

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Mining Engineering

Semester: 3

Subject Code

Subject Name MINING MACHINERIES - I

Sr. No.	Course content
1.	OPEN-CAST MACHINERIES: 1.1 Drills-showels-draglines-Bucket Wheel Excavators, Their construction - & operations.
2.	TRANSPORT - MACHINERIES: 2.1 Rope-haulages: Different types of haulages, construction, & Operations, (Direct, Endless) 2.2 Mine locomotives: Diesel, Electric, Battery, & trolley wire, compressed air,- their application - merits - demerits. Diesel locomotive Flame traps - & exhaust conditioner box. 2.3 Conveyors: Construction & application.Belt:- Their drives,loops take up arrangement, troughed belt, carrying capacity of conveyor. 2.4 Chain conveyors & shaker conveyors: Scrapper chain conveyors-armoured flexible conveyors, their principle, operation construction & application - merits & demerits.
3.	MINE TRACK & SAFETY DEVICES: 3.1 Safety systems on haulage roads- including JAZZ rails, back catches. 3.2 Couplings: Different types of rope coupling, - clips tub couplings. 3.3 Crossing curves:- Haulage curves, goose neck curves Diamond crossing. 3.4 General: Description with simple sketches of haulage systems - Numerical problems of different types of rope haulage systems.
4.	MINE DEWATERING MACHINERIES: 4.1 Sources of water in mines. 4.2 Classification of mine pump. 4.3 Siphon. 4.4 Ram pump- construction -features - working & its use. 4.5 Centrifugal turbine pump constructional features,working & use. Balancing axial thrust, characteristic curves for turbine pumps. 4.6 Roto pump - construction features, working and use. 4.7 Sinking pump - constructional features, working, method of suspension in shaft use. 4.8 Bore hole pump - constructional features working installation and use. 4.9 Trouble in pumps & remedial measures. 4.10 Arrangement of pipes & pipe joints. 4.11 Support of rising main in shaft. 4.12 Pump calculations, numerical problems. 4.13 Main sump at pit bottom.

LABORATORY EXPERIENCES :

1. Study of different types of rope haulages
2. Study of diesel locomotive flame traps & exhaust conditioner box
3. Study of different types of belt & chain conveyors
4. Study of loops takeup arrangement
5. Study & sketeches of various haulage track safety devices
6. Study of various types of rope couplings
7. Study of Ram pump
8. Study of Turbine pump
9. Study of Roto pump.
10. Study of Bore hole pump

REFERENCES:

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|----------------------------------|---------------|
| 1. Elements of Mining Technology | D.J. Deshmukh |
| 2. Mine Pumps and Haulages | S.Ghatak |