

Course Syllabus typical Format (CSTF)

1	College: Faculty of Pharmacy	2	Department: Pharmaceutical Chemistry
3	Academic Semester: 1st semester	4	Academic year: 1443 H
5	Course Name: Pharmaceutical Organic Chemistry-1	6	Course code and number: PDPC0 211
7	Number of credit hours: 3 credit hours (3 theoretical)		
8	Course requirement in program: <input checked="" type="checkbox"/> Required (obligatory) <input type="checkbox"/> Optional (Elective)		
9	Course type: <input type="checkbox"/> University Requirement <input checked="" type="checkbox"/> College Requirement <input type="checkbox"/> Departmental Requirement		
10	Pre-requisite (code and number) (if applicable): NA		

Second: Instructor Information

1	Instructor's name: Dr. Nader E. Abodya		
2	Sections of the course that I teach : All		
3	Office phone number: 3914	4	Mobile number (optional): 0542741803
5	Office location and number: Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Main Campus.		
6	Office hours: Sunday-Thursday (12:00-13:00PM)		
7	Website: https://www.ut.edu.sa/ar/web/u58345		
8	E-mail: Nabodya@ut.edu.sa		

Third: Lecture and lab timetables

Lecture	Days	Time	Place (Building/Room)
	Monday	ص 08:00 - ص 10:00	01-03-0-10
Male section Section 1454	Wednesday	ص 08:00 - ص 09:00	01-03-0-11
Femal section	Tuesday	09:00 am – 12:00 pm	1-25-2-076

Fourth: Course description

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Course description as found in the University Catalogue in both Arabic and English.

The aim of the course is to enable second year student developing the necessary understanding and skills related to the basic concepts of organic chemistry including: types of bonds in organic molecules, nomenclature, acidity, basicity, polarity, reasoning of stability and reactivity, stereochemistry of drugs, aromaticity, preparation and reactions of alkanes, alkenes and alkynes with emphasis on pharmaceutical organic compounds.

Fifth: General Objectives and Teaching Strategies

	CLOs	Aligned PLOs	Teaching strategies and instructional aids
1	Knowledge and Understanding		
1.1	Outline types of bonding, origin of stability, polarity, solubility, acidity, basicity, structural and stereoisomerism with emphasis on drugs.	K2	1. Lectures using power point and whiteboard.
1.2	name stereoisomers and other listed organic compounds.	K2	2. Group discussion
1.3	state the major reactions of the listed classes	K2	3. Research assignments
2	Skills :		4. Internet search.
2.1	Integrate pharmaceutical organic chemistry with pharmaceutical applications.	S1	
2.2	Interpret information obtained from different resources to provide creative solutions to problems related to drug purity and stability.	S7	
3	Values:		
3.1	plan effective time management schedules, independent thinking and adaptation to changes.	V2	

Sixth: Course or Curriculum units, subjects, specific objectives, and time schedule in the academic semester (first, second, or third semester (summer))

(Example)

Week number	Units		Instructional Objectives (Actions that prove the students adoption of specified behavior and achievement, learning outcomes, content)	Readings		Keywords
	Unit No.	Unit/Chapter/Subject title		Reference Number	Pages	
First	1	First meeting: <ul style="list-style-type: none"> - Introducing the curriculum (course content) - Highlighting the knowledge and skills the curriculum is based on - Bonding, a - Valence and electronegativity 	1) Presenting an overview of the curriculum's content and extent 2) Clarifying curriculum requirements 3) Specifying methods of communication between students and their instructors 4) Clarifying the assessment techniques/methods of the learning objectives 5) Clarifying policies concerning instruction, classroom participation and assessment 6) Properties of atoms and various types of bonding in organic compounds	Organic Chemistry, Sixth Edition William H. Brown, Christopher S. Foote, Brent L. Iverson, Eric V. Anslyn (1.2)	2-8	Exam purpose, Time management, Properties of atoms: Valence, Electronegativity
Second	2	Types of bonds and hybridization	<ul style="list-style-type: none"> ➤ Differentiate between coordinate and ionic bonds ➤ Recognize the States of hybridization of carbon, oxygen and nitrogen atoms. 	1.2	8-14 33-37 70-74	sp ³ , sp ² and sp states of hybridization, bond angle, molecular geometry
Third	3	➤ Bond polarity, dipole moment, and hydrogen	➤ Demonstrate polarity of bonds and organic molecules.		25-27	Polar covalent bond, non-polar covalent bond,

		bonding	<ul style="list-style-type: none"> ➤ Differentiate between Inter- and Intramolecular H-Bond 	1.2	404-407 686 973	coordinate bond, ionic bond, bond polarity Intermolecular H-Bond, Intramolecular H-Bond
Fourth	4	<ul style="list-style-type: none"> ➤ Acidity and Basicity Resonance, inductive effect, 	<ul style="list-style-type: none"> ➤ Define resonance and inductive effect ➤ Outline acidity and basicity of organic molecule 	1.2	157-183	Electron donating group, Electron withdrawing Brønsted-Lowry acid, Bronsted lawry base, Lewis acid, Lewis base, Acid dissociation constant, weak acid, weak base, strong acid and strong base
Fifth	5	<ul style="list-style-type: none"> ➤ Resonance, inductive effect, acidity and basicity 	<ul style="list-style-type: none"> ➤ Show the effect of resonance and inductive effect on acidity and basicity 	1.2	157-183	Electron-donating group Electron withdrawing group Conjugate acid Conjugate base
Sixth	6	<ul style="list-style-type: none"> ➤ Functional groups and nomenclature of organic compounds 	<ul style="list-style-type: none"> ➤ Give the name of functional groups ➤ Give IUPAC name for alkanes, alkenes and alkynes ➤ Give IUPAC name for halogenated alkanes and alcohol ➤ Give IUPAC and common names of alkyl group 	1.2	17-22 67-77	Alkane, Alkene, Alkyne, Alcohol, phenol, ether, aldehyde, ketone, carboxylic acid, ester, amide, acid anhydride, primary amine, secondary amine, teriray amine, imide, nitriles, carbamate, methyl , ethyl, isopropyl and tert-butyl
Seventh	7	<ul style="list-style-type: none"> ➤ Structural isomerism and stereoisomerism (a. conformational isomerism) 	<ul style="list-style-type: none"> ➤ Enumerate the types of structural isomerism and describe the relation between a given pair of structural isomers. ➤ Outline the types of conformers. 	1.2	78-90	Conformer, Gauch (Skew), staggered (Anti), Eclipsed, rotational barrier free rotation, Bond angle strain, Torsional strain, steric strain, butterfly conformation, chair and boat conformations of cyclohexane

Eighth Ninth	Midterm Exam					
Tenth and 11th	10 and 11	Chirality and Optical isomerism	<ul style="list-style-type: none"> ➤ Determine chiral centers and their effect on molecular properties and nomenclature ➤ Define the various terms related to optical isomers ➤ Describe chiral axis and give examples ➤ Outline chiral centers other than carbon. ➤ Show the effect of optical isomerism on drug action 	1.2		Chiral carbon, enantiomers, diastereomers, racemic mixture, dextrorotatory, levorotatory, optical purity, enantiomeric excess chiral sulfur, chiral phosphorus chiral nitrogen chiral axis, atropisomers, rectus, (R), sinister (S)
Twelves	12	Geometrical isomerism and reactions of alkanes	<ul style="list-style-type: none"> ➤ Recognize the presence of geometrical isomerism ➤ Give the right stereodescriptor for geometrical isomers ➤ Outline the difference between primary secondary and tertiary hydrogen atoms ➤ Outline the reactions of alkanes. ➤ Compare between different types of halogenations of alkanes 	1.2	91-92 196-201 311-313	-Cis-trans isomerism Cycloalkanes, alkenes Halogenation, free radical, stability
Twelfth Thirteenth	12-13	Reactions of Alkenes	<ul style="list-style-type: none"> ➤ Give the general mechanism of electrophilic addition reactions ➤ Outline the various types of electrophilic addition on alkenes ➤ Describe allylic halogenations and Diels Alder reaction 	1.2	221-257	-Electrophilic addition, halogenation, hydroxylation, reduction, oxidation, addition of Halogen acids, allylic halogenation Diels Alder reaction
Fourteenth	14	Reactions of Alkynes	<ul style="list-style-type: none"> ➤ outline electrophilic addition reactions on alkynes ➤ Compare and differentiate between 		278-289	Halogenation, oxidation, reduction, alkylation, terminal alkyne, non-

			alkenes and alkynes ➤ 3. Explain acidity of alkenes	1.2		terminal alkyne
Fifteenth	15	Revision	Tutorial			

Seventh: Assessment and evaluation plan

5. Schedule of Assessment Tasks for Students During the Semester

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz (MCQ)	5	10%
2	Mid-Term exam (MCQs)	8	30%
3	Activity (written report)	11	10%
4	Final exam (MCQs)	16	50%

Eighth: Readings and further References

1	List Required Textbooks 1- Organic Chemistry: Brief Survey of Concepts and Applications by Philip S. Bailey, Christina A. Bailey 2- Organic Chemistry, Sixth Edition William H. Brown, Christopher S. Foote, Brent L. Iverson, Eric V. Anslyn
2	Saudi Digital Library, Science direct, Google search, Wikipedia etc

Ninth: The instructor's policy of dealing with students within the framework of the university laws, regulations, and guidelines (examples and prototypes).

1	Late attendance Will be counted as absence after a couple warnings to the students
2	Cheating and plagiarism Student will fail the course if caught cheating, student will also bear the consequences of plagiarism
3	Absences More than 25% absence results in prohibition in the final exam
4	Late work policy Late works will affect the student's grades to some extent

5	Exiting during the lecture period Not allowed unless necessary
6	Seating and student placement in the classrooms : Balanced distribution
7	Absence from an exam Results in student failure if the absence is not justified
8	Mobile phone use in the classroom Forbidden
9	Eating and drinking Forbidden