



Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	06

1.	Course Title	Organometallics
2.	Course Number	0333921
3.	Credit Hours (Theory, Practical)	3
	Contact Hours (Theory, Practical)	3
4.	Prerequisites/ Corequisites	-
5.	Program Title	PhD in Chemistry
6.	Program Code	0333
7.	School/ Center	Science
8.	Department	Chemistry
9.	Course Level	First Year
10.	Year of Study and Semester (s)	
11.	Other Department(s) Involved in Teaching the Course	
12.	Main Learning Language	English
13.	Learning Types	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14.	Online Platforms(s)	<input type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams
15.	Issuing Date	16/11/2024
16.	Revision Date	

17. Course Coordinator:

Name: Deeb Taher	Contact hours:
Office number:	Phone number:
Email: Email:d.taher@ju.edu.jo	

**18. Other Instructors:**

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

19. Course Description:

As stated in the approved study plan.

20. Program Student Outcomes (SO's): (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

- SO1. Develop chemistry expertise, focus on theory and practice, and contribute to advancing knowledge in a specific research field.
- SO2. Conduct original, high-quality research that advances knowledge in chemistry by developing complex projects using innovative methodologies.
- SO3. Mentor junior researchers and students and demonstrate leadership in the scientific community through collaboration, peer review, and knowledge exchange.
- SO4. Recognize the ethical implications and responsibly use chemistry solutions to tackle global challenges.
- SO5. Participate in ongoing professional development to stay up to date with the latest research and innovations.

21. Course Intended Learning Outcomes (CLO's): (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

- CLO 1. Examine the basic principles that govern 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.
- CLO 4. Freely integrate, selectively apply, and critically assess ideas and research at an advanced level.
- CLO 5. Research, analyze, and communicate research articles in inorganic chemistry.

	The learning levels to be achieved
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Course CLOs	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1	X	X				
2	X	X	X	X		X
3	X	X		X		
4		X	X	X	X	X
5		X	X	X	X	

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Program SO's	SO (1)	SO (2)	SO (3)	SO (4)	SO (5)
Course CLO's					
CLO (1)	✓			✓	
CLO (2)	✓	✓			✓
CLO (3)	✓	✓		✓	
CLO (4)	✓	✓	✓	✓	✓
CLO (5)	✓	✓	✓		✓

23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types Face to Face (FF) Blended (BL) Fully Online (FO)	Platform Used	Synchronous (S) Asynchronous (A)	Evaluation Methods	Learning Resources
1	1.1	structures, properties and methods of preparation of organometallic compounds of the main group IA	CLO-1	Face to Face			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			Exam	Third edition, Christoph, Organometallics



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	1.3	structures, properties and methods of preparation of organometallic compounds of the main group IA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
2	2.1	structures, properties and methods of preparation of organometallic compounds of the main group IIA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
	2.2	structures, properties and methods of preparation of organometallic compounds of the main group IIA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
	2.3	structures, properties and methods of preparation of organometallic compounds of the main group IIA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
3	3.1	structures, properties and methods of preparation of organometallic compounds of the main group IIIA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
	3.2	structures, properties and methods of preparation of organometallic compounds of the main group IIIA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
	3.3	structures, properties and methods of preparation of organometallic compounds of the main group IIIA	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics



4	4.1	structures, properties and methods of preparation of organometallic compounds of the main group IIIB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
	4.2	structures, properties and methods of preparation of organometallic compounds of the main group IIIB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
	4.3	structures, properties and methods of preparation of organometallic compounds of the main group IIIB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
5	5.1	structures, properties and methods of preparation of organometallic compounds of the main group IIB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
	5.2	structures, properties and methods of preparation of organometallic compounds of the main group IIB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
	5.3	structures, properties and methods of preparation of organometallic compounds of the main group IIB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
6	6.1	structures, properties and methods of preparation of organometallic compounds of the main group IB	CLO-1	Face to Face		Exam	Third edition, Christoph, Organometallics
	6.2	structures, properties and methods of preparation of	CLO-1	Face to Face		Exam	Third edition, Christo



		organometallic compounds of the main group IB						ph, Organometallics
	6.3	structures, properties and methods of preparation of organometallic compounds of the main group IB	CLO-1	Face to Face			Exam	Third edition, Christoph, Organometallics
7	7.1	General Properties of Organometallic Complexes	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	7.2	General Properties of Organometallic Complexes	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	7.3	General Properties of Organometallic Complexes	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
8	8.1	Metal Alkyls, Aryls, and Hydrides and Related σ -Bonded Ligand	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	8.2	Metal Alkyls, Aryls, and Hydrides and Related σ -Bonded Ligand	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	8.3	Metal Alkyls, Aryls, and Hydrides and Related σ -Bonded Ligand	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics



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9	9.1	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	9.2	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	9.3	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
10	10.1	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	10.2	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
	10.3	Carbonyls, Phosphine Complexes, and Ligand Substitution Reactions	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics
11	11.1	Complexes of π -Bound Ligands	CLO-2	Face to Face			Exam	Third edition, Christoph, Organometallics



	11.2	Complexes of π -Bound Ligands	CLO-2	Face to Face		Exam	Third edition, Christoph, Organometallics
	11.3	Complexes of π -Bound Ligands	CLO-2	Face to Face		Exam	Third edition, Christoph, Organometallics
12	12.1	Metal–Ligand Multiple Bonds	CLO-2	Face to Face		Exam	Third edition, Christoph, Organometallics
	12.2	Metal–Ligand Multiple Bonds	CLO-3	Face to Face		Exam	Third edition, Christoph, Organometallics
	12.3	Metal–Ligand Multiple Bonds	CLO-3	Face to Face		Exam	Third edition, Christoph, Organometallics
13	13.1	Oxidative Addition and Reductive Elimination	CLO-3	Face to Face		Exam	Third edition, Christoph, Organometallics
	13.2	Oxidative Addition and Reductive Elimination	CLO-3	Face to Face		Exam	Third edition, Christoph, Organometallics
	13.3	Oxidative Addition and Reductive Elimination	CLO-3	Face to Face		Exam	Third edition, Christoph



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14	14.1	Insertion and Elimination	CLO-3	Face to Face			Exam	Third edition, Christo ph, Organo metallic s
	14.2	Insertion and Elimination	CLO-3	Face to Face			Exam	Third edition, Christo ph, Organo metallic s
	14.3	Insertion and Elimination	CLO-3	Face to Face			Exam	Third edition, Christo ph, Organo metallic s
15	15.1	Homogeneous Catalysis	CLO-3	Face to Face			Exam	Third edition, Christo ph, Organo metallic s
	15.2	Homogeneous Catalysis	CLO-3	Face to Face			Exam	Third edition, Christo ph, Organo metallic s
	15.3	Homogeneous Catalysis	CLO-3	Face to Face			Exam	Third edition, Christo ph, Organo metallic s
16						Final Exam		

**24. Evaluation Methods:**

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

Evaluation Activity	Mark	Topic(s)	CLO/s Linked to the Evaluation activity	Period (Week)	Platform
Mid	30	1,2,3	All	8	Face to Face
Presentation	30	1,2,3,4,5	All	14	Face to Face
Final	40	1,2,3	All	16	Face to Face

25. Course Requirements:

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

26. Course Policies:

A- Attendance policies:

B- Absences from exams and submitting assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

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

27. 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)

28. Additional information:

Name of the Instructor or the Course Coordinator: Signature: Date:
Dr. Deeb Taher, Prof.

The Head of Graduate Studies Committee/
Department Chemistry **Signature:** **Date:**
Dr. Murad AlDamen, Prof.

The Head of Department of Chemistry **Signature:** **Date:**
Dr. Murad AlDamen, Prof.

Vice Dean for Graduate Studies and Scientific
Research / School of Science **Signature:** **Date:**
Dr. Kamal Sweidan, Prof.

The Dean of School of Science **Signature:** **Date:**
Dr. Mahmoud I. Jaghoub, Prof.