



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME : MINING AND MINESURVEYING

Name of Scheme : OCBC-2019

COURSE CODE :7221

COURSE TITLE : INTRODUCTION TO MINING

RATIONALE :

Indian mining industry is one of the key industries accountable for the overall development of the nation. Be it the power industry, railways, mineral based industries, cement, automobile, oil and gas; the mining industry has a major role to play for overall effective growth. The oldest mines in India include lead-zinc mineral deposits at Zawar, copper deposits at Khetri, and gold deposits in Karnataka. Mining industry has undergone tremendous changes over the years. Once seen as a primitive and traditional industry, now establishes itself as most modern industry. It has gone through different phases of management too. Earlier the mining industry was under private hands. Since nationalization the expansion has taken manifold. Government has invested several thousand crores of rupees in developing and maintaining these mines as they provide rich resources to the country in addition to employment to many hundred thousands individuals. Today mining industry in the country ranks in the world market for its quality of products.

Every mining engineer and supervisor needs to understand the basic nature and framework of mining industry. Mines are either underground or an open cast mines. Coal mining is mostly done through opencast mines. Huge machines are used for production of coal in open cast mines. Underground coal mines lay deep beneath the earth surface. The method of working employed in different underground mines varies with the type of minerals mined. The Gold Mines of Kolar are deepest in India. Oil and gas industry have different methods of exploration and exploitation. All the mines, whether underground or opencast have to follow rules, regulations and bylaws for maintaining safety standards laid by Director General of Mines Safety (DGMS).

The students after completing the course will be able to –

- *Understand the mineral wealth of the country, their geographical locations.*
- *Elaborate roles and responsibilities of different agencies involved in mining industry*
- Enumerate different terms used in mining industry.
- Elaborate different methods of access used in the mines, their modes and selection.
- Understand drilling in mines, its purposes and different methods of drilling.
- Understand mine explosives, types, methods of shot firing and safe techniques in blasting.
- Understanding basic functions of safety in mines.
- Understand the various mining methods used in mines.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME : MINING AND MINESURVEYING

Name of Scheme : OCBC-2019

COURSE CODE :7221

COURSE TITLE : INTRODUCTION TO MINING

	Content (Theory)	Hrs/Unit	Marks/Unit
Unit – 1 INTRODUCTION TO MINING INDUSTRY	1.1 Types of major minerals, their characteristic features and usages. 1.2 Geographic locations of major mineral deposits in India, development of mining industry over the years. 1.3 Major government, semi-government, autonomous and private industries in Mining. 1.4 Roles and responsibilities of different agencies in mining industry such as Ministry of Mines, State government ,department of mines, ministry of environment and forest, DGMS, CMRI, Indian Bureau of Mines, Geological Survey of India, etc. 1.5 Terms used in mining operations and mines.	15	20
Unit – 2 ACCESS IN MINES, MODES & SELECTION	2.1 Selection of site for opening a Mine. 2.2 Different types of modes of entry in mines – adit, Incline and shaft. 2.3 Conditions suitable to selection of a suitable mode of entry. 2.4 Factors governing shape, size and site of modes of entry. 2.5 Comparison, suitability and advantages of each mode of entry. 2.6 Sinking of shaft in normal coal strata. 2.7 Surface plant and equipment required for shaft sinking. 2.8 Temporary lining , Permanent lining of shaft sides. 2.9 Introduction of special methods of shaft sinking – casing method, freezing method, Cementation method.	20	20
Unit – 3 DRILLING IN MINES	3.1 Objectives of drilling 3.2 methods of drilling – Percussive and rotary drilling. 3.3 Diamond drilling, Surface arrangement of Diamond drilling. 3.3 Surface drilling, drilling for exploration. 3.3 Types of drill bits. 3.4 Core recovery – Single tube core barrel and double tube core barrel. 3.5 Bore hole survey – introduction, methods of bore hole survey - Etch methods using hydrofluoric acid, Carlson compass . 3.6 Bore hole survey instruments – Tropari instrument, bore hole camera.	20	20
Unit – 4 EXPLOSIVES USED IN MINES	4.1 Definition of explosives, Properties o Explosives, 4.2 High Explosive & Low explosive, their comparison. 4.3 Permitted explosives their types, composition. 4.4 Detonators, common type of detonators - plain detonators, ordinary electric detonators and delay detonators their construction, uses, comparison etc. low tension & high-tension detonators. Advantages of delay detonators. 4.5 Safety fuses, detonating cords, detonating relays. Shot firing tools, exploders. 4.6 Solid blasting, conditions to be satisfied before doing solid blasting,	20	20



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME : MINING AND MINESURVEYING

Name of Scheme : OCBC-2019

COURSE CODE :7221

COURSE TITLE : INTRODUCTION TO MINING

	advantages of solid blasting, drilling patterns used with solid blasting 4.7 Misfires, causes, remedy and method of relieving, dealing with misfires. Blown out shots & blown through shots. Causes and precautions.		
Unit – 5 INTRODUCTION TO COAL MINING	5.1 Open cast mining – Suitability, advantages and disadvantages. 5.2 Classification of Open cast mining – manual quarrying, semi mechanized and mechanized quarrying. 5.3 Quarriable limit . 5.4 Underground mining -Main classifications of method of working coal a) Bord & Pillar – applicability, advantages and disadvantages. b) Long wall – applicability , classification – advancing, retreating. 5.5 comparison between bord & pillar and longwall mining method.	15	20
	TOTAL	90	100

PRACTICAL SKILLS

Sl. No.	Skills to be developed
1.	<ul style="list-style-type: none"> • Intellectualskills-
2.	<ul style="list-style-type: none"> • Motorskills-

Laboratory Experiments :

Sl. No.	
1.	List characteristic features and usage of major minerals.
2.	Draw geographic locations of major mineral and coal deposits on the map of India.
3.	Sketch a cross section of different modes of entry in mines.
4.	Sketch and describe different types of drill bits used in mines.
5.	Sketch a neat diagram of Surface arrangement of Diamond drilling.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME : MINING AND MINESURVEYING

Name of Scheme : OCBC-2019

COURSE CODE :7221

COURSE TITLE : INTRODUCTION TO MINING

6.	Sketch and describe ordinary Electric Detonator.
7.	Sketch and describe delay Detonator used for Shot firing in U/G Mines.
8.	Draw layout of a board and pillar method of mining.
9.	Draw layout of a longwall Advancing method of mining.
10.	Draw layout of a longwall Retreating method of mining.

Text and reference books:

Sl. No.	Title of the Book	Name of Authors	Publisher
1.	Explosive and Blasting Techniques	G.K. Pradhan,	Mintech publication Bhubaneshwar. 1996
2.	Explosives and Blasting Techniques	S.K. Das,	Lovely Prakashan Dhanbad. 1993
3.	Elements of Mining Technology Vol.- I	D.J. Deshmukh,	Central techno publication, Nagpur,1995
4.	Introductory Mining Engineering	H.L. Hartman	John Wiley & Sons, 1990