

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.E. SEMESTER : 3**  
**CHEMICAL TECHNOLOGY**

Subject Code: 133604

Subject name : **CHEMISTRY OF INTERMEDIATES & COLORANTS -I**

Sr. No.	Course contents
<b>01.</b>	Introduction, definition, classification & importance of dyes, Chemical Feedstock for dyestuff industry-fossil feedstock – coal, petroleum-coal-tar primaries: renewable raw materials.
<b>02.</b>	Chemistry of benzenoid aromatics. Electrophilic aromatic substitution reactions with the mechanisms, one carbon electrophiles & their utility. Nucleophilic aromatic substitution reaction Orientations in aromatic substitution reaction. Hammett substitution constants. Introduction of various functional groups into benzenoid aromatics, functional group interconversions. Synthesis of typical dyestuff intermediates based on benzene, xylene, toluene chemistry of fast bases.
<b>03.</b>	Chemistry of naphthalene-Electrophilic aromatic substitution reactions. Bucherer reaction, Reverse Bucherer reaction. Synthesis of naphthols, naphthylamines, naphthol sulphonic acid, naphthylamine sulphonic acids, aminonaphthol sulphonic acids. Benzenoid arylides as Azo coupling components. Anthracene & condensed aromatics. Anthraquinone & benzanthrone. Reactions of anthraquinone, benzanthrone & synthesis of dyestuff intermediates based on anthraquinone & benzanthrone.
<b>04.</b>	Active methylene compounds such as acetoacetic ester, malonic ester, malononitrile & their use in synthesis of dyestuff intermediates, diketene, acetoacetanilides. Simple heterocyclic compounds like pyrazolones, aminopyrazoles, pyrimidines, pyridines. Evolution of dyestuff chemistry.

**Reference Books:**

1. Industrial Organic Chemistry, Arpe H.J.VCH, Weinheim, Weissermal K.1993
2. Organic Synthesis, Smith M.B., Tata McGraw Hill, New York, 2<sup>nd</sup> Ed., 2004
3. Chemistry of Synthetic Dyes, Lubs H.A., Robert E Krieger Publishing Company New York, 1995
4. Organic Chemistry, Clayden, Greeves, Warren, Oxford Univ. Press, 2001
5. Chemistry of Synthetic Dyes, Lubs H.A., Robert E Krieger Publishing Company New York, 1<sup>st</sup> Ed.,1995

6. Chemistry of Synthetic Dyes – Vol I, Venkatraman K., Academic Press, New York, 2009
7. Chemistry of Synthetic Dyes – Vol II, Venkatraman K., Academic Press, New York, 2009
8. Chemistry of Synthetic Dyes – Vol III, Venkatraman K., Academic Press, New York, 2009
9. Chemistry of Synthetic Dyes – Vol IV, Venkatraman K., Academic Press, New York, 2009
10. Chemistry of Synthetic Dyes – Vol V, Venkatraman K., Academic Press, New York, 2009
11. Chemistry of Synthetic Dyes – Vol VI, Venkatraman K., Academic Press, New York, 2009
12. Color Chemistry: Syntheses, Properties and Applications of Organic Dyes and Pigments  
,Heinrich Zollinger, Wiley-VCH,2<sup>nd</sup> Ed, 1991