DEPARTMENT OF MINING ENGINEERING(2022-2023)

		LESSON PLAN
Discipline: Mining	Semester: 4th	Name of the Teaching faculty: KEDARNATH JENA
Subject: MOM (TH-4)	No of Days/Week class alloted: 4	Semester from Date: 15 . 09 . 2022 To Date: 22.12.2022 No of weeks: 15
Week	**Class Day**	**Topics**
1st	1st	**CH. 1. Strength of Materials and Power transmission.** Define Elasticity ' Hook's Law , Limit of Proportionality.
	2nd	Young's Modulus , Factor of safety.
	3rd	Lateral strain and Poisson's ratio.
	4th	Explain stress-strain curve for ductile materials.
2nd	1st	Explain the effect of axial load on bar of Uniform section
	2nd	Explain the effect of axial load on bar of variable section
	3rd	Solve numerical problems on above
	4th	Define bending moment and shear force.
3rd	1st	State types of beam and types of loading.
	2nd	Explain shear force diagram and bending moment diagram for Cantilever with concentrated loading.
	3rd	Explain shear force diagram and bending moment diagram for cantilever beam with U.D.L over whole span
	4th	Explain shear force diagram and bending moment diagram for Simply supported beam with concentration loading.
4th	1st	Explain shear force diagram and bending moment diagram for Simply supported beam with U.D.L over whole span State bending formula.
	2nd	Define section modules. Find out section modules for beam section of simple cases.
	3rd	Define torsion and state its effects and application of torsion formula
	4th	Explain working of Shaft couplings such as hydraulic and magnetic couplings.
5th	1st	Explain working ofBelt, chain and rope Drive, Simple and compound gear train.
	2nd	State function of flywheel and governors.
	3rd	Explain working of watt, purler and proel governors.
	4th	Explain working of watt, purler and proel governors.
	1st	**CH.2 . Elements of Hydraulics.** Various fluid properties.

6th	**2nd**	Define pressure of fluid and pressure head
	3rd	State and explain working principle of various pressure measuring devices such as:Piezometer
	4th	State and explain continuity equation.
7th	**1st**	State and explain Bernoulli's theorem.
		Explain working of venturimeter.
	2nd	Solve numerical problems on above.
	3rd	Solve numerical problems on above.
	4th	Define and classify orifices.
8th	**1st**	State the formula and discharge for rectangular orifices and solve problems.
	2nd	State the formula and discharge for rectangular orifices and solve problems.
	3rd	Define and differentiate between orifice and notch.
		Classification notches.
	4th	State formula for discharge through notches & solve problem on above.
9th	**1st**	State and explain laws of fluid friction.
	2nd	State and explain loss of head due to friction (Darcy weisbach formula)
	3rd	Explain hydraulic gradient and energy gradient and Solve numerical problems as above.
	4th	class test 1
10th	**1st**	**CH. 3. Compressed air.** Explain introduction of compressed air as a power.
	2nd	Explain introduction of compressed air as a power.
	3rd	Classify Compressor & state working principle.
	4th	Classify Compressor & state working principle.
11th	**1st**	Classify Compressor & state working principle.
	2nd	⬛ State the various methods of transmission and storage of compressed air.
	3rd	State the various methods of transmission and storage of compressed air.
	4th	State the various methods of transmission and storage of compressed air.
12th	**1st**	State and explain the advantages of use of compressed air in mines.
	2nd	State and explain the advantages of use of compressed air in mines.
	3rd	State and explain the advantages of use of compressed air in mines.
	4th	Explain the working principle of pneumatic machines.
13th	**1st**	Explain the working principle of pneumatic machines.
	2nd	Explain the working principle of pneumatic machines.
	3rd	**CH. 4. I C Engines.** Explaination of OTTO air cycle utilized in I/C Engines .
	4th	Explaination of DIESEL air cycle utilized in I/C Engines .
14th	**1st**	Explain working principle of 2 stroke petrol engine
	2nd	Explain working principle of 2 stroke diesel engine

14th	3rd	Explain working principle of 4 stroke petrol engine
	4th	Explain working principle of 4 stroke diesel engine
15th	1st	Define I.H.P., B.H.P. & Mechanical efficiency of I/C Engine.
	2nd	State various applications of I/C Engines in Mining field.
	3rd	State various applications of I/C Engines in Mining field.
	4th	CLASS TEST 2

Signature of Faculty

LEARNING RESOURCES

Sl. No.	Author	Title of the book	Publisher
01	O.P. Khanna	Production Technology, Vol- I& II	Dhanpat Rai Publication
02	B.S Raghuwanshi	Workshop technology, Vol- I& II	Dhanpat Rai & Co
03	P.N. Rao	Manufacturing technology, Vol- I&II	TMH
04	P.C.Sharma	Manufacturing technology, Vol- I	S. Chand