Lesson Plan

Name of Faculty : INRANIL BISWAS Discipline : CERAMIC ENGINEERING

Semester : 4th

Subject : CEMENT TECHNOLOGY

Lesson Plan Duration : 15 WEEKS

Work Load (Lecture /Practical) per week in hours : Lecture : 3 Practical 4

Week	Theory		Practical	
	Lecture Day	Topic (Including assignment/test)	Practical Day	Topic
1	1	Definition and Classification of cements	1	Physical identification of cement: Colour and Specific gravity.
1	2	Different types of cements Portland cement, Pozzolona cement	2	Physical identification of cement: Colour and Specific gravity.
1	3	Slag cement, Quick setting cement, Rapid hardening cement		
2	4	Low heat cement, High alumina cement, White & coloured cement	3	Physical identification of limestone: Colour and Specific gravity
2	5	Oil well cement, Iron ore cement, Water proof cement	4	Physical identification of limestone: Colour and Specific gravity
2	6	Sulphate resisting cement, Acid proof cement, Hydrophobic cement		
3	7	Ordinary Portland cement of different grades (33,43,& 53)	5	Determination of fineness of cement.
3	8	Assignment of chapter 1	6	Determination of fineness of cement.
3	9	Raw Materials and Additives Raw materials, and their selection		
4	10	Calcareous Raw materials: Limestone, Chalk, Marl.	7	Determination of water cement ratio.
4	11	Argillaceous Raw materials: Silica and its Sources, Alumina, Iron oxide, Shale.	8	Determination of water cement ratio.
4	12	Other raw materials: Fly ash, blast furnace slag, lime sludge.		
5	13	Additives: Definition, Types and purposes. Effect of gypsum on cement properties	9	Determination of initial & final setting time of cement.
5	14	Assignment of chapter 2	10	Determination of initial & final setting time of cement.
5	15	Sessional test 1 as per HSBTE academic calendar		
6	16	Effect of raw materials and constituents on the properties of cement	11	Determination of soundness of cement by Le Chatteliers apparatus.

6	17	General composition of cement.	12	Determination of soundness of cement by Le Chatteliers apparatus.
6	18	Phases of cement and their effect on the properties of Cement		
7	19	Calculations of raw mix:- Estimation of silica modulus, alumina modulus,	13	Determination of soundness of cement by Le Chatteliers apparatus.
7	20	Hydraulic modulus, Lime saturation factor, Liquid content.	14	Determination of soundness of cement by Le Chatteliers apparatus.
7	21	Impact of modulus on cement manufacturing process and clinker.		
8	22	Hydration of portland cement, Hydration and heat of hydration of cement,	15	Prepare a sequential flow Diagram for Dry process and wet process
8	23	mechanism of hydration	16	Prepare a sequential flow Diagram for Dry process and wet process
8	24	hydration of C2S, C3S and C3A setting and hardening of Portland cement.		
9	25	Physical and mechanical properties of portland cement.	17	Prepare a sequential flow Diagram for Dry process and wet process
9	26	Assignment chapter 3	18	Prepare a sequential flow Diagram for Dry process and wet process
9	27	Sessional test 2 as per HSBTE academic calendar		
10	28	Wet and dry process, advantages and disadvantages of each process,	19	Prepare a cement plant Layout
10	29	Types of kilns used in Kiln used in cement manufacture.	20	Prepare a cement plant Layout
10	30	Raw mill Grinding, Mixing and homogenization, Burning,		
11	31	Refractories used in Kiln and Coating Formation,	21	Prepare a cement plant Layout
11	32	Thermo chemistry of clinker formation, sequence of reaction.	22	Prepare a cement plant Layout
11	33	Cooling - Importance of cooling.		
12	34	Grinding of clinker - in tube mill, ball mills,	23	Slide show of a Cement plant
12	35	Role of gypsum. Effect of temperature on gypsum during grinding of clinkers	24	Slide show of a Cement plant
12	36	Lime and other building materials, different classes of lime,		

13	37	Properties and uses of Lime	25	Slide show of a Cement plant
13	38	Pollutants from cement industry and pollution control measures.	26	Slide show of a Cement plant
13	39	Electro Static Precipitators, Cyclone dust collector,		
14	40	Scrubbers and wet collectors.	27	Video demonstration on safety measures taken in cement plant.
14	41	Water consistency, initial setting time, final setting time,	28	Video demonstration on safety measures taken in cement plant.
14	42	fineness, soundness and compressive strength		
15	43	Health and Safety Measures taken in cement industries.	29	Video demonstration on safety measures taken in cement plant.
15	44	Precautions for environmental pollution.	30	Video demonstration on safety measures taken in cement plant.
15	45	3rd sessional Test as per hsbte academic calendar		