-metal organometallic chemistry	A1, A2, B1	B, d	s
14	الاختبار النهائي			

* K: Knowledge, S: Skills, C: Competency

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Interactive videos
- Practice Labs
- Discussion Forums
- Quizzes
- Other Interactive online activities
- Reports

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**


Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: <https://elearn.iu.edu.jo/>**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:.....

Responsible Persons and their Signatures:

Course Coordinator	Dr. Samer Al-Ali	Completed Date	9/10/ 2023
		Signature	
Received by (Department Head)	Dr. Manal khabbas	Received Date	17/10/2022
		Signature	