



Strategic Plan for Learning and Teaching
Department of Chemical Engineering

Branch Name:	Chemical Engineering (CHE)	Session :	2018-2019
Subject Name:	Chemical Process Technology – I	Year:	3 rd
Subject Code:	CHE 503	Semester :	5 th

Course Objective:	To impart knowledge about the process technologies of various organic and inorganic process industries
Course Outcome:	<ul style="list-style-type: none"> • Ability to understand the manufacturing of various inorganic and organic chemicals • Understand the process kinetics, thermodynamics and flow diagram and various process parameters along with the ability to identify • Solve engineering problems during production

Teaching-Learning Plan:

Lecture Class No.	Reference to the WBUT Syllabus	Subject Topics to be discussed/ covered/ delivered	Text book / Referred book Sl.No.
1	Mod I	Water for the chemical process industry, Boiler feed-water, Cooling tower water, Demineralised water, Drinking water;	1,3
2		Treatment methodology: Ion-exchange, Membrane technology etc.	
3		Production and consumption pattern, manufacture of Chlorine-caustic soda: Raw materials, principles of manufacture,	
4		Mercury-cathode & Membrane process: flow-sheet and sequence of operation,	
5		other processes, advancement of process technology and major engineering problems, uses.	
6		Production and consumption pattern, Raw materials, Solvey process	
7		Physico-chemical principles of manufacture, carbonation and	
8		ammonia recovery step, flow-sheet and sequence of operation,	
9		Other processes, advancement of process technology and	
10		Modified Solvey process, major engineering problems, uses.	
11	Mod II	<i>Hydrochloric Acid</i> : Raw materials, principles of manufacture, flow-sheet and sequence of operation, major engineering problems, uses.	1,2
12		Sulfuric acid production process, Contact process, Physico-chemical principles and general theory of contact reaction with thermodynamic and reaction engineering aspects,	
13		different types of catalyst – preparation methodology and relative merits, flow-sheet and sequence of operation,	
14		details of major equipments,	
15		advancement of process technology & major engineering problems, DCDA process,uses.	
16		Raw materials, Ostwald Process –physico-chemical principles, catalyst,	
17		process flow sheet and sequence of operation	
18		details of major equipments, uses.	

19		Raw materials, manufacturing process with process flow sheet, details of major equipments, uses.	
20		Ammonia- Source of hydrogen; methods of obtaining hydrogen from different sources,	
21	Mod III		1,3
22		source of nitrogen-liquefaction of air and distillation of liquid air.	
23		Synthesis of ammonia- physico chemical principles, catalyst for synthesis of ammonia,	
24		process flow sheet and sequence of operation, details of major equipments.	
25		Urea - Raw materials, manufacturing process with flow sheet, sequence of operation, major equipments details.	
26		Ammonium sulphate: Raw materials, manufacturing process with flow sheet, major equipments details.	
27		Manufacturing process of super phosphate of lime	
28		triple super phosphate and	
29		ammonium phosphate.	
30		NPK –manufacturing process, details of major equipments.	
31	Mod IV	Chemical composition of Portland cement, raw materials,	1,2
32		dry and wet process for manufacturing cement clinker, setting and hardening of cement	
33		Composition of glass, raw materials, manufacturing method of glass- pot furnace	
34		and tank furnace, annealing of glass.	
35		Basic raw materials, white-wares,	
36		manufacturing process of porcelain and their forming operations.	
37		Properties of Refractories, raw materials,	
38		manufacturing techniques of acid refractories,	
39		basic Refractories,	
40		sintered and fused refractories,insulating refractories	

Recommended Text/ Reference Books:

Sl.No.	Name of Text/ Reference Book	Name of Author	Publisher & edition
1	Outlines of Chemical Technology	Dryden, C. E., and Rao, M.G.	Affiliated East West Press
2	Chemical Process Industries,	Austins, G.T., Sherve	MGH 5th Edn.
3	Encyclopedia of Chemical Technology	Kirk & Othmer (Ed.)	

Course Co-ordinator / Faculty

Sl. No.	Name of the Course Co-ordinator / Faculty	Signature of Course coordinator / Faculty		Signature of HOD	
1	Dr.Ardhendu Sekhar Giri				