

Chhattisgarh Swami Vivekanand Technical University, Bhilai (C.G.)

Name of Program:	Bachelor of Technology		
Branch:	Mining Engineering	Semester:	VIII
Subject:	Strata Control	Course Code:	D039811(039)
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	One per Unit
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

COURSE CONTENTS:

UNIT-I	SUPPORTS Timber & steel supports, Examination of roof, Roof bolting, roof stitching, method of supporting roadways. Supporting under different conditions viz. Pit bottom, crossing, junctions, faulted area, longwall faces, depillaring areas and stoping areas, support loads SSR, CTR, Support plan, Support withdrawal.
UNIT-II	POWERED SUPPORTS Powered supports: their principles of operation, Frame support, Chock support, shield support & chock shield support: Classification, designation, constructional features, merits demerits and applications, Hydraulic fluids, power pack.
UNIT-III	STOWING Principal methods of stowing, their relative merits, demerits and applicability, Hydraulic stowing, Pneumatic stowing, Mechanical stowing, Hand packing, face arrangements, pipe wear, pipe jams. Hydraulic gradient.
UNIT-IV	STRATA CONTROL Theories of ground movement, Rock pressure due to Narrow and Wide excavation, Front abutment and back abutment, Failure of roof and floor, instrumentation in strata measurement and monitoring, Causes and preventive measures against Rock burst, Bumps & Gas outbursts.
UNIT-V	SUBSIDENCE Theories of subsidence, Types of subsidence, Sag subsidence & Pot holes. Damage and loss due to subsidence, vertical and lateral movements and their estimation, angle of fracture and angle of draw, factors affecting subsidence, subsidence control, protection of surface structures, design of protective pillars including shaft pillars.

Text books:

1. Strata control in mines: Chaing & Peng.
2. Winning and Working of Coal: R.T. Deshmukh & D.J. Deshmukh.
3. Modern Coal Mining Practices: R.D. Singh.
4. D.G.M.S. Circulars (Tech.) 1995 onwards.
5. Longwall Mining: Syd. S. Chaing & Peng.

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Name of Program:	Bachelor of Technology		
Branch:	Mining Engineering	Semester:	VIII
Subject:	Surface Mining–II (Professional Elective-IV)	Course Code:	D039831(039)
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	One per Unit
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

COURSE CONTENTS:

UNIT–I	Layouts of open pit mines, Methods of side casting, Side casting by Stripping Shovel and Dragline, Range Diagram, calculation of operating radius. Explosive casting, Layouts of waste dumps. Design of Haul roads.
UNIT–II	Introduction to continuous surface mining equipment, Bucket wheel excavators: construction, basic operation and productivity calculation, Continuous surface miner: construction, basic operation and productivity calculation. Face Layouts.
UNIT–III	Ultimate pit design, Factors affecting ultimate pit limits; Significance of ultimate pit limits; Manual methods of developing ultimate pit limits. Floating cone technique, Production planning, Basics of mine life and plant size concepts, mine and Mill plant sizing.
UNIT–IV	Introduction to rock slope engineering, Slopes in surface mines and their formation, Pit slopes and their influence on mine economics, Slope stability, Factors influencing slope stability, various types of slope failure and their conditions.
UNIT–V	Determination of factor of safety of a slope under plane and circular failure, planning of slope stability investigations, Stabilization and protection methods for stability of slopes.

Text books:

1. Surface Mining: G.B. Misra.
2. Surface Mining Equipment: Martin.
3. Surface Mining: Pfeider.
4. Rock Slope Engineering: Hoek & Bray.
5. SME Handbook: Hartman.
6. Surface Mine Planning & Design: Hustralid & Kuchha.

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Name of Program:	Bachelor of Technology.		
Branch:	Mining Engineering	Semester:	VIII
Subject:	Mine Legislation–II (Professional Elective-IV)	Course Code:	D039832(039)
Total Theory Periods:	40	Total Tutorial Periods:	Ten (Minimum)
Class Tests:	Two (Minimum)	Assignments:	One per Unit
ESE Duration:	Three Hours	Max Marks:100	Min Marks: 35

COURSE CONTENTS:

UNIT–I	Principal Provisions of Mines & Minerals (Regulation & Development) Act, Coal Mines Conservation & Development Act.
UNIT–II	Mineral Concession Rules, Indian Electricity Rules related to mining activity.
UNIT–III	Byelaws & D.G.M.S. Circulars.
UNIT–IV	Mines Rescue Rules, Mines Vocational Training Rules.
UNIT–V	Safety Campaign, Safety Week in Mines.

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Name of Program:	Bachelor of Technology		
Branch:	Mining Engineering	Semester:	VIII
Subject:	Strata Control (Lab)	Course Code:	D039821(039)
Max Marks:	100	Min Marks:	35

LIST OF PRACTICALS TO BE PERFORMED:

1.	Study of Conventional support systems.
2.	Study of constructional features and working of Hydraulic props.
3.	Study of methods to support roof by roof bolts, roof stitching and cable bolts.
4.	Study of withdrawal of supports by Sylvester prop withdrawer.
5.	Study of methods to support junctions and faulted area.
6.	Study of constructional features and working of Powered Supports.
7.	Study of Hydraulic stowing System and the arrangement required for it.
8.	Study of Subsidence measurement.
9.	Study of principle and constructional features of different types of load cell.
10.	Study of principle and constructional features of different types of convergence recorder.
11.	Study of principle and constructional features of different types of borehole extensometer.

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Name of Program:	Bachelor of Technology		
Branch:	Mining Engineering	Semester:	VIII
Subject:	Mine Machinery–III (Lab)	Course Code:	D039822(039)
Max Marks:	100	Min Marks:	35

LIST OF PRACTICALS TO BE PERFORMED:

1.	Study of working and construction of Rotary Coal Drill Machine used in U/G Coal Mine.
2.	Study of working and construction of Jack hammers drill used in Metal Mine.
3.	Study of working and construction of Continuous Miner.
4.	Study of working and construction of Side dump loader.
5.	Study of working and construction of a LHD.
6.	Study of Double ended ranging drum shearer.
7.	Study of drill panel and gate end box.
8.	Study of working and construction of Gathering Arm Loader.
9.	Study of working and construction of Coal Plough.
10.	Study of working and construction of Torque Convertor.
11.	Study of working and construction of Reciprocating Compressors.