

## CH483: CATALYSIS

CREDITS = 4 (L = 4, T=0, P = 0)

1. **HOMOGENEOUS CATALYSIS:** Acid Catalysis, base catalysis and general acid-base catalysis catalysis, Catalytic constants, gas phase catalysts. The mode of actions, drawback of homogeneous catalysis. 8 Hours
2. Theory of phase transfers catalysis and industrial applications of phase transfer catalysis. 5 Hours
3. **HETEROGENEOUS CATALYSIS:** Gas-solid interface, adsorption, physical adsorption of catalysis, surface area and pore structure, Langmuir adsorption isotherm, BET isotherm. Chemisorption of gases on metal and non metals, Kinetics of heterogeneous catalysis reactions, interpretations of chemisorptions and surface catalysis based on modern solid state theories, reaction types and mechanisms. Methodology of catalyst selection and development, catalyst evaluation methods. Factors influencing choice of catalyst, promoters and supports, catalyst poisons. Discussion of some industrially important catalytic processes. 20 Hours
4. **ENZYME CATALYSIS:** The mode of action, specificity of enzyme catalysis, condition for enzymatic actions. 4 Hours
5. Techniques of catalyst preparations, characterization of catalysts. 3 Hours

### REFERENCE BOOKS

Title: Heterogeneous Catalysis-Principle and applications.  
Author: G.C.Band  
Publisher: Claredan Press, Oxford

Title: Catalysis Vol – 1 & 2  
Author: Ed. P. H Limnets  
Publisher: Reinhold

Title: Introduction to Principles of Heterogeneous Catalysis  
Author: S.M.Thomas, W.J.Thomas  
Publisher: Academic Press.