



# IIPM SCHOOL OF ENGINEERING & TECHNOLOGY

## LESSON PLAN: 2021-22

### Sub: Th.01-UNDERGROUND COAL MINING

Branch : Mining Engineering Semester : 4<sup>th</sup>

Faculty name : Sanjay Kumar Majhi

Duration : 60 hours

Objective :

- Explain the dynamic natural agencies that are constantly moulding the landscape of earth. He will be able to visualize the erosional and depositional landforms created by natural agencies.
- Distinguish between Igneous, Sedimentary and Metamorphic rocks and their texture and structures.
- Distinguish and identify the various structures that one may encounter in the field.
- Underline the importance of crystal structures in the identification and study of minerals.
- Identify minerals based on their physical properties. They will possess a sound knowledge of silicate structures.

**Learning Outcome:** In majority of the cases, materials that need to be mined in order to reach the hidden treasure are rocks and minerals. It is therefore, essential for a mining engineer to have the basic knowledge of geology.

Sl. No	Chapter	Proposed Week for Teaching	Lecture No.	Sub. Topic	Important Teaching Points	Content Source
01	I	1 <sup>ST</sup>	01	U/G Mcoal mining	Intro. On u/g coal mining	
02			02		Classification and various methods	EMT VOL I,D.J Deshmukh
03			03	Access to coal seam	Adits, Tunnel, Shafts, Incline	EMT VOL I,D.J Deshmukh
04			04	Access to coal seam	advantages and disadvantages of Bord& Pillar method.	EMT VOL I,D.J Deshmukh
05		2 <sup>ND</sup>	01	Bord and Pillar Method	Applicability and methods of works on entries	COAL Mining tech,R.DSinghS
06			02	Bord and Pillar Method	Development phase	COAL Mining tech,R.DSinghS
07			03	Bord and Pillar Method	various layouts of Bord& Pillar method.	EMT VOL I,D.J Deshmukh

08	<b>II</b>	<b>3<sup>RD</sup></b>	04	Bord and Pillar Method	Panel system and production calculation	EMT VOL I,D.J Deshmukh
09			01	Bord and Pillar Method	Doubt Clearing and class.	
10			02	Bord and Pillar Method	Dip,Strike,Level ,Level Intervals	EMT VOL I,D.J Deshmukh
11			03	Bord and Pillar Method	depillaring method with sand stowing	EMT VOL I,D.J Deshmukh
12		04	Bord and Pillar Method	depillaring method with stowing and caving	EMT VOL I,D.J Deshmukh	
13		<b>4<sup>TH</sup></b>	01	Bord and Pillar Method	Unit Test (Chapter 1),Ch-02	-----
14			02	Bord and Pillar Method	precautions against fire and after depillaring	COAL Mining tech,R.DSinghS
15			03	Bord and Pillar Method	precautions against water during and after depillaring	COAL Mining tech,R.DSinghS
16			04	Bord and Pillar Method	various machineries used in working face.	COAL Mining tech,R.DSinghS
17		<b>5<sup>TH</sup></b>	01	Bord and Pillar Method	contigeous seam. ,working of contiguous seams	COAL Mining tech,R.DSinghS
18			02	Bord and Pillar Method	working of seams above and below goaved out area.	COAL Mining tech,R.DSinghS
19			03	Longwall Method	Intro. &Applicability	EMT VOL I,D.J Deshmukh
20			04	Longwall Method	Unit Test& Doubt clearing Class	-----
21		<b>6<sup>TH</sup></b>	01	Longwall Method	Longwall advancing with layout	EMT VOL I,D.J Deshmukh
22			02	Longwall Method	retreating methods with layout	EMT VOL I,D.J Deshmukh
23			03	Longwall Method	single unit and double unit face.	COAL Mining tech,R.DSinghS
24			04	Longwall Method	cyclic and non-cyclic L/W layouts.	COAL Mining tech,R.DSinghS
25		<b>7<sup>TH</sup></b>	01	Longwall Method	mechanizedlongwall working with armoured flexible conveyor, shield support and shearer loader.	COAL Mining tech,R.DSinghS
26			02	Longwall Method	Doubt Clearing and class.	-----

27			03	Thick seam Mining Method	Unit Test	-----	
28	<b>III</b>	8 <sup>TH</sup>	04	Thick seam Mining Method	Intro. & Applicability		
29			01	Thick seam Mining Method	Classify Thick seam Mining.	COAL Mining tech,R.DSinghS	
30			02	Thick seam Mining Method	Method of Thick seam Mining	COAL Mining tech,R.DSinghS	
31			03	Thick seam Mining Method	Different layouts	COAL Mining tech,R.DSinghS	
32			04	Thick seam Mining Method	horizontal slicing, incline slicing	COAL Mining tech,R.DSinghS	
33			<b>IV</b>	9 <sup>TH</sup>	01	Thick seam Mining Method	blasting gallery and sublevel caving
34	02	Thick seam Mining Method			Doubt Clearing and class.	-----	
35	03	Horizon Mining Method			Intro.&Applicability Conditions	COAL Mining tech,R.DSinghS	
36	04	Horizon Mining Method			advantages, disadvantages and limitations of Horizon Mining	COAL Mining tech,R.DSinghS	
37	10 <sup>TH</sup>	01			Horizon Mining Method	layout of Horizon Mining.	COAL Mining tech,R.DSinghS
38		02			Hydraulic & Pneumatic Stowing Method	Intro.	COAL Mining tech,R.DSinghS
39		03	Hydraulic & Pneumatic Stowing Method	hydraulic stowing	COAL Mining tech,R.DSinghS		
40		04	Hydraulic & Pneumatic Stowing Method	Pneumatic stowing.	COAL Mining tech,R.DSinghS		
41	11 <sup>TH</sup>	11 <sup>TH</sup>	01	Support system & Roof control	Introduction	COAL Mining tech,R.DSinghS	
42			02	Support system & Roof control	Unit Test& Doubt Clearing class	-----	
43			03	Support system & Roof control	properties of various types of roof & roof behavior	EMT-01	
44			04	Support system & Roof control	Pressure arch theory in B&P	EMT-01	
45	12 <sup>TH</sup>	12 <sup>TH</sup>	01	Support system & Roof control	Pressure arch theory inlongwall working	EMT-01	
46			<b>V</b>	02	Support system & Roof control	Unit Test	-----

47			03	Support system & Roof control	testing of roof	COAL Mining tech,R.DSinghS
48			04	Support system & Roof control	Classify support system in Mines	COAL Mining tech,R.DSinghS
49		13 <sup>TH</sup>	01	Support system & Roof control	principle of operation application and load bearing capacity assessment.	COAL Mining tech,R.DSinghS
50			02	Support system & Roof control	Doubt class on Previous Topics	-----
51			03	Subsidence due to Mining	Introduction&angle of draw, shaft pilla	EMT-01
52			04	Subsidence due to Mining	factors of subsidence, critical area of extraction & factors affecting subsidence	EMT-01
53		14 <sup>TH</sup>	01	Subsidence due to Mining	precautionary measures against damage due to subsidence	EMT-01
54			02	Subsidence due to Mining	<u>Doubt class on Previous Topics</u>	-----
55			03	Face Mechanization	Unit Test	-----
56			04	Shaft sinking	Introduction, vertical shaft and inclined shaft	EMT-01
57		15 <sup>TH</sup>	01	Shaft sinking	shape and size of shaft, location of shaft, sinking through normal ground, shaft plumbing	Modern coal mining tech
58			02	Shaft sinking	sinking through difficult ground, cementation, freezing	Modern coal mining tech
59			03	Shaft sinking	mechanized shaft sinking, sinking upward, widening and deepening of shafts.	Modern coal mining tech
60			04	Face Mechanization	Doubt Clearing Class & Unit Test	-----

**Books Suggested:**

- E.M.T Vol-01                      D.jDeshmukh
- COAL Mining tech                R.D Singh
- Modern coal mining tech        Samir Kumar Das

Signature of Lecturer

**Faculty Member**

**HOD**

**Principal/ Director**