

INSTITUTE	DIPLOMA STUDIES
PROGRAM	DIPLOMA ENGINEERING (CHEMICAL ENGINEERING)
SEMESTER	4
COURSE TITLE	GENERAL CHEMICAL TECHNOLOGY
COURSE CODE	09CH2405
COURSE CREDITS	3

Objective:

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

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, and material balance.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	2	2	0	30	20	25	25

Contents : Unit	Topics	Contact Hours
Total Hours		

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Tutorial 1 Scope of chemical Industry, Classification of Chemical Industries.	2
2	Tutorial 2 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.	6

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
3	Tutorial 3 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.	4
4	Tutorial 4 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.	4
5	Tutorial 5 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.	4
6	Tutorial 6 Introduction, Classification, application of dyes, Azo dyes, Anthroquinone 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	4
7	Tutorial 7 Introduction, Coking of coal, Distillation of coal tar, Gasification of coal, Hydrogenation of coal.	4
8	Experiment 1 Standardization of sulphuric acid solution.	2
9	Experiment 2 Estimation of CaOH group	2
10	Experiment 3 Preparation of. Hydrated lime	2
11	Experiment 4 Preparation of phenyl azo-β Naphthol from Aniline.	2
12	Experiment 5 Preparation of Nitrobenzene from Benzene.	2
13	Experiment 6 To prepare mordant Yellow dye.	2
14	Experiment 7 Preparation of Fast green o dye.	2
15	Experiment 8 Preparation of Disperse Dye.	2
16	Experiment 9 Preparation of soap	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
17	Experiment 10 Preparation of detergent	2
18	Experiment 11 Proximate analysis of coal.	2
19	Experiment 12 To study about Ultimate analysis of coal.	2
20	Experiment 13 To study about Cement manufacturing process.	2
21	Experiment 14 To study about Bomb Calorimeter.	2
Total Hours		56

Textbook :

- 1 Outlines of Chemicals Technology, M. Gopala Rao, Mc Hill, 1990
- 2 Chemical Process Industry , Shreve and Austin, Mcgrow Hill, 1987

References:

- 1 Chemical Technology , Chemical Technology , G.N. Panday, Nirali Publication, 2004
- 2 Industrial Chemicals , Industrial Chemicals , Faith, keyes and Clark, Hill Publication, 2011

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking
40.00	40.00	10.00	10.00		

Instructional Method:

- 1 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.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- 4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

- 1 [https://onlinecourses.nptel.ac.in/noc23_ch16/preview#:~:text=ABOUT%20THE%20COURSE%3A&text=Our%20goal%20is%20to%20help,macroscale%20\(the%20process\)%20domains.](https://onlinecourses.nptel.ac.in/noc23_ch16/preview#:~:text=ABOUT%20THE%20COURSE%3A&text=Our%20goal%20is%20to%20help,macroscale%20(the%20process)%20domains.)