University of Petra		جامعة البترا – خمسة وعشرون عاما University of Petra Anniversary
Faculty of Arts and Sciences	جامعة البترا	كلية الآداب والعلوم
Department of Chemistry		قسم الكيمياء

Course Syllabus

Year: 2019/2020 **Semester: 20192**

Course No.	Course Title	Prerequisite	Co-requisite	Credit Hours Lectures / ECT: European Credit Transfer System
101443	Physical Organic Chemistry	101311	-	3/ 5

Instructor Name	E-mail	Office No.	Office Ext.	Office Hours
Dr. Nabil Eldurini	nabild@uop.edu.jo	7111	7111	Sun, Tue, Thu 10.00 – 11.00 Mon, 12.30 – 14.00

Coordinator's Name: (if applicable)	-

Course Description	Structure; Reactivity; Mechanism; Energetics; Kinetics; Investigation of Mechanism; Carbanions and their Reactions; Linear Free Energy Relationshiop.

Course Objectives

- To instill in students a sense of enthusiasm for organic chemistry, an appreciation of its application in different contexts and to involve them in an intellectually stimulating and satisfying experience of learning and studying.
- To develop in students the ability to apply their chemical knowledge and skills to the solution of theoretical and practical problems in chemistry.
- To provide students with a knowledge and skills base from which they can proceed to further studies in specialized areas of organic chemistry or multi-disciplinary areas involving organic chemistry.
- To generate in students an appreciation of the importance of organic chemistry in an industrial, economic, environmental and social context.

Course Intended Learning Outcomes (ILOs) and their Alignment with Program ILOs:

Upon successful completion of this course, students are expected to achieve the following learning outcomes:

A - Knowledge and Understanding:

This course will ensure that students become conversant with the following main aspects of physical organic chemistry:

1. Major aspects of structure, reactivity, and mechanism in organic chemistry.
2. Major aspects of carbanions, their formation, carbon acids, and tautomerism.
3. Major aspects of carbanion reactions.

***B- Intellectual skills – with ability* to:**

This course will ensure that students become conversant with the following main aspects of physical organic chemistry:

4. Free energy linear relatinships towards quantification of chemical reactions.

C- Subject specific skills

This course will ensure that students become conversant with the main aspects of all 5 ILOs:

D- Transferable skills

5. Evaluation, interpretion and analyses of chemical information and data obtained from the above reactions mechanisms.

Course Schedule:

Units	Topics	Topic Details	References
1	Introduction:	Structure, reactivity, and mechanism.	Chapter 1
2	Energetics, kinetics, and the investigation of mechanism:	Energetics of reactions; Kinetics of reactions; Investigation of reaction mechanism.	Chapter 2
3	Carbanions and their reactions:	Carbanion formation; Stabilization; Configuration; Tautomerism; and Reactions.	Chapter 10
4	linear free energy relationship:	Substituent effects; First Hammet plot; The Hammet equation; Uses of Hammet plots. Substituent effects and their linear free energy relationship; Sterric effects; Solvent effects; Spectroscopic correlation; Thermodynamic implication; Special reactions and their detailed mechanisms.	Chapter 13

Assessment Methods:

Assessment method	Grade	Comments
First Exam	25	(Thu) 31/03/2016
Second Exam	25	(Mon) 09/05/2016
Attendance & contributions	10	Every Lecture
Final Exam	40	Set by Registrar
Total	100	

Alignment of Teaching and Learning Methods, Assessment and Course ILOs:

Teaching method	Contact Hours	Assessed through	ILOs numbers
Lectures	40	Exams and Home works	All ILOs

Learning References:

1- Textbook: Printed sheet will be available in the bookshop.
2- Reference book: A Guidebook to Mechanism in Organic Chemistry, by Peter Sykes, 6th ed.
3- Other Resources: Power point slides supplied by the instructor.

Course Policies:

- **Attendance Policy:** University regulations apply to attendance.
- **Academic Honesty:** Academic dishonesty is an unacceptable mode of conduct, and will not be tolerated in any form at University of Petra. All persons involved in academic dishonesty and plagiarism in any form will be disciplined in accordance with University rules and regulations.

Approved by	Name	Date	Signature
Head of Department	Dr. Abdelmnim Altwaiq	23/10/2020	
Faculty Dean	Prof. Rami Abdel-Rahem	25/02/2020	