Heavy and Fine Chemicals (Chemical Process Technology) - Web course

COURSE OUTLINE

The course covers the chemical process industries, which is the integral part of the chemical sciences and engineering. It is being taught at B.Sc., M.Sc. Industrial chemistry and B.Tech. Chemical engineering at almost all the institution of repute.

It mainly covers the synthesis, industrial manufacture, flow diagram, properties and uses of Mineral acids, sodium compounds, Industrial gases & Paints, cement, ceramic & glass Industries, phosphorus based agro-chemicals, Nitrogen & potassium fertilizers

COURSE DETAIL

Module No.	Topics to be covered	Lecture Numbers
Module No. 1	**Overview**	1
	Introduction, classification of chemical industries, heavy and fine chemicals	
Module No. 2	**Industrial Gases**	2 – 7
	Introduction, manufacture and uses of carbon dioxide, nitrogen, oxygen, hydrogen, ammonia, acetylene.	
Module No. 3	**Sodium compounds**	8 – 15
	Sources, uses and preparation of sodium chloride. Manufacture, properties and uses of sodium carbonate, sodium bicarbonate sodium hydroxide and chlorine.	
Module No. 4	**Mineral acids**	16 – 21
	Manufacture, properties and uses of nitric acid, sulfuric acid, hydrochloric acid, phosphorus and phosphoric acid	
Module No. 5	**Cement Industries**	22 – 25
	Raw materials, manufacturing method, types of cement	

NP-TEL

NPTEL

http://nptel.iitm.ac.in

Chemical Engineering

Pre-requisites:

Thecourse is designed for B.Tech., B.E. and B.Sc. students, hence the student must have +2 level in chemical sciences.

Additional Reading:

1. Riegel's Hand Book of Industrial Chemistry by James A Kent

Hyperlinks:

- www.nkpatel.co.in

Coordinators:

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Module No. 6	**Ceramic Industries**	26 – 29
	Raw materials, manufacturing methods and properties of white wares, clay products, refractories.	
Module No. 7	**Glass Industries**	30 – 32
	Raw materials, manufacture of glass, types of glass	
Module No. 8	**Phosphorus based agrochemicals**	33 – 37
	Introduction of fertilizers. Synthesis, properties and uses of ammonium phosphate, super phosphate, triple super phosphate.	
Module No. 9	**Nitrogen fertilizers**	38 – 40
	Introduction, manufacture & properties of urea, ammonium chloride, calcium ammonium nitrate (CAN), ammonium sulfate	
Module No. 10	**Potassium fertilizers**	41 - 42
	Introduction manufacture and properties of potassium chloride and potassium sulfate	
Module No. 11	**Paint Industries**	43 – 45
	Introduction, types, manufacture and properties of paints	

References:

1. Industrial chemistry, B.K.Sharma, 15th edition, 2006, Goel Publishing House,Meerut
2. Shreve's chemical process industries, George T. Austin, 5th edition, 1984, Mc Grow hill international edition