

نموذج توصيف مقرر
Course Description Form

Name of College\Faculty : Science

Name of Department: Chemistry

اسم الكلية:

اسم القسم العلمي:

Course Name	Applied Organic Chemistry (Industrial)	اسم المقرر
Course No.	Chem. 453	رقم المقرر
No. of Credits	2	عدد الوحدات
Theoretical Hours	3	عدد الساعات النظرية
Practical Hours	2	عدد الساعات المحلّية
Course topics		مواضيع المقرر
1. High polymers: Condensation polymers; addition polymers (free radical, cationic, anionic, coordination); resins (glyoxal, bakelite, urea-formaldehyde, melamine, epoxy-resins); ion exchangers (cation and anion exchangers); synthetic fibers: polyamides fibers (nylon 5, nylon 6 (perlon) nylon 6.6, nylon 6.10, nylon 11), polyester fibers (polyethylene glycol terephthalate),(Decron), other types of polyamides, poly(benzimidazoles), poly(imidazopyrolenes), poly(hydrazides); synthetic rubber; butadiene, acrylonitrile butadienestyrol, i-butene-isoprene, chloroprene, thiokol, foaming rubber (polyurethane). 2. Noncovalent interactions and molecular recognition: Nonpolar interactions – polar interactions, multiple hydrogen bonds in two dimensions, genetic coding, reading and misreading, molecular recognition of chiral molecules, biosignificance of chirality. 3. Catalyzed reactions: Distinction between catalysis and induction, intramolecular and intermolecular reactions compared, catalysis by enzymes, enzymes and chiral recognition, artificial enzymes, catalytic antibodies. 4. Cofactor for biological redox reactions recycling of biological reagents: Chemical reagents for biological transformations, pyridoxamine phosphate, route to α-amino acids: Hydride reduction of β-ketoacids, tetrahydrofolic acid. 5. Energy storage in organic molecules: Reaction energetic, multistep transformations, complex reaction, energy storage in redox reactions, energy storage in fatty acid biosynthesis, energy release in fatty acid degradation, the cross cycle.		

6. Molecular basis for drug action. Chemical basis of disease states, interact biological systems as chemical factories, beta blockers: Modern antiacids, beta phenethylamine: Peptide mimics, blocking tetrahydrofolic acid synthesis. Antibiotics affecting membrane structure and ion balance across membrane , distribution of bacterial cell walls, drugs affecting nucleic acid synthesis.

Text book: (Name, Author , Year , Publisher)	عنوان الكتاب : (الاسم ، المؤلف ، سنة الطبع ، دار النشر)
(Library Books, Monographs on applied Organic Chemistry)	
References: (Name , Author , Year . Publisher)	عنوان المرجع : (الاسم ، المؤلف ، سنة الطبع ، دار النشر)

Prerequisites Chem. 257 + Chem. 258				متطلبات المقرر	
Grading	Exams		%		الاختبارات
	Quizzes		%		امتحانات قصيرة
	H.W.		%		واجبات
	Project (field study)		%		مشاريع (دراسة ميدانية)
	Final		%		الاختبار النهائي
					آلية رصد المقرر

Course objectives					
No.	Course Objectives (Learning Outcomes)	Example(s) of relevant (Topics and activities)	Recommended Level to satisfy the objectives		
			High	Medium	Low
1	To introduce to the students the applications of organic chemistry in chemical industry.			X	
2	To emphasis on modern developments in chemistry of dyes and detergents			X	
3	To practice laboratory preparations of organic compounds produced industrially.			X	
Fields					
Skills					



Coordinator (Name and Rank) :	Convener of the organic chemistry
Signature and stamp :	
Date:	11\ 11 \2025