# IIPMIIPM SCHOOL OF ENGINEERING & TECHNOLOGY

**LESSON PLAN: 2020-21**

# Sub: Th.4 (a). MINERAL DRESSING

## Branch : Mining Semester : 6th

**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.

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| **Sl. No** | **Chapter** | **Proposed Week for Teaching** | **Lecture No.** | **Sub. Topic** | **Important Teaching Points** | **Content Source** |
| 01 | **I** | 1ST | 01 | mineral dressing | Introduction | Principles of Mineral Dressing |
| 02 | 02 | mineral dressing | objective & scope of application of mineral dressing in surface &  u/g mines. | Principles of Mineral Dressing |
| 03 | 03 | Unit Operations | Working principle of  Blake & dodge jaw crushers | Principles of Mineral Dressing |
| 04 | 04 | Unit Operations | Difft. Between Blake & dodge jaw crushers | Principles of Mineral Dressing |
| 05 | 2ND | 01 | Unit Operations | gyratory & cone crushers | Principles of Mineral Dressing |
| 06 | 02 | Unit Operations | roll crusher. | Principles of Mineral Dressing |

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| 07 |  |  | 03 | Unit Operations | cone crushers | Principles of Mineral Dressing |
| 08 | 04 | Unit Operations | Unit Test & Doubt class | ----------- |
| 09 | 3RD | 01 | Grinding | introduction | Principles of Mineral Dressing |
| 10 | 02 | Grinding | principle of ball mill operation | Principles of Mineral Dressing |
| 11 | 03 | Grinding | open circuit grinding, close circuit grinding, | Mineral Processing  Technology |
| 12 | 04 | Grinding | wet grinding. | Mineral  Processing Technology |
| 13 | 4TH | 01 | Grinding | dry grinding. | Mineral  Processing Technology |
| 14 | 02 | Grinding | Doubt class | ---------- |
| 15 | 03 | Lab. Sizing | introduction | Mineral  Processing Technology |
| 16 | **II** | 04 | Lab. Sizing | procedure for size analysis | Mineral Processing  Technology |
| 17 | 5TH | 01 | Lab. Sizing | use of standard screen | Mineral  Processing Technology |
| 18 | 02 | Lab. Sizing | Particles shape & size | Mineral  Processing Technology |
| 19 | 03 | Lab. Sizing | Sub-level technique | Mineral Processing  Technology |
| 20 | 04 | Lab. Sizing | Unit test | ---------------- |
| 21 | 6TH | 01 | Industrial Screening | introduction | Principles of Mineral Dressing |
| 22 | 02 | Industrial Screening | principle of industrial screening | Principles of Mineral Dressing |
| 23 | 03 | Industrial Screening | Classification or types | Principles of Mineral Dressing |
| 24 | 04 | Industrial Screening | operation of classifier | Principles of Mineral Dressing |
| 25 | 7TH | 01 | Industrial Screening | their application. | Principles of Mineral Dressing |
| 26 | 02 | Industrial Screening | Doubt class | ---------------- |
| 27 | 03 | Gravity Concentration | Introduction | Mineral Processing  Technology |

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| 28 | **III** |  | 04 | Gravity Concentration | principles of wilfly table | Mineral Processing  Technology |
| 29 | 8TH | 01 | Gravity Concentration | its operation | Mineral  Processing Technology |
| 30 | 02 | Gravity Concentration | Intro. On jigs | Mineral Processing  Technology |
| 31 | 03 | Gravity Concentration | elementary idea  regarding the operation jigs. | Mineral Processing Technology |
| 32 | 04 | Gravity Concentration | Shaking table | Mineral Processing  Technology |
| 33 | 9TH | 01 | Gravity Concentration | Unit Test | ---------------- |
| 34 | **IV** | 02 | Heavy Media Separation | Introduction | Principles of Mineral Dressing |
| 35 | 03 | Heavy Media Separation | fundamental principle of heavy media separation | Principles of Mineral Dressing |
| 36 | 04 | Heavy Media Separation | Dense medium | Principles of Mineral Dressing |
| 37 | 10TH | 01 | Heavy Media Separation | Lab. Heavey Liquid test | Principles of Mineral Dressing |
| 38 | 02 | Heavy Media Separation | Organic efficiency | Principles of Mineral Dressing |
| 39 | 03 | Heavy Media Separation | Doubt class | Principles of Mineral Dressing |
| 40 | 04 | Heavy Media Separation | DMS Circuit | Principles of Mineral Dressing |
| 41 | 11TH | 01 | Heavy Media Separation | Unit Test | ----------------- |
| 42 | 02 | Floatation | Introduction | Mineral Processing  Technology |
| 43 | 03 | Floatation | principle of froth floatation | Mineral Processing  Technology |
| 44 | 04 | Floatation | Classification of minerals | Mineral  Processing Technology |
| 45 | 12TH | 01 | Floatation | Collector & frothers | Mineral  Processing Technology |
| 46 | **V** | 02 | Floatation | Regulators & imp. Of ph | Mineral Processing  Technology |
| 47 | 03 | Floatation | Typical floatation plant | Mineral Processing  Technology |
| 48 | 04 | Floatation | Control of floatation plant | Mineral  Processing Technology |

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| 49 | 13TH | 01 | Floatation | practical utility of  frother, collection, modifiers & depressants. | Mineral Processing Technology |
| 50 | 02 | Floatation | illustrate floatation cell. | Mineral  Processing Technology |
| 51 | 03 | Floatation | Doubt class on Previous Topics | Mineral Processing Technology |
| 52 | 04 | Magnetic &  Electrostatic S Magnetic | Introduction | Principles of Mineral Dressing |
| 53 | 14TH | 01 | Magnetic &  Electrostatic Separators | Working Principle of  Magnetic Separators | Principles of Mineral Dressing |
| 54 | 02 | Magnetic & Electrostatic  Separators | Magnetic properties of Substances | Principles of Mineral Dressing |
| 55 | 03 | Magnetic & Electrostatic  Separators | Applications of Magnetic Separators | Principles of Mineral Dressing |
| 56 | 04 | Magnetic & Electrostatic  Separators | Working Principle of  electrostatic separators. | Principles of Mineral Dressing |
| 57 | 15TH | 01 | Magnetic &  Electrostatic Separators | Applications of  electrostatic separators. | Principles of Mineral Dressing |
| 58 | 02 | Magnetic & Electrostatic Separators | Use in O/C & u/g Mines of electrostatic  separators & Magnetic Separators | Principles of Mineral Dressing |
| 59 | 03 | Magnetic & Electrostatic  Separators | Unit Test | ----------- |
| 60 | 04 | Magnetic & Electrostatic  Separators | Doubt Clearing Class | ------------- |

**Books Suggested:**

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| * Principles of Mineral   Dressing | A.M.Gaudin |
| * Mineral Processing Technology | B.A.Wills |

Signature of Lecturer

## Faculty Member HOD Principal/ Director