Course Type	Course Code	Name of Course	L	T	P	Credit
DC7	MNC 208	UNDERGROUND COAL MINING	3	0	0	9

Course Objective
To provide a deep knowledge on various underground coal mining methods including development, extraction, coal evacuation and associated mechanization for productive and safe mining
Learning Outcomes
Upon successful completion of this course, the students will be able to select a suitable method of coal mining and design its layout, equipment/manpower deployment for a given geo-mining condition and production requirement

Sl. No.	Major Topics	No. of Lectures & Tutorials	Learning Outcome
1	Choice of methods of mining coal seams; factors affecting choice of mining methods; In-seam and horizon mining; Underground coal mining methods, Comparison of underground mining methods	5	Students will have an overview of different underground coal mining methods and factors affecting the choice of mining method
2	a) Opening of coal seams: Types of mine entries (shaft, incline, adit), Relative advantages and disadvantages, Location of entries b) Shaft Sinking Operations: Ground breaking and muck disposal tools and equipment, lining; ventilation, sinking in difficult and water-bearing ground; An overview of mechanized shaft sinking	2 5	Students will learn the mode of entries into coal seams for underground mining. Will get an overview of the process of sinking vertical shafts
5	Pillar mining methods: a) Layout of B&P / R&P mine, sequence of pillar extraction; b) Formation and extraction of pillars by B&P method using LHDs / SDLs c) Formation and extraction of pillars by R&P method using Continuous Miner - Split and Fender method, Wongawilli method, Rib pillar extraction method d) Statutory provisions regarding formation and extraction of pillars by B&P and R&P method e) Air blast and measures to minimize its effects f) Case studies of R&P mining in India	2 2 4 1 1 1	This unit will help the students to learn the process of pillar mining using different mining equipment. Students will also get an opportunity to know the actual operation of underground coal mining in India though case studies. This will help in designing underground coal mine by pillar mining method complying with the statutory requirements.
6	Longwall method of mining: a) Factors affecting longwall mining; advancing and retreating faces; longwall face layouts, factors affecting length and width of longwall panel b) Gate road development using road headers, continuous miner, single entry and multiple entry c) Extraction of coal by longwall method, Longwall face equipment,	4 3 3	This unit will help the students to learn about the modern method of longwall mining, its application condition, design issues, etc. Students will also learn about different machines to be used and their functions. Students will get an opportunity to know the status of application of longwall mining in India through case studies.

Sl. No.	Major Topics	No. of Lectures & Tutorials	Learning Outcome
	Application of Shearer / Plough, Armoured Face Conveyor d) Support system of longwall face and gate roads e) Statutory provisions regarding longwall mining f) Case studies longwall faces in India	4 1 2	
7	Pillar extraction by stowing; Conditions requiring stowing in mines; types of stowing; suitable materials for hydraulic stowing	3	This unit deals with the process of mining with stowing
8	Introduction to Advanced Technologies	2	This unit will help the students to learn about the advanced technologies being practiced worldwide.
Total		42	

Text Book:

1. Principles and Practices of coal mining by R.D.Singh
2. Underground Winning of Coal by T N Singh
3. SME Mining Engineering Handbook

Reference Book:

1. Longwall Mining: by Peng and Chiang
2. Coal Mine Ground Control: Syed Peng