

COURSE SPECIFICATIONS

Form

**Course Title: Advanced Organometallic
Chemistry**

Course Code: 4026813-3



Date: 21-10-2018

Institution: Umm Al-Qura University.

College: Faculty of Applied Science

Department: Department of Chemistry

A. Course Identification and General Information

1. Course title and code: **Advanced Organometallic Chemistry / 4026813-3**

2. Credit hours: **3 (theoretical)**

3. Program(s) in which the course is offered: **M. Sc.in Chemistry**

(If general elective available in many programs indicate this rather than list programs)

4. Name of faculty member responsible for the course: **Dr. HodaAbou El-Fetouh El-Ghamry**

5. Level/year at which this course is offered: **1st / 1st**

6. Pre-requisites for this course (if any): **None**

7. Co-requisites for this course (if any): **None**

8. Location if not on main campus: **El-Abedyah, El-Azizya, and El-Zaher**

9. Mode of Instruction (mark all that apply):

- | | | | |
|-------------------------------------|-------------------------------------|-------------|--------------------------------------|
| a. Traditional classroom | <input type="checkbox"/> | percentage? | <input type="checkbox"/> |
| b. Blended (traditional and online) | <input checked="" type="checkbox"/> | percentage? | <input type="checkbox" value="80%"/> |
| c. E-learning | <input type="checkbox"/> | percentage? | <input type="checkbox"/> |
| d. Correspondence | <input type="checkbox"/> | percentage? | <input type="checkbox"/> |
| f. Other | <input checked="" type="checkbox"/> | percentage? | <input type="checkbox" value="20%"/> |

Comments:

B Objectives

1. The main objective of this course

- a- This course intends to introduce the students to understand some advanced aspects related to organometallic compounds.
- b- Special emphasis will be on the catalytic applications of organometallic compounds in different organic reactions.

2. Describe briefly any plans for developing and improving the course that are being implemented. (e.g. increased use of the IT or online reference material, changes in content as a result of new research in the field)

- Variation of learning sources for the course, so that students benefit from more than one reference.
- Encourage students to prepare reports include the preparation and chemical properties of coordination and organometallic compounds.
- Link the theoretical and practical sides of the course to give the students to understand and interpret the properties of the complexes.
- The use of teaching intelligent classes for lectures.

C. Course Description (Note: General description in the form used in the program's bulletin or handbook)

Course Description:

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
• Coordination chemistry of organometallic compounds.	1	3
• Organometallic compounds as a source of carbanions.	2	6
• Reactions of organic groups bonded to metals in which the metal-carbon bond is retained.	1	3
• Carbene chemistry and organometallic compounds.	2	6
• Stoichiometric applications of organometallic compounds to organic chemistry (main group elements compounds and transition metal compounds).	3	9
• Homogeneous catalysis and catalytic applications of organometallic compounds.	2	6
• Spectral properties of organometallic compounds.	2	6

- Magnetic properties of organometallic compounds.

1

3

2. Course components (total contact and credit hours per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other	Total
Contact Hours	Planned	42	---	---	---	---	42
	Actual	42	---	---	---	---	42
Credit	Planned	3	---	---	---	---	3
	Actual	3	---	---	---	---	3

3. Individual study/learning hours expected for students per week.

2

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategies

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and targeted learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy should fit in together with the rest to form an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Curriculum Map

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Explain the relation between coordination chemistry and organometallic compounds.	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • Written mid-term and final exams. • Long and short essays. • web-based student performance systems
1.2	Identify the organometallic compounds as a source of carbanions.		
1.3	Memorize the stoichiometric applications of organometallic compounds to organic chemistry (main group elements compounds and transition metal compounds).		
1.4	Explain the spectral and magnetic properties of organometallic compounds		
2.0	Cognitive Skills		
2.1	Report the reactions of organic groups bonded	• Lectures	• Final and mid-term

	to metals in which the metal-carbon bond is retained	<ul style="list-style-type: none"> • Scientific discussion • Library visits • Web-based study 	exams. <ul style="list-style-type: none"> • Measuring the response to the assignments.
2.2	Interpret examples of homogeneous catalysis and catalytic applications of organometallic compounds		
2.3	Discover the Spectral and magnetic properties of organometallic compounds		
2.4	Estimate the role of organometallic compounds as a source of carbanions		
3.0	Interpersonal Skills & Responsibility		
3.1	Take the personality and responsibility for their own learning.	<ul style="list-style-type: none"> • Encourage the solving problems in groups during lecture. • Making open discussion about certain recent topic of the. 	<ul style="list-style-type: none"> • Homeworks • Group reports.
3.2	Working effectively in groups and exercise leadership when appropriate		
3.3	Act ethically and consistently with high molar standards in personal and public forums		
3.4	Community linked thinking		
4.0	Communication, Information Technology, Numerical		
4.1	Communicate effectively in oral and written forms	<ul style="list-style-type: none"> • The use of computers in the training room of the department. • Organizing group visits to the Central Library. • The use of the international information network (internet). 	<ul style="list-style-type: none"> • Ask questions that test the student's ability to interpret simple statistical information. • Assess the duties associated with the proper use of communication skills and numerical process
4.2	Use information and communication technologies		
4.3	Apply the basic mathematical and statistical techniques.		
5.0	Psychomotor (if any)		
5.1	Not applicable.		
5.2			

5. Assessment Task Schedule for Students During the Semester			
	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Assignments and activities.	--	10 %

2	Midterm Exam.	8	30 %
3	Final Exam.	15-16	60 %
4	Total	100 %	

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic counseling. (include the time teaching staff are expected to be available per week)
 - Office hours: During the working hours weekly.
 - Academic advising for students.
 - Availability of Staff members to provide counselling and advice.

E Learning Resources

1. List Required Textbooks
 - R.H. Crabtree, "The Organometallic Chemistry of the Transition Metals", 6thed. Wiley publisher, 2014.
 - P. Pérez "Advances in Organometallic Chemistry", 1sted., Elsevier, 2018.
2. List Essential References Materials (Journals, Reports, etc.)
 - Journal of organometallic chemistry.
 - Journal of applied organometallic chemistry.
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
 - <http://link.springer.com/book/10.1007%2F978-1-349-18198-8>
 - <http://eu.wiley.com/WileyCDA/WileyTitle/productCd-1118138074.html>
4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
 - None.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
 - Equipped lecture halls specializing in inorganic chemistry.
2. **Technology** resources (AV, data show, Smart Board, software, etc.)
 - Rooms equipped with computers, data show and TV.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
 - No other requirements.

G Course Evaluation and Improvement Procedures

1. Strategies for Obtaining Student's Feedback on Effectiveness of Teaching
 - Structured group discussions and/or focus groups.
 - Questionnaires can be used to collect student feedback.
 - Student representation on staff-student committees and institutional bodies.

2. Other Strategies for Evaluation of Teaching by the Instructor or the Department

- The instructor's statement of his/her goals for the course, teaching methods and philosophy, student outcomes, and plans for improvement are a critical source of information.
- A systematic self-review has the potential for contributing significantly to the instructor's teaching improvement by focusing on the strengths and weaknesses of the course in light of his/her original course objectives.
- Visits by other faculty can provide information about the process of teaching.
- Colleagues have the expertise to evaluate the quality of a course as evidenced by its content and format (peer reviewers)..

3. Procedures for Teaching Development

- Providing new tools for learning.
- The application of e-learning.
- Exchange of experiences internal and external.
- Training programs and workshops for Staff member.
- Review of strategies proposed.

4. Procedures for Verifying Standards of Student's Achievement (e.g. check marking by an independent member teaching staff of a sample of student's work, periodic exchange and remarking of tests or a sample of assignments with staff members at another institution)

- Check marking by an independent member teaching staff of a sample of student work.
- Periodic exchange and remarking of tests or a sample of assignments with staff at another institution.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for developing it.

- Workshops for teachers of the course.
- Periodic review of the contents of the syllabus and modify the negatives.
- Consult other staff of the course.
- Hosting a visiting staff to evaluate of the course.

Name of Course Instructor: **Dr. HodaAbou El-Fetouh El-Ghamry**

Signature: 

Date Completed: **21/10/2018**

Program Coordinator: **Dr. Ismail Ibrahim Althagafi**

Signature: 

Date Received: **22/10/2018**

