

16CH306 CHEMICAL TECHNOLOGY

Hours Per Week :

L	T	P	C
3	-	2	4

Total Hours :

L	T	P	WA/RA	SSH/HSH	CS	SA	S	BS
45	-	30	20	15	-	2	5	5

Course Description and Objectives:

This course comprises of detailed industrial processes and process flow sheets employed for manufacturing of various types of chemical products. The objective of this course is to provide exposure to the students on process flow and equipments used in large scale production of chemical products.

Course Outcomes:

The student will be able to:

- explain unit operations and unit processes involved in large scale manufacturing process, such as chloro alkali, cement, rubber, pulp and paper industries.

SKILLS:

- ✓ Draw process flow sheet of chemical process industries.
- ✓ Constructing standardized flow sheet for new product development.
- ✓ Identify processing equipments in a process flow sheet.

UNIT - 1**L-9**

CHLOR - ALKALI INDUSTRIES : Manufacture of soda ash, Caustic soda, Chlorine. Manufacture of special glass, Water gas, Producer gas, Manufacture of ammonia, Urea and complex fertilizers.

UNIT - 2**L-9**

SULFURIC ACID, HYDROCHLORIC ACID AND INORGANIC CHEMICALS : Manufacture of sulphuric acid, Manufacture of aluminum sulphate and alum, Barium salts and rare earth compounds.

UNIT - 3**L-9**

CEMENT AND RUBBER INDUSTRIES : Manufacture of cement, Portland cement, Miscellaneous calcium compounds, Phenol formaldehyde, Vinyl chloride, Manufacture of PVC & SBR.

UNIT - 4**L-9**

SOAPS AND DETERGENTS : Production and extraction of vegetable oils, Hydrogenation of oils, Refining of oils, Glycerin and soap, Production of detergents.

UNIT - 5**L-9**

PULP AND PAPER INDUSTRIES : Methods of pulping, Production of sulphate and sulphite pulp, Production of paper-wet process.

ACTIVITIES:

- *Mini project on production of any one chemical product.*

LABORATORY EXPERIMENTS**LIST OF EXPERIMENTS**

Total hours: 30

1. Estimation of glucose/sucrose.
2. Estimation of Iodine value of oil.
3. Estimation of saponification value of oil.
4. Estimation of acid value of oil.
5. Preparation of acetanilide.
6. Preparation of aspirin (acetyl salicylic acid).
7. Preparation of nitrobenzene from benzene.
8. Preparation of meta dinitro benzene from nitro benzene.
9. Preparation of diammonium phosphate.
10. Extraction of casein from milk.
11. Preparation of soap and detergent.

TEXT BOOKS:

1. M. Gopal Rao and M. Sittig, "Dryden's outlines of Chemical Technology", 2nd edition, East West Press, 2000.
2. Shreve. J. "Chemical Process Industries", 5th edition, McGraw-Hill, 1999.