CH354: CHEMICAL PROCESS TECHNOLOGY

CREDITS = 6 (L = 4, T=0, P = 2)

1.	**ENERGY TECHNOLOGY:** Survey of different sources of energy and their utilization of Fossil fuels, liquid and gaseous fuels coke-oven gas, producer gas, water gas, natural gas, LPG etc, properties and processing. Elementary idea about non-conventional energy sources, solar energy (different collector plates) wind energy, biomass energy, geothermal energy.	6 Hours
2.	**WATER TREATMENT:** Municipal water treatment. Review of different processes of desalination, Ion Exchange, Reverse osmosis and electro dialysis.	4 Hours
3.	**STUDY OF SELECTED CHEMICALS**. With special references to the aspects of major manufacturing process, raw materials and utilities, physico-chemical parameter, material of construction of major equipment, By products and waste treatment. (a) Soda ash, Cement, Glass (b) Paper & Pulp Industries (c) Industrial gases (CO_2, H_2, He, N_2, Acetylene and Argon) (With reference to cryogenic processes) (d) marine chemicals (e) refractories (f) porcelain (g) electro thermal products (h) nuclear materials (i) Fermentation process (j) Manufacturing of H_2SO_4, HNO_3 and HCl,(k) starch & sugar	6 Hours
4.	**FERTILIZER TECHNOLOGY CONCEPT OF SIMPLE, COMPOUND AND COMPLEX FERTILIZER**: Urea, ammonium sulphate potastic fertilizer, single and triple super phosphate, Recent advances in fertilizer technology, slow release and suspension fertilizer, Bioferlilzer.	8 Hours

REFERENCE BOOKS:

Title: Chemical Process Industries 5th Ed.
Author: George T Austin
Publisher: McGraw Hill

Title: Out lines of Chemical Technology
Author: E E Dryden
Publisher: East west Publication

Title: Fuels and Combustions
Author: Samir Sarkar
Publisher: Orient Longman Ltd.

LIST OF EXPERIMENTS

1. To determine the Kinematic viscosity of a given sample of oil using Redwood Viscometer.

2. To determine the Kinematic viscosity of a given sample of oil using Saybolt Viscometer.

3. To determine the Acid Value of a given Vegetable Oil.

4. To determine the Iodine Number of a given sample of Oil.

5. To determine the excess Alkali content of a given sample of Soap.

6. To determine the GCV of Pressurized LPG gas by Junker's Calorimeter.

7. To determine the moisture content of a given sample of oil using Dean and Stark apparatus.

8. To determine the percentage yield of a given seed using Soxhelet apparatus.

9. Proximate analysis of a given sample of coal.

10. To determine the COD content of a given sample of waste water.