Subject Code: 09CH0405

Subject Name: General Chemical Technology

Semester: 4th

Objective: To study about General Chemical Technology is useful in chemical engineering for the manufacturing of different chemical product.

Credits Earned: 4 Credits

Course Outcomes: After completion of this course, student will be able to:

1. Understand detailed flow diagram of different chemical process industries.

2. Understand basic for the production of different types acids, gasses, coal, polymers.

Pre-requisite of course: Basic concepts of units and dimensions, mass fraction mole fraction, material balance.

Teaching and Examination Scheme:

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Practical Exam (V)	Term work (TW)	
0	0	4	4	0	30	20	25	25	**100**

Contents:

Unit	Topics
1	**Introduction :** Scope of chemical Industry, Classification of Chemical Industries.
2	**Acids :** Types / Classification of acids, Physical and chemical properties of sulphuric acid, Uses of sulphuric acid, Manufacture of sulphuric acid by DCDA process, Uses and physical properties of HCL, manufacturing process for HNO_3, Manufacture of hydrochloric acid by synthetic method.

4	**Chlor-Alkali Industries :** Different process of production of soda ash, Manufacturing of soda ash by Solvay process, Physical properties of soda ash, caustic soda and chlorine, Production of caustic soda by electrolytic process, Major engineering problems for manufacturing soda ash, caustic soda and chlorine.
5	**Cement And Lime :** Introduction, Properties of cement, Types of cement, Manufacturing process of Portland cement, Major Engineering problems of cement industries, Physical properties of lime, Uses of lime, Manufacturing process of lime by hydrated lime process, Major Engineering problems of hydrated lime process.
6	**Fuel and Industrial Gasses :** Introduction, Classification of fuel, Method of production of fuel gases, producer gas, water gas, coke oven gas, natural gas, , Industrial gases Major engineering problems in manufacturing of different types of gasses.
7	**Dyes and Intermediates** Introduction, Classification, application of dyes, Azo dyes, Anthroquione dyes, Triamyl dyes, dispersed dyes, Miscellaneous dyes: azine, thiazines, oxazines, thiazoles, nitro dyes. Various dye intermediates and their manufacturing, manufacturing of H-acid, Koch acid, Nitro benzene, Chrome blue black.
8	**Coal And Coal Chemical :** Introduction, Coking of coal, Distillation of coal tar, Gasification of coal, Hydrogenation of coal.

References:

- **Text Book:**

1. Outlines of Chemicals Technology- M. Gopala Rao
2. Chemical Process Industry –Shreve and Austin

- **Reference Book:**

1. Chemical Technology -vol.1&2 by G.N. Panday
2. Industrial Chemicals –by Faith, keyes and Clark

List of Experiments: Any Five experiments to be performed

1. Standardization of sulphuric acid solution.
2. Estimation of CaOH group
3. Preparation of. Hydrated lime
4. Preparation of phenyl azo-ß Naphthol from Aniline.
5. Preparation of Nitrobenzene from Benzene.
6. To prepare mordant Yellow dye.
7. Preparation of Fast green o dye.
8. Preparation of Disperse Dye.
9. Preparation of soap
10. Preparation of detergent
11. Proximate analysis of coal.

Instructional Method:

a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory