

Institute/School Name	Chitkara College of Pharmacy		
Department Name	Pharmacy		
Programme Name	B.Pharmacy		
Course Name	Pharmaceutical Organic Chemistry-II	Session	July-Dec 25
Course Code	BP-301T	Semester/Batch	3 rd /2024
L-T (Per Week)	3-1	Course Credits	4
Pre-requisite	Basics of Pharmaceutical Organic Chemistry-I	NHEQF Level¹	5.5
Course Coordinator	Dr Pragati Silakari		
SDG	3, 4, 9		

Objectives of the Course: At the end of the course, the student shall be able to:

- to write the structure, name and the type of isomerism of the organic compound.
- write the reaction, name the reaction and orientation of reactions.
- account for reactivity/stability of compounds, prepare organic compounds.

Course Outcomes (COs)

Students should be able to:

	CLOs	Program Outcomes (PO)	NHEQF Level Descriptor	No. of Lectures
CLO01	Explain the structure, resonance, and aromaticity of benzene based on analytical and synthetic evidence.	PO1, PO3, PO11	Q1	13
CLO02	Analyze the mechanisms and limitations of electrophilic substitution reactions in benzene and its derivatives.	PO1, PO3, PO11	Q2	12
CLO03	Understand the acidity and chemical behavior of phenols and their derivatives, along with their applications.	PO1, PO3, PO11	Q4	10
CLO04	Evaluate the basicity and synthetic applications of aromatic amines, including aryl diazonium salts.	PO1, PO3, PO11	Q2	10
CLO05	Describe the acidity, reactions, and applications of aromatic acids and polynuclear hydrocarbons.	PO1, PO3, PO11	Q1	8
CLO06	Assess the chemical properties, reactions, and analytical constants of fats and oils.	PO1, PO3, PO4, PO11	Q2	7
Total Contact Hours				60

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	Type of Assessment's
CO01	3		2								2	Summative/Formative
CO02	3		3								2	Summative/Formative
CO03	3		2								2	Summative/Formative
CO04	3		3								2	Summative/Formative
CO05	3		2								2	Summative/Formative
CO06	3		2	1							2	Summative/Formative

3=High, 2=Medium, 1=Low

Recommended Books:

B01: Arun Bahl, B.S. Bahl, A textbook of organic chemistry
 B02: Organic Chemistry by P.L Soni
 B03: Organic Chemistry by Morrison and Boyd
 B04: I.L. Finar, organic chemistry, Volume-I & II, 6TH edition

Other readings and relevant websites:

Serial No	Link of Journals, Magazines, websites and Research Papers
1.	www.masterorganicchemistry.com
2.	www.chemguide.co.uk
3.	www.ncbi.nlm.nih.gov/pmc/
4.	www.sciencedirect.com
5.	www.google.com/scholar

Lecture Plan

Lect. No.	Topic(s)	Book No, CH No, Page No	TLM	ALM	Web References	Audio - Video
1-2	Benzene and its derivatives: Analytical, synthetic and other evidence in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel's rule;	B-3, CH 13, Page No: 529-530	Lecture, Active learning	Group Discussion		
3	Friedel crafts alkylation-reactivity, limitations, Friedel crafts acylation;	B-3, CH 14, Page No:553-564	Discussion, Inductive teaching and learning	Group Discussion		
4-7	Substituents, effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitution reaction	B-3, CH 14, Page No:571-574	Lecture, Active learning	Quiz/Test Questions		
8-10	Structure and uses of DDT, Saccharin, BHC and Chloramine.		Discussion, Inductive teaching and learning	Student-Created Ppt	https://www.pharmaguideline.com/2007/01/structure-	

					and-uses-of-ddt-saccharin-bhc-and-chloramine-t.html	
11	Phenols*: Synthesis and reactions of –OH group	B-3, CH 24, Page No: 925-931	Lecture, Active learning	Group Discussion		
9-10	Reactions of Benzene ring	B-3, CH 24, Page No: 934-935	Lecture, Active learning	Statement – Opinion		
11-13	Acidity of phenols, effect of substituents on acidity, qualitative tests,	B-3, CH 24, Page No: 939	Discussion, Inductive teaching and learning	Quiz/Test Questions		
14	Structure and uses of phenol, cresols, resorcinol and naphthols		Lecture, Active learning	Statement – Opinion	https://www.pharmaguideline.com/2007/01/structure-and-uses-of-phenol-cresol-resorcinol-naphthols.html	
15-16	Aromatic amines: Synthesis and reactions	B-3, CH 23, Page No: 881-886	Discussion, Inductive teaching and learning	Group Discussion		
17	Basicity of amines, effect of substituents on basicity	B-3, CH 23, Page No: 889	Lecture, Active learning	Group Discussion		
18-19	Synthetic uses of aryl diazonium salts and structure along with synthesis and reactions.	B-3, CH 23, Page No: 902	Lecture, Active learning	Student-Created Ppt		
20	Aromatic Acids: Acidity, effect of substituents on acidity	B-1, CH 42, Page No: 798	Inductive teaching and learning	Group Discussion Group Discussion		
21-25	Synthesis and reactions of benzoic acid	B-1, CH 42, Page No: 800	Lecture, Active learning	Group Discussion		
26	Fats and Oils: Fatty acids Hydrolysis, Hydrogenation,	B-3, CH 33, Page No: 1155	Discussion, Inductive teaching and learning	Statement – Opinion		
27-28	Saponification and Rancidity of oils, Drying oils;	B-3, CH 33, Page No: 1161	Inductive teaching and learning	Group Discussion		
29-35	Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.	B-3, CH 33, Page No: 1163	Lecture, Active learning	Group Discussion		
36-30	Polynuclear hydrocarbons Structure and reactions of Naphthalene	B-1, CH 44, Page No: 830	Discussion, Inductive teaching and learning	Statement – Opinion		
31-33	Structure and medicinal uses of Anthracene	B-1, CH 44, Page No: 841	Lecture, Active learning	Group Discussion		
34-38	Phenanthrene its structure and reactions with medicinal uses	B-1, CH 44, Page No: 842	Inductive teaching and learning	Group Discussion		
38- 42	Triphenylmethane and Diphenylmethane reactions and uses	B-1, CH 44, Page No: 845	Lecture, Active learning	Statement – Opinion		

43-45	Baeyer's strain theory, limitation of Baeyer's strain theory,	B-1, CH 29, Page No: 585	Lecture, Active learning	Group Discussion		
46-50	Sachse Mohr's theory (Theory of strainless rings), Reactions of cyclopropane and cyclobutane only.	B-1, CH 29, Page No: 590	Inductive teaching and learning	Group Discussion		

Teacher in-charge

Assistant Dean

Dean