FINE PARTICLE PROCESSING LABORATORY

Course Type	Course Code	Name of Course	L	T	P	Credit
DC	FMC253	Fine Particle Processing Laboratory	0	0	3	3

Course Objective
To give practical knowledge of processing of coal and minerals at fine size range.
Learning Outcomes
Upon successful completion of this course, students will: • have the practical experience of processing of fines. • be able to understand the practical application of flocculation, thickening and filtration process in dewatering of fines

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Processing of copper ores using froth flotation and study the effect of collector dosage on flotation kinetics.	3	Understanding of beneficiation of sulphide ores using froth flotation technique and its kinetic behaviour.
2	Processing of lead-zinc ores using froth flotation and study the effect of frother dosage on grade and recovery.	3	Understanding of beneficiation of sulphide ores using selective froth flotation.
3	Processing of coal fines using froth flotation and study the effect of pulp density on the quality of clean coal.	3	This will help students in selecting in optimizing the reagent dosage and selecting flotation cell size.
4	Processing of iron ore fines using selective flocculation and study the effect of reagent dosage on the performance.	3	This will help students to understand the application of selective flocculation in beneficiation.
5	Study of the effect of oil dosage on the processing of coal/mineral using oil agglomeration.	3	This will help student to understand use of oil agglomeration in fines beneficiation.
6	Processing of ore/coal fines using advanced gravity separation technique.	3	This will give exposure of advanced gravity separation of fines.
7	Study the effect of process parameters (pH, pulp density, flocculant dosage) on the settling and thickening behaviour of coal fines at given flocculant dosage.	3	The students shall be able to understand the dewatering of fines in coal washery and role of process parameters.
8	Study the effect of process parameters (pH, pulp density, flocculant dosage) on the settling and thickening behaviour of iron ore fines.	3	The students shall be able to understand the dewatering of minerals in process plants and effect of process parameters.
9	Dewatering of fines using vacuum/pressure filtration.	4	This will give idea of filtration and its use in dewatering of fines.
10	Demonstration of laboratory model vacuum drum filter and vacuum disc filter.	4	This will give comparative idea of application of filters in dewatering of fines.
11	Demonstration of laboratory model thickener and pressure filter.	4	This will give idea of application of dewatering of fines using various equipment.
12	Examination and evaluation	6	
	Total	42	

Text Books:

S. No.	Resource/Book Name	Author(s)/Editor(s)	Publisher
1	Laboratory Experiments in Mineral Engineering	S. Venkatachalam, S. N. Degaleesan	Oxford & IBH Publishing

Reference Books:

S. No.	Resource/Book Name	Author(s)/Editor(s)	Publisher
1.	Analytical methods for ores and minerals	B. H. Khawas	I.K. International Publishing House