

معلومات المقرر * (Course Information):

اسم المقرر:	كيمياء عضوية تطبيقية
رقم المقرر:	CHM 455
اسم ورقم المتطلب السابق:	كيمياء عضوية- 2 ، CHM222
اسم ورقم المتطلب المرافق:	لا يوجد
مستوى المقرر:	الثامن
الساعات المعتمدة:	3 ساعات
Module Title:	Applied organic chemistry
Module ID:	455
Prerequisite (Co-requisite) :	Organic chemistry 2
Co-requisite :	None
Course Level:	Eighth Level
Credit Hours:	3 hours

Module Description

وصف المقرر :

The course of Applied organic chemistry is provide in the Eighth Level with 3 credit hours. The course provide the skills and knowledge demanded of the modern Applied organic chemistry and it is designed to equip those who wish to work in chemical-related industries with the employability skills and the practical expertise to thrive within this cutting edge environment.

This course demonstrates the basic ideas of applied organic chemistry, using industrial processes and important commercial materials.

The course demonstrates how the principles of organic chemistry are intertwined with the many changes that characterize the chemical industry.



المعلومات



Module Aims

أهداف المقرر :

1	Gain experience in using industry standard apparatus in both the synthetic and analytical laboratories	1
2	Graduates will have hands-on capability required for professional success in the organic chemical and allied industries	2
3	Knowledge of concepts and principles in Applied organic Chemistry along with the ability to evaluate and interpret these within the course	3
4	Develop skills of observation, analysis, evaluation, communication and problem-solving	4
5	Provide a foundation concepts in applied organic chemistry for those students who will continue their studies in applied organic chemistry or in related subjects	5

Learning Outcomes:

مخرجات التعليم:

Upon successful completion of this course, the student will be able to :		
1	Illustrate generally how humanity has benefited from the study and practice of organic chemistry	1
2	Knowledge of concepts and principles in applied organic Chemistry along with the ability to evaluate and interpret these within the course	2
3	Discuss theoretical chemistry concepts related to Applied organic Chemistry .	3
4	Summarize general overview of the most significant applications in industrial organic chemistry.	4
5	Communicate to the content in scientific papers of the applied organic chemistry	5
6	Demonstrate proficiency in organic chemical laboratory techniques related to applied organic Chemistry	6





1

2

3

Contents:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
4	2	Introduction included :- The technological revolution of the XX century second half is linked, in a great measure, to the industrial development of organic chemistry. Fuels, polymers, pharmaceuticals, materials and technological products are some industrial sectors that are based in the organic chemistry achievements.
4	2	Organic Photochemistry Photochemical processes. Energy transfer, sensitization and quenching. Singlet and triplet states and their reactivity. Photoreactions of carbonyl compounds, Norrish reactions. Photoreactions of enes, dienes, and arenes. Photoreactions of Vitamin-D. Applications of photoreactions and their applications for industrial synthesis
6	3	Pharmaceuticals. Discussion on various aspects of the pharmaceutical industry, properties of a drug, cardiovascular drugs, drugs affecting the nervous system (barbiturates, psychotropic drugs, stimulants), antibacterial agents (sulfonamides, penicillins, cephalosporins, tetracyclines, macrolides), steroid drugs (oral contraceptives, sex hormones, adrenocortical hormones, anabolic agents, anti-inflammatory agents), analgesics (aspirin, acetaminophen), anti-histamines.
2	1	Fermentation. General discussion on the use of microorganisms (yeasts, bacteria and fungi) in production of commercial products.
4	2	study of biomimetic polymer chemistry, Definition of Biomimetic material, Biomimetic Material Synthesis, Biomimicry and Sustainability, Economic Impact of Biomimetic Materials.
4	2	Chemistry of dyes:-mechanism of colour formation, Classification of dyes, synthesis of dyes, Dyeing processes.
2	1	Organic Detergents: general introduction for detergents , types of detergents, detergent manufacturing process.
4	2	Sustainability and green organic chemistry. Application of the concept of green chemistry in organic chemistry for sustainable development, future directions of industrial green organic chemistry.
30	15	Total
second part : Practical		
6	3	Synthesis of organic compounds by multi-step reactions involving nitration, halogenation, acetylation and oxidation.
6	3	Estimation of ester, acids, reducing sugars, phenols, amines, ketones, nitrogen and sulphur in different manufacturing samples





8	4	Quantitative analysis of (a) milk and butter, (b) fats, oils and soaps, (c) drugs such as acetyl salicylic acid, aspirin, phenacetin and suphanilide, (d) caffeine, sugar and starch food, (e) spectrophotometric determination of simple organic compounds, and (f) spectrophotometric determination of cholesterol, ascorbic acids, glucose and ammonia
6	3	Characterization of organic compounds using IR, UV-Vis and NMR spectral methods
26	13	Total

Textbook and References:

الكتاب المقرر والمراجع المساندة:

ISBN	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم الكتاب المقرر Textbook title
9783527305780.	2003	Weinheim [etc.]: Wiley-VCH	Weissermel, K.	industrial organic chemistry.
	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
9783527304462.	2013	Weinheim, Germany: Wiley	Jess, A.; Wasserscheid, P	. Chemical technology: an integral textbook
9780081002490	2015	Woodhead Publishing	Trung Dung Ngo.	Biomimetic Technologies

* يتم تعبئة معلومات المقرر فقط باللغتين العربية والانجليزية وباقي المعلومات بلغة التدريس المعتمدة ويكرر لكل مقرر في الخطة الدراسية

* Course Information should be filled in Arabic and English. Other information should be filled using the approved teaching language at the college.



