

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.E Semester: 3 Chemical Engineering

Subject Code 130505  
Subject Name Chemical Process Industries-I

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Sr.No	Course contents
1	Chemical processing and the work of chemical engineering : Basic chemical data, batch and continuous processing, flowcharts etc.
2	Water : Water treatment for industrial and domestic use such as demineralization, deionization, desalination, reverse osmosis..
3	Sulfur and Sulfuric acid : Mining of sulfur, manufacture of Sulfur and sulfuric acid by DCDA process, its applications. Manufacturing technologies, Engineering problems, Energy recovery from the process Introduction to Fertilizer industries, manufacturing processes of Ammonia, Urea, Nitric acid, Phosphoric acid their uses and applications, major engineering problems. NPK fertilizer
4	Chlor-alkali and Heavy Inorganic industry : manufacturing caustic soda and chlorine by membrane cell process, Manufacturing Process of Sodium bicarbonate
5	Introduction to industrial gases and carbon : Gases like carbon dioxide, oxygen, nitrogen, hydrogen, rare gases of atm. , helium, acetylene, sulfur dioxide, carbon monoxide, nitrogen oxide. Carbon like carbon black, activated carbon, natural graphite, manufacturing of graphite and carbon, industrial diamonds.
6	Introduction to ceramic industries. Portland cements, calcium and magnasium compounds, glass industries.
7	Introduction to explosives, propellants and toxic chemical agents, photographic products industries.
8	Introduction to pulp and paper industries, Kraft process, Paper making process ,etc.

### Reference Books:

1. Shreve's Chemical Process Industries by George Austin
2. DRYDENS outlines of chemical technology for the 21<sup>st</sup> century, third edition by
3. M Gopalarao & Marsal Sitting, pub East-West Press
4. General chemical technology by Shukla and Pandey.