St.James College of Pharmaceutical Sciences St.James medical Academy River Bank, Chalakudy			
Programme:	B.Pharm	Sem.:	III Semester
Name of Course: (*Subject*)	BP 301T- PHARMACEUTICAL ORGANIC CHEMISTRY II	Course Code:	009
Teaching faculty of the course	GEETHA ELIAS		

Summary of the Lecture Plan

Topic	Lectures	Hours
1.Benzene and its derivatives. 10 hrs	A. Analytical, synthetic and other evidences in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel's rule	03
	B. Reactions of benzene - nitration, sulphonation, halogenation- reactivity, Friedelcrafts alkylation-reactivity, limitations, Friedelcrafts acylation.	04
	C. Substituents- effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitution reaction	02
	D.Structure and uses of DDT, Saccharin, BHC and Chloramine	01
2. Phenols & Aromatic amines. 10hrs	Phenols* - Acidity of phenols, effect of substituents on acidity, qualitative tests	02
	Methods of preparation and reactions of Phenol	02
	Structure and uses of phenol, cresols, resorcinol, naphthols	01
	Basicity of amines, effect of substituents on basicity,	01
	Methods of preparation and reactions of Aromatic amines	02
	Synthetic uses of aryl diazonium salts	02
3.Fats and Oils .10hrs	a.Fatty acids – reactions.	01
	b. Hydrolysis, Hydrogenation, Saponification and Rancidity of oils, Drying oils.	03
	c. Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.	06
4. Polynuclear hydrocarbons. 10hrs	Synthesis, Reactions & Structure of Naphthalene, Phenanthrene, and medicinal uses of their	04

	derivatives.	
	Synthesis, Reactions & Structure of Anthracene, Diphenylmethane and medicinal uses of their derivatives.	03
	Synthesis, Reactions & Structure of Triphenylmethane and medicinal uses of their derivatives.	03
5. Cycloalkanes*. 05hrs	Stabilities – Baeyer's strain theory, limitation of Baeyer's strain theory	02
	Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings)	01
	Methods of preparations &Reactions of cyclopropane and cyclobutane only	02

Major issues or Core aspects to be addressed/ covered:

Topic Title Benzene and its derivatives
Nomenclature of Benzene and its derivatives
Structure elucidation of Benzene
Molecular Orbital structure, resonance in benzene, aromatic characters, Huckel's rule
Reactions of benzene with mechanisms of - nitration, sulphonation, halogenation-reactivity, Friedelcrafts alkylation-reactivity and its limitations, Friedelcrafts acylation.
Effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic aromatic substitution reaction
Structure and uses of DDT, Saccharin, BHC and Chloramine
Topic Title Phenols & Aromatic amines
Phenols* - Acidity of phenols, effect of substituents on acidity, qualitative tests of phenol
Important methods of preparation and reactions of Phenol . Structure and uses of phenol, cresols, resorcinol, naphthols
Basicity of amines, effect of substituents on basicity,
Methods of preparation and reactions of Aromatic amines
Synthetic uses of aryl diazonium salts
Topic Title Fats and Oils
Reactions of fatty acids with alkali and glycerol. Hydrogenation and addition of HI and Iodine to unsaturated fatty acids
Hydrolysis, Hydrogenation, Saponification , Rancidity of oils and Drying oils giving specific examples
Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.

Topic Title	Polynuclear aromatic hydrocarbons
Synthesis (Haworth's), Reactions & Structure of Naphthalene, Phenanthrene, and medicinal uses of their derivatives.	
Synthesis (Haworth's), Reactions & Structure of Anthracene, Diphenylmethane and medicinal uses of their derivatives.	
Synthesis, Reactions & Structure of Triphenylmethane and medicinal uses of their derivatives.	
Topic Title	Cycloalkanes
Stability of cycloalkanes – Baeyer's strain theory, limitation of Baeyer's strain theory	
Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings)	
Methods of preparations of cycloalkanes &Reactions of cyclopropane and cyclobutane only	
Topic Title	

Sample Questions

Topic Title	Benzene and its derivatives
What do you mean by resonance? Explain resonance in benzene.	
How do you elucidate the structure of Benzene	
Explain the halogenation, nitration and sulphonation reactions of Benzene with mechanisms.	
State Huckel's rule giving example of an aromatic compound.	
Name some activating and deactivating groups of monosubstituted benzene stating reasons for their reactivity and orientation in electrophilic aromatic substitution reactions.	
Explain Friedel Crafts reactions.	
Topic Title	Phenols & Aromatic amines
Explain acidity of phenols and effect of substituents on acidity.	
Give general methods of preparation and any two reactions of Phenol	
What are the qualitative tests for phenol?	
Explain basicity of amines and effect of substituents on basicity,	
Discuss the synthetic uses of aryl diazonium salts	
Topic Title	Fats and Oils
What are oils? Give examples for saturated and unsaturated fatty acids.	
Define acid value, saponification value and iodine value along with their significance.	
What is hydrogenation of oils?	

What are drying oils?
What is meant by rancidification of oils?
Give some reactions of fatty acids.
What are ester value and RM value of oils?
Topic Title Polynuclear aromatic hydrocarbons
What are fused poly-nuclear hydrocarbons? Give the Haworth's synthesis of naphthalene and any two chemical reactions.
Name the medicinally important compounds of phenanthrene and triphenyl methane and their uses.
Give the synthesis, reactions & structure of anthracene.
Give the synthesis, reactions & medicinal uses of diphenylmethanes.
Topic Title Cycloalkanes
Explain Baeyer's strain theory and its limitations.
Explain the theory of strainless rings.
What is Coulson and Moffitt's modification?
Give methods of preparations & reactions of cyclopropane and cyclobutane
Topic Title