مركز الاعتماد وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

Course Syllabus

1	**Course title**	Organometallics
2	**Course number**	0333921
3	**Credit hours**	3
	Contact hours (theory, practical)	3
4	**Prerequisites/corequisites**	-
5	**Program title**	PhD. In Chemistry
6	**Program code**	0333
7	**Awarding institution**	Science
8	**School**	Science
9	**Department**	Chemistry
10	**Course level**	First Year
11	**Year of study and semester (s)**	Spring 2023/2024
12	**Other department (s) involved in teaching the course**	N/A
13	**Main teaching language**	English
14	**Delivery method**	X Face to face learning ☐Blended ☐Fully online
15	**Online platforms(s)**	☐Moodle ☐Microsoft Teams ☐Skype ☐Zoom ☐Others……
16	**Issuing/Revision Date**	25/12/2023

17 Course Coordinator:

Name: Deeb Taher	Contact hours: 17.30-19.00 (Sun, Tue)
Office number:	Phone number: 0791601872
Email:d.taher@ju.edu.jo	

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18 Other instructors:

Name: Office number: Phone number: Email: Contact hours: Name: Office number: Phone number: Email: Contact hours:

19 Course Description:

As stated in the approved study plan.

20 Course aims and outcomes:

A- Aims:

Introduces the chemistry of carbon to transition-metal bonds beginning with rules governing structure and stability; effects of metal and ancillary ligand environment; general mechanistic steps; NMR and IR spectroscopy; fluxional processes. Followed by applications in homogeneous catalysis and stoichiometric organic synthesis.

B- Students Learning Outcomes (SLOs):

Course Learning Outcomes: 303421 Organometallic Chemistry.

CLO-1. Examine the basic principles that govern the electronics, structure and bonding in inorganic and organometallic complexes.
CLO-2. Explore the fundamental and experimental aspects of elementary organometallic transformations.
CLO-3. Apply elementary organometallic reactions in the context of catalysis and new reactivity.

0333921 Organometallics								
		Student Outcomes (SO)						
		SO-1	SO-2	SO-3	SO-4	SO-5	SO-6	SO-7
Course Learning Outcomes (CLO)	CLO-1	✓	✓					
	CLO-2	✓	✓					
	CLO-3	✓	✓					

21. Topic Outline and Schedule:

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Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	structures, properties and methods of preparation of organometallic compounds of the main group IA	CLO-1	**Face to Face**	Power point	NA	Exam	Third edition, Christoph, Organometallics
	1.2	structures, properties and methods of preparation of organometallic compounds of the main group IA	CLO-1	**Face to Face**	Power point		Exam	
	1.3	structures, properties and methods of preparation of organometallic compounds of the main group IA	CLO-1	**Face to Face**	Power point		Exam	

	2.1	structures, properties and methods of preparation of organometallic compounds of the main group IIA	CLO-1	**Face to Face**	Power point		Exam	
2	2.2	structures, properties and methods of preparation of organometallic compounds of the main group IIA	CLO-1	**Face to Face**	Power point		Exam	
	2.3	structures, properties and methods of preparation of organometallic compounds of the main group IIA	CLO-1	**Face to Face**	Power point		Exam	
3	3.1	structures, properties and methods of	CLO-1	**Face to Face**	Power point		Exam	

		preparation of organometallic compounds of the main group IIIA						
	3.2	structures, properties and methods of preparation of organometallic compounds of the main group IIIA	CLO-1	**Face to Face**	Power point		Exam	
	3.3	structures, properties and methods of preparation of organometallic compounds of the main group IIIA	CLO-1	**Face to Face**	Power point		Exam	
4	4.1	structures, properties and methods of preparation of organometallic	CLO-1	**Face to Face**	Power point		Exam	

		compounds of the main group IIIB						
	4.2	structures, properties and methods of preparation of organometallic compounds of the main group IIIB	CLO-1	**Face to Face**	Power point		Exam	
	4.3	structures, properties and methods of preparation of organometallic compounds of the main group IIIB	CLO-1	**Face to Face**	Power point		Exam	
5	5.1	structures, properties and methods of preparation of organometallic compounds of the	CLO-1	**Face to Face**	Power point		Exam	

		main group IIB						
	5.2	structures, properties and methods of preparation of organometallic compounds of the main group IIB	CLO-1	**Face to Face**	Power point		Exam	
	5.3	structures, properties and methods of preparation of organometallic compounds of the main group IIB	CLO-1	**Face to Face**	Power point		Exam	
6	6.1	structures, properties and methods of preparation of organometallic compounds of the main group IB	CLO-1	**Face to Face**	Power point		Exam	

	6.2	structures, properties and methods of preparation of organometallic compounds of the main group IB	CLO-1	**Face to Face**	Power point		Exam	
	6.3	structures, properties and methods of preparation of organometallic compounds of the main group IB	CLO-1	**Face to Face**	Power point		Exam	
7	7.1	General Properties of Organometallic Complexes	CLO-2	**Face to Face**	Power point		Exam	
	7.2	General Properties of Organometallic Complexes	CLO-2	**Face to Face**	Power point		Exam	
	7.3	General Properties of	CLO-2	**Face to Face**	Power point		Exam	

		Organometallic Complexes						
8	8.1	Metal Alkyls, Aryls, and Hydrides and Related σ-Bonded Ligand	CLO-2	**Face to Face**	Power point		Exam	
	8.2	Metal Alkyls, Aryls, and Hydrides and Related σ-Bonded Ligand	CLO-2	**Face to Face**	Power point		Exam	
	8.3	Metal Alkyls, Aryls, and Hydrides and Related σ-Bonded Ligand	CLO-2	**Face to Face**	Power point		Exam	
9	9.1	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	**Face to Face**	Power point		Exam	
	9.2	Carbonyls, Phosphine Complexes, and Ligand	CLO-2	**Face to Face**	Power point		Exam	

		Substitution Reactions						
	9.3	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	**Face to Face**	Power point		Exam	
10	10.1	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	**Face to Face**	Power point		Exam	
	10.2	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	**Face to Face**	Power point		Exam	
	10.3	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	**Face to Face**	Power point		Exam	
11	11.1	Complexes of π-Bound Ligands	CLO-2	**Face to Face**	Power point		Exam	
	11.2	Complexes of π-Bound Ligands	CLO-2	**Face to Face**	Power point		Exam	
	11.3	Complexes of π-Bound Ligands	CLO-2	**Face to Face**	Power point		Exam	
12	12.1	Metal–Ligand	CLO-2	**Face to Face**	Power point		Exam	

		Multiple Bonds						
	12.2	Metal–Ligand Multiple Bonds	CLO-3	**Face to Face**	Power point		Exam	
	12.3	Metal–Ligand Multiple Bonds	CLO-3	**Face to Face**	Power point		Exam	
13	13.1	Oxidative Addition and Reductive Elimination	CLO-3	**Face to Face**	Power point		Exam	
	13.2	Oxidative Addition and Reductive Elimination	CLO-3	**Face to Face**	Power point		Exam	
	13.3	Oxidative Addition and Reductive Elimination	CLO-3	**Face to Face**	Power point		Exam	
14	14.1	Insertion and Elimination	CLO-3	**Face to Face**	Power point		Exam	
	14.2	Insertion and Elimination	CLO-3	**Face to Face**	Power point		Exam	
	14.3	Insertion and Elimination	CLO-3	**Face to Face**	Power point		Exam	

15	15.1	Homogeneous Catalysis	CLO-3	**Face to Face**	Power point		Exam	
	15.2	Homogeneous Catalysis	CLO-3	**Face to Face**	Power point		Exam	
	15.3	Homogeneous Catalysis	CLO-3	**Face to Face**	Power point		Exam	

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Mid	30	All	All	8	Face to Face
Presentation	30	All	All	14	Face to Face
Final	40	All	All	16	Face to Face

23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc): N/A

24 Course Policies:

A- Attendance policies:

Attendance is taken each class.

Six unexcused absences will result an "F" grade.

B- Absences from exams and submitting assignments on time:

The highest four marks from all quizzes will be considered. No make-up exams will be held for the quizzes, regardless of the excuse.

Course Coordinator will take care for student whom absent for the midterm exam.

Dean Office will take care for student whom absent for the final exam.

C- Health and safety procedures:
N/A

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Students are expected to adhere to the standards of academic honesty. Collaboration and discussion are encouraged, cheating of any kind is not tolerated.

E- Grading policy:

F- Available university services that support achievement in the course:

25 References:

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

Organometallics, 3th Edition by Christoph Elschenbroich (Author).

B- Recommended books, materials, and media:

The Organometallic Chemistry of The Transition Metals, 4th Edition by Robert H. Crabtree (Author)

26 Additional information:

Name of Course Coordinator: Deeb Taher Signature: ---------- Date: 25/12/2023
Head of Curriculum Committee/Department: Deeb Taher---------- Signature: ----------
Head of Department: Firas Awwadi ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------