GOVERNMENT POLYTECHNIC DARLIPALI, SUNDARGARH
ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ ଦର୍ଲିପାଲି, ସୁନ ରଗଡ
GOVERNMENT OF ODISHA | ଓଡିଶା ସରକାର

Website:. https://gpdarlipali.org.in E-mail: gpdarlipali24@gmail.com
A/ P: Darlipali , NTPC Darlipali ,Dist.: Sundargarh, Odisha- 770025

LESSON PLAN

Discipline: Mining Engineering	Semester: 4th	Name of the Teaching faculty: Brajabandhu Nahak
Subject: Mine Legislation and General Safety – I Code: MIEPE204B (Th 5 -b)	No of Days/Week class allotted: 3	Semester from Date: 22/12/2025 to 18/04/2025 No of weeks: 18 No. of Period Avaliable: 45

Month	Week	No of periods avaliable	Class Day	Unit	Theory topics to be covered
DEC	1	2P	1	I	Mines Act 1952 & Mines Rules 1955
			2	I	Mines Act: Important definition: Adolescent, adult, child, Employed,
	2	2P	3	I	Serious bodily injury. Provisions under chapter V, Provision for health and safety.
			4	I	Serious bodily injury. Provisions under chapter V, Provision for health and safety.
JAN	3	1P	5	I	Provisions regarding leave with wages, Act 49 to 56
	4	3P	6	I	Hours & Limitations of Employment, act 28 to 48.Mines rules: Provisions
			7	I	Mines Rules- Provisions connected with leave with wages
			8	I	over time and welfare amenities. Employment of persons, Rule 46 to 52
	5	2P	9	I	over time and welfare amenities. Employment of persons, Rule 46 to 52
			10	II	officials. Provisions of Reg. 38, 39, 43, 44, 45, 46, 48, 56 Planes and sections Reg. 58, 59, 61, 63.
			11	II	officials. Provisions of Reg. 38, 39, 43, 44, 45, 46, 48, 56 Planessections Reg. 58, 59, 61, 63.
	6	3P	12	II	Means of access & egress. Reg. 66 to 70 Provisions regarding winding in shaft Reg. 71 to 86.
			13	II	Means of access & egress. Reg. 66 to 70 Provisions regarding winding in shaft Reg. 71 to 86.
			14	II	Transport of men & material Reg. 88, 89,90,91,92,93,94,95
	7	3P	15	II	mine working Reg. to 115 Precautions against dangers from the dust, gas & water .Reg. 116 to 128
			16	II	mine working Reg. to 115 Precautions against dangers from the dust, gas & water .Reg. 116 to 128
			17	II	Explosives & Blasting Reg. 158 to 180 Provisions regarding machinery,
	8	3P	18	II	plant& equipment and important provisions under chapter on miscellaneous.
			19	III	Mine accidents : Basic concept and their classification
			20	III	accident costs, accident report,
			21	III	procedure for conducting an enquiry to ascertain the causes of accidents,

FEB	9	3P	22	III	procedure for investigating and reporting mine accidents, accident proneness, Industrial fatigue,
			23	III	procedure for investigating and reporting mine accidents, accident proneness, Industrial fatigue,
	10	3P	24	III	fatality rate, frequency rate, severity rate,
			25	III	role of supervisor in accident prevention
			26	III	statistics- its need and method of data processing ,
	11	3P	27	III	Effect of accidents in productivity
			28	III	Revision and Test
			29	IV	Mine Rescue rules 1985:
MAR	12	1P	30	IV	Mine Rescue rules 1985:
	13	3P	31	IV	Mine Rescue rules 1985:
			32	IV	Mine Rescue rules 1985:
			33	IV	Mine Rescue rules 1985:
			34	IV	Explain Various provision MRR 1985
	14	3P	35	IV	Explain Various provision MRR 1985
			36	IV	Explain Various provision MRR 1985
			37	IV	Explain Various provision MRR 1985
	15	3P	38	V	Indian Explosive rule 2008
			39	V	Indian Explosive rule 2008
			40	V	Indian Explosive rule 2008
	16	1P	41	V	Indian Explosive rule 2008
APR	17	1P	42	V	Discuss various provisions of Indian Explosive rules
	18	3P	43	V	Discuss various provisions of Indian Explosive rules
			44	V	Discuss various provisions of Indian Explosive rules
			45	V	Previous year qns and answer

22/12/25

Prepared By.
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LESSON PLAN

Discipline: Mining Engineering			**Semester: 4th**		**Name of the Teaching faculty: Brajabandhu Nahak**
Subject: Mine Machinery II Code: MIEPC206 (TH:3)			**No of Days/Week class allotted: 3**		**Semester from Date: 22/12/2025 to 18/04/2025 No of weeks: 19 No. of Period Avaliable: 45**
Month	**Week**	**No of periods avaliable**	**Class Day**	**Unit**	**Theory topics to be covered**
DEC	1	1P	1	I	Underground Face Machineries: Electric coal drill
	2	1P	2	I	Constructional features, operation of electric coal drill
JAN	3	3P	3	I	principle and use of electric coal drill, Types of drill rods & drill bits used in electric coal drill,
			4	I	principle and use of electric coal drill, Types of drill rods & drill bits used in electric coal drill,
			5	I	Constructional features and operation principle of gathering arm loader,
	4	2P	5	I	Constructional features and operation principle of gathering arm loader,
			6	I	Constructional features and operation principle of gathering arm loader,
	5	4P	7	I	scraper loader, side discharge loader, load and haul loader
			8	I	scraper loader, side discharge loader, load and haul loader
			9	I	Jack hammer drill and air leg
	6	2P	10	I	Jack hammer drill and air leg
			11	I	Road header and Shearer loader
	7	3P	12	I	Review Unit I
			13	II	Opencast machineries: Constructional features of surface miner,
			14	II	Opencast machineries: Constructional features of surface miner,
FEB	8	4P	15	II	dragline, shovel and backhoe
			16	II	bucket wheel excavator,
			17	II	Dumper, dozer
			18	II	scraper and road grader.
	9	2P	19	III	Mine Pumps: Mine pumps, Constructional features,
			20	III	Mine Pumps: Mine pumps, Constructional features,
	10	4P	21	III	working & use of ram pumps,
			22	III	Constructional features, Principle of centrifugal and turbine pumps
			23	III	Constructional features, Principle of centrifugal and turbine pumps

			24	III	and their applicability, Balancing the axial thrust of turbine pumps,
	11	2P	25	III	Characteristic curves for turbine pumps,
			26	III	Constructional features working principle and use of roto pump (screw pump),
MAR	12	3P	27	III	Constructional features working principle and use of roto pump (screw pump),
			28	III	Constructional features & working principle of sinking pump, Suspension in shaft.
			29	III	Constructional features & working principle of sinking pump, Suspension in shaft.
	13	2P	30	III	Review unit 3 &Test
			31	IV	Bore hole pump: Constructional features
	14	2P	32	IV	Bore hole pump: Constructional features
			33	IV	working of bore hole pump,
	15	2P	34	IV	working of bore hole pump,
			35	IV	Installation of bore hole pump.
	16	1P	36	IV	Installation of bore hole pump.
APR	17	3P	37	V	Pipes and valves: Types of pipes and valves used in Mines
			38	V	Pipes and valves: Types of pipes and valves used in Mines
			39	V	Constructional features of various type of valves
	18	2P	40	V	Constructional features of various type of valves
			41	V	Different types of pipe joints.
	19	4P	42	V	Describe Pipe line layout
			43	V	Describe Pipe line layout
			44	V	VST
			45	V	Previous year qns & ans

22/12/25

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LESSON PLAN

Discipline: Mining Engineering	Semester: 4th	Name of the Teaching faculty: Brajabandhu Nahak
Subject: Mine Ventilation Code: MIEPC204 (Th 2)	No of Days/Week class allotted: 3	Semester from Date: 22/12/2025 to 18/04/2025 No of weeks: 18 No. of Period Avaliable: 45

Month	Week	No of periods avaliable	Class Day	Unit	Theory topics to be covered
DEC	1	3P	1	I	Natural Ventilation: Objective of ventilation. Define geothermic gradient
			2	I	Definition of natural ventilation and factors affecting natural ventilation,
			3	I	Definition of natural ventilation and factors affecting natural ventilation,
	2	1P	4	I	Different types of Barometer, Kata thermometer
JAN	3	2P	5	I	Sources of moisture content of mine air
			6	I	Effects of heat and humidity, Natural ventilation
	4	3P	7	I	motive column,
			8	I	Laws of mine air friction and solve problems.
			9	I	Laws of mine air friction and solve problems.
	5	3P	10	II	Air Crossing and distribution: Ventilation stopping
			11	II	air crossing, ventilation door, brattice partition,
			12	II	Different types of ventilation, Accessional and declensional Ventilation
	6	1P	13	II	Homotropal and Antitropal ventilation
	7	3P	14	II	Boundary ventilation, Central and combined ventilation,
			15	II	Splitting of air current
			16	II	solve numerical problems on splitting
FEB	8	3P	17	II	solve numerical problems on splitting
			18	II	Air locks at pit top.& Revision
			19	III	Mechanical Ventilation: Construction and principle of operation of centrifugal flow fans,
	9	3P	20	III	Mechanical Ventilation: Construction and principle of operation of centrifugal flow fans,
			21	III	Fan laws & calculate fan efficiency and capacity
			22	III	Fan laws & calculate fan efficiency and capacity
	10	3P	23	III	Fan drift, fan drive, evasee and diffusers
			24	III	Fan drift, fan drive, evasee and diffusers
			25	III	Fan characteristics and mine characteristics
	11	3P	26	III	Methods of output control of mine fans.
			27	III	Forcing fan vs. exhaust fan
			28	IV	Review Unit III: Assessment on ventilaton
			29	IV	Booster fan and its Effects: Installation,

	12	2P	30	IV	Booster fan and its Effects: Installation,
	13	3P	31	IV	Booster fan location & its purpose
			32	IV	disadvantages of booster fan.
			33	IV	Auxiliary Ventilation: Systems of auxiliary ventilation,
	14	3P	34	IV	Auxiliary Ventilation: Systems of auxiliary ventilation,
			35	IV	Advantages and disadvantages of auxiliary ventilation.
MAR			36	IV	Advantages and disadvantages of auxiliary ventilation.
	15	3P	37	V	Ventilation Survey: Methods of pressure survey using barometer,
			38	V	Ventilation Survey: Methods of pressure survey using barometer,
			39	V	gauge and pitot tube with manometer, Method of measurement of cross-sectional area
	16	1P	40	V	Method of velocity measurements by using anemometer, velometer, pitot- static tube,
APR	17	3P	41	V	smoke & cloud method, Determination of percentage of oxygen, methane, carbon monoxide
			42	V	SO2 and H2S by using multigas detector.
			43	V	Leakage of air in Mines: Causes and preventive measures of leakage of air in mines.
	18	2P	44	V	Test series
			45	V	Previous year qns and answer

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