TEACHING PLAN: CH-304

SCHOOL: SOBAS		ACADEMIC SESSION: 2023-2024	FOR STUDENTS' BATCH: VI SEMESTER
1	Course code	CH-304	
2	Course Title	ORGANIC CHEMISTRY	
3	Credits		
4	Learning Hours	Contact Hours: 54; Practical Teaching: 27; Project, Tutorial and Assessment: 09; Total hours: 90	
5	Course Objective	The purpose of this course is to provide: 1. Broad and balance knowledge in chemistry in addition to understanding of key chemical concepts, principles and theories. 2. To develop students' ability and skill to acquire expertise over solving both theoretical and applied chemistry problems. 3. To provide knowledge and skill to the students' thus enabling them to undertake further studies in chemistry in related areas or multidisciplinary areas that can be helpful for self-employment/entrepreneurship.	
6	Course Outcomes	1. To gain knowledge about aromatic behaviour and basicity of simple heterocyclic compounds (pyridine, piperidine and pyrrole). 2. To know about 5 and 6 membered heterocyclic rings, basicity of and the preparation and reactions of indole, quinoline and isoquinoline. 3. To get knowledge about the acidity of α-hydrogens of diethyl malonate, ethyl acetoacetate and the synthesis and Keto-enol tautomerism of ethyl acetoacetate. 4. To learn about the essential amino acids, peptides and proteins. To get the knowledge about their structure and properties.	
7	Outline syllabus:		

7.01	Paper Code	Unit	Introduction	Reference number	Teaching methods
7.02	CH-204 UNIT-I HETEROCYCLIC COMPOUNDS-I	(a)	MO picture and Aromaticity	Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
		(b)	Methods of synthesis	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
		(c)	Reactions	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
7.03	CH-104 UNIT-II	(a)	Preparation	Finar Solomon	Lecture, Blackboard, PPT, Discussion

	HETEROCYCLIC COMPOUNDS-II	(b)	Chemical reactions	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
		(c)	Organosulphur compounds	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
7.04	**CH-104 UNIT-III ORAGNIC SYNTHESIS**	(a)	Acidity of Hydrogens	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
		(b)	Synthesis of enolates	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
		(c)	Polymerization	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
7.05	**CH-104 UNIT-IV AMINO ACIDS, PEPTIDES & PROTEINS**	(a)	Amino acids	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion
		(b)	Peptides and Protein synthesis	Solomon Fianr	Lecture, Blackboard, PPT, Discussion
		(c)	Peptides and Protein structure	Solomon Fianr Morrison & Boyd	Lecture, Blackboard, PPT, Discussion

8	**Course Evaluation**	
8.10	**CA: 20%**	
8.1	**Attendance**	5%
8.12	**Homework**	-
8.13	**Quizzes**	4 Quizzes, 5%
8.14	**Projects**	1 Project, 5%
8.15	**Presentation**	1 Presentation, 5%
8.16	**Any other**	--
8.2	**MTE(IA)**	20%
8.3	**End-term examination: 60%**	

9	Text Books & References	
9.1	Text books	
9.2	References	Organic Chemistry: Graham Solomon Organic Chemistry: Morrison & Boyd Organic Chemistry: I L Finar University Chemistry: Mahan
9.3	Video References	https://www.youtube.com/watch?v=z0N3c2ZQxpY https://www.youtube.com/watch?v=gijQ5HQbUqs https://www.youtube.com/watch?v=ij6Qfhhmgq8 https://www.youtube.com/watch?v=wfwUbkdwILw https://www.youtube.com/watch?v=gl-xdxefgY8

Mapping of Outcomes v. Topics

Outcome no. → Syllabus topic↓	1	2	3	4
.Unit I (a)	Y			
. Unit I (b)	Y			
Unit I (c)	Y			
.Unit II (a)		Y		
. Unit II(b)		Y		
. Unit II(c)		Y		
Unit III (a)			Y	
Unit III(b)			Y	
. Unit III(c)			Y	
.Unit IV (a)				Y
Unit IV(b)				Y
Unit IV(c)				Y

QUESTION BANK

Subjective type

UNIT I

1. What are Heterocyclic compounds?
2. How are the heterocyclic compounds classified?
3. Give the structure of two five membered heterocycles with numbering used for IUPAC nomenclature.
4. Compare the basicity of Pyridine with that of pyrrole.
5. Explain why pyridine is less reactive than benzene in electrophilic substitutions?
6. What is Chichibabin reaction? Give one example.
7. Explain why pyridine undergoes nucleophilic substitution reaction?

8. How will you convert furan to pyrrole?
9. Explain: Piperidine is more basic than pyridine.
10. Why is substitution at 2 is more favoured than 3 in case of furan?

UNIT II

1. Outline the synthesis of Indole.
2. Write a short note on Fischer-Indole synthesis.
3. How is quinolone obtained from Skraup's synthesis?
4. How will you synthesis Isoquinoline?
5. What is the role of nitrobenzene and glycerol in the synthesis of quinoline?
6. Give a detailed view on the reations of thiol.
7. How thioethers are prepared?
8. Discuss the structural features of organosulphur compounds.

UNIT III

1. Discuss the mechanism of alkylation in diethyl malonate.
2. How ethyl acetoacetate are synthsized?
3. What is Ziegler-Natta polymerization?
4. Discuss the step-growth polymerization.
5. What are the synthetic and natural rubbers?
6. What is Keto-Enol tatutomerism?

UNIT IV

1. Discuss the classification of amino acids.
2. What is isoelectric point?
3. What is electrophoresis?
4. Discuss the preparation of α amino acids.
5. Discuss the method of peptide structure determination.
6. What is the primary and secondary structure of proteins?
7. Discuss the classification of proteins.

PROJECTS (To be given to group of students)
