COURSE TYPE	COURSE CODE	NAME OF THE COURSE	L	T	P	CREDIT
DC	NFMC507	Process Equipment Selection	3	1	0	4

COURSE OBJECTIVE
• To prepare the students for the selection of equipment used in coal preparation and mineral processing industries by imparting relevant principles and solving problems of industrial scale
LEARNING OUTCOMES
After successful completion of the course, the students will be able to • Understand the theories and practices about the selection of process equipment • Select standard equipment used in coal preparation and mineral processing plants • Select ancillary equipment used in processing plants

NO.	TOPICS TO BE COVERED	LECTURE HOURS	TUTORIAL HOURS	LEARNING OUTCOME
1	**Fundamentals:** Introduction. Importance and challenges. Basic philosophies and general practices.	1	0	Introduction to the basic concepts of process equipment selection
2	**Crushers and screens:** Theories and practices for the selection and sizing of crushers and screens.	5	2	Knowledge of crusher and screen selection
3	**Grinding mills:** Theories and practices for selecting ball, rod, and bowl mills.	5	1	Knowledge of mill selection
4	**Classifiers:** Theories and practices for the selection of hydrocyclones and mechanical classifiers.	4	1	Knowledge of classifier selection
5	**Concentrators:** Theories and practices for selecting density separators – jig, DMS, etc. Design of wing tank. Selection of equipment for medium recovery circuit. Magnetic and electrical separators.	8	3	Knowledge of beneficiation equipment selection
6	**Froth Flotation:** Estimation of the number and size of flotation cells and banks.	4	1	Knowledge of flotation cell and bank selection

7	**Dewatering:** Selection and sizing of thickeners, dewatering screens, filters and centrifuges.	5	2	Knowledge of dewatering systems
8	**Ancillary Equipment:** General guidelines on solid and liquid storage and transportation. Selection and sizing of belt conveyors.General outline of selection of water pump, slurry pump, sludge pump, froth pump, and sump pump. Application of DE system and DS system. Guidelines on selecting valves, pipes, bends, blowers, compressors, cooling towers etc., in mineral processing plants.	10	4	Knowledge of the selection and application of utilities and ancillary equipment in processing plants
	Total	**42+14=56**		

TEXT BOOKS:

1. Mineral Processing Plant Design by Andrew L. Mular, Roshan Boman Bhappu, SME

REFERENCE BOOKS:

1. Mineral Processing Design and Operations: An Introduction by Ashok Gupta, Denis Yan, SME
2. Mineral Processing Plant Design, Practice, and Control: Proceedings. Vol. I and II by Andrew L. Mular, Derek J. Barratt, Doug N. Halbe, SME
3. Coal Preparation by J. W. Leonard, SME