Lesson Plan On

(PR-III) WORKSHOP-III

(4TH SEM)

(Session - 2024)

Prepared by

Mr. RANJAN KUMAR NAYAK

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	**Semester:** 4TH	**Name of the Teaching Faculty:** MR RANJAN KUMAR NAYAK, GF IN MECHANICAL ENGG.
Subject: workshop-III (PR. 3)	**No. of days/per week class allotted:** 06	**Semester From date:** 16.01.2024 **To Date:** 26.04.2024 **No. of Weeks:** 15
PRE-REQUISITE	Basic knowledge about foundry, welding and machining.	
COURSE OUTCOMES	CO1: Preparing components and jobs using foundry, welding and machining CO2:Realizing process parameters involved and their effects CO3: Know the process of Machining Practices.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Job in evolving drilling, boring	Demonstration
	2ND	Job in evolving drilling, boring	Job
	3RD	Job in evolving drilling, boring	Job
	4TH	Job in evolving drilling, boring	Job
	5TH	Job in evolving drilling, boring	Job
	6TH	Job in evolving drilling, boring	Job
2ND	1ST	Job in evolving drilling, boring	Job
	2ND	Job in evolving drilling, boring	Job
	3RD	Job in evolving drilling, boring	Job
	4TH	Internal/External threading on Turning jobs	Demonstration
	5TH	Internal/External threading on Turning jobs	Job
	6TH	Internal/External threading on Turning jobs	Job
3RD	1ST	Internal/External threading on Turning jobs	Job
	2ND	Internal/External threading on Turning jobs	Job
	3RD	Internal/External threading on Turning jobs	Job
	4TH	Job in evolving use of Capstan and turret lathe	Demonstration
	5TH	Job in evolving use of Capstan and turret lathe	Job
	6TH	Job in evolving use of Capstan and turret lathe	Job
4TH	1ST	Job in evolving use of Capstan and turret lathe	Job
	2ND	(Taper Turning & Chamfering)	Demonstration
	3RD	(Taper Turning & Chamfering)	Job
	4TH	(Taper Turning & Chamfering)	Job
	5TH	(Taper Turning & Chamfering)	Job
	6TH	(Taper Turning & Chamfering)	Job
	1ST	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Demonstration
	2ND	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job

5TH	3RD	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	4TH	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	5TH	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	6TH	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
6TH	1ST	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	2ND	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	3RD	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	4TH	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	5TH	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	6TH	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
7TH	1ST	All gear lathe, CNC Lathe Trainer Practice Job involving all turning process on MS Rod & aluminum rod for jobs using CNC Lathe trainer.	Job
	2ND	Metal Machining	Demonstration
	3RD	Metal Machining	Job
	4TH	Metal Machining	Job
	5TH	Metal Machining	Job
	6TH	Metal Machining	Job
8TH	1ST	Shaper	Demonstration
	2ND	Shaper	Job
	3RD	Shaper	Job
	4TH	Shaper	Job
	5TH	Shaper	Job
	6TH	Preparation of V Block on CI or MS Blocks	Demonstration
9TH	1ST	Preparation of V Block on CI or MS Blocks	Job
	2ND	Preparation of V Block on CI or MS Blocks	Job
	3RD	Preparation of V Block on CI or MS Blocks	Job
	4TH	Preparation of V Block on CI or MS Blocks	Job
	5TH	Preparation of V Block on CI or MS Blocks	Job
	6TH	Preparation of V Block on CI or MS Blocks	Job
10TH	1ST	Preparation of V Block on CI or MS Blocks	Job
	2ND	Preparation of V Block on CI or MS Blocks	Job
	3RD	Preparation of V Block on CI or MS Blocks	Job
	4TH	Preparation of V Block on CI or MS Blocks	Job
	5TH	Preparation of V Block on CI or MS Blocks	Job
	6TH	Preparation of V Block on CI or MS Blocks	Job
11TH	1ST	Milling Machine	Job
	2ND	Milling Machine	Demonstration
	3RD	Milling Machine	Job
	4TH	Milling Machine	Job
	5TH	Milling Machine	Job
	6TH	Milling Machine	Job

12TH	1ST	Milling Machine	Job
	2ND	Milling Machine	Job
	3RD	Milling Machine	Job
	4TH	Milling Machine	Job
	5TH	Milling Machine	Job
	6TH	Milling Machine	Job
13TH	1ST	Milling Machine	Job
	2ND	Preparation of Spur gear on CI or MS round	Job
	3RD	Preparation of Spur gear on CI or MS round	Job
	4TH	Preparation of Spur gear on CI or MS round	Job
	5TH	Preparation of Spur gear on CI or MS round	Job
	6TH	Preparation of Spur gear on CI or MS round	Job
14TH	1ST	Preparation of Spur gear on CI or MS round	Job
	2ND	Preparation of Spur gear on CI or MS round	Job
	3RD	Preparation of Spur gear on CI or MS round	Job
	4TH	Preparation of Spur gear on CI or MS round	Job
	5TH	Preparation of Spur gear on CI or MS round	Job
	6TH	Preparation of Spur gear on CI or MS round	Job
15TH	1ST	Preparation of Spur gear on CI or MS round	Job
	2ND	Preparation of Spur gear on CI or MS round	Job
	3RD	Preparation of Spur gear on CI or MS round	Job
	4TH	Preparation of Spur gear on CI or MS round	Job
	5TH	Preparation of Spur gear on CI or MS round	Job
	6TH	Preparation of Spur gear on CI or MS round	Job

Reference Books

1. Workshop Technology by S.K.Hajara Choudhray, Media Promoters Publishers, New Delhi.
2. Workshop Technology by B.S. Raghubanshi, Dhanpat Rai and Sons, New Delhi.
3. Workshop Technology by H.S. Bawa – TMH.
4. Workshop Familiarization by E Wilkinson.
5. Sheet metal shop practice by Bruce & Meyer.
6. Workshop Technology by R.S. Khurmi & J.K. Gupta, S.Chand.

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Lesson Plan on
(PR-2) MECHANICAL ENGG. LAB-II
(4th sem)

(Summer - 2024)

Prepared by
Mrs. SUSHRI PRIYANKA PANIGRAHI
W/S SUPTD. GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 4TH	Name of the Teaching Faculty: Mrs. SUSHREE PRIYANKA PANIGRAHI, WORK SHOP SUPTD. MECH. ENGG.
Subject: MECH. ENGG. LAB-II (PR. 2)	No. of days/per week class allotted: 06	Semester From date: 16.01.2024 To Date: 26.04.2024 No. of Weeks: 15
PRE- REQUISITE	Basic knowledge about petrol and diesel engines, brake efficiency, braking powers, air compressor, pressure measuring devices, and Bernoulli's theorem.	
COURSE OUTCOMES	CO1: Understand the petrol and diesel engine. CO2: Understand the thermal efficency of petrol and diesel engine. CO3: Understand the mechanical efficency, braking powers of an engine. CO4: Understand the various pressure measuring devices and Bernoulli's theorem.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	2ND	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	3RD	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	4TH	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	5TH	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	6TH	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
2ND	1ST	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	2ND	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	3RD	Study of 2-S, 4-S petrol & diesel engine models.	Lab Manual / LAB
	4TH	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	5TH	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	6TH	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
3RD	1ST	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	2ND	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	3RD	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	4TH	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	5TH	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
	6TH	Determine the brake thermal efficiency of single cylinder petrol engine.	Lab Manual / LAB
4TH	1ST	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	2ND	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	3RD	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	4TH	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	5TH	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	6TH	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
5TH	1ST	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	2ND	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	3RD	Determine the brake thermal efficiency of single cylinder diesel engine.	Lab Manual / LAB
	4TH	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	5TH	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	6TH	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
6TH	1ST	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	2ND	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	3RD	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	4TH	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	5TH	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
	6TH	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test.	Lab Manual / LAB
7TH	1ST	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	2ND	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	3RD	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	4TH	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	5TH	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB

8TH	6TH	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
9TH	1ST	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	2ND	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	3RD	Determine the mechanical efficiency of an air Compressor.	Lab Manual / LAB
	4TH	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	5TH	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	6TH	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
10TH	1ST	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	2ND	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	3RD	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	4TH	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	5TH	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
	6TH	Study of pressure measuring devices (manometer, Bourdon tube pressure gauge).	Lab Manual / LAB
11TH	1ST	Verification of Bernoulli's theorem.	Lab Manual / LAB
	2ND	Verification of Bernoulli's theorem.	Lab Manual / LAB
	3RD	Verification of Bernoulli's theorem.	Lab Manual / LAB
	4TH	Verification of Bernoulli's theorem.	Lab Manual / LAB
	5TH	Verification of Bernoulli's theorem.	Lab Manual / LAB
	6TH	Verification of Bernoulli's theorem.	Lab Manual / LAB
12TH	1ST	Verification of Bernoulli's theorem.	Lab Manual / LAB
	2ND	Verification of Bernoulli's theorem.	Lab Manual / LAB
	3RD	Verification of Bernoulli's theorem.	Lab Manual / LAB
	4TH	Determination of Cd from venturimeter.	Lab Manual / LAB
	5TH	Determination of Cd from venturimeter.	Lab Manual / LAB
	6TH	Determination of Cd from venturimeter.	Lab Manual / LAB
13TH	1ST	Determination of Cd from venturimeter.	Lab Manual / LAB
	2ND	Determination of Cd from venturimeter.	Lab Manual / LAB
	3RD	Determination of Cd from venturimeter.	Lab Manual / LAB
	4TH	Determination of Cd from venturimeter.	Lab Manual / LAB
	5TH	Determination of Cd from venturimeter.	Lab Manual / LAB
	6TH	Determination of Cd from venturimeter.	Lab Manual / LAB
14TH	1ST	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	2ND	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	3RD	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	4TH	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	5TH	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	6TH	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
15TH	1ST	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	2ND	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	3RD	Determination of Cc, Cv, Cd from orifice meter.	Lab Manual / LAB
	4TH	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	5TH	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	6TH	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	1ST	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	2ND	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	3RD	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	4TH	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	5TH	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB
	6TH	Determine of Darcy's coefficient from flow through pipe.	Lab Manual / LAB

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Lesson Plan On

(PR-I) TOM&M LAB

(4TH SEM)

(Summer - 2024)

Prepared by

Mr. BISWAJIT NAYAK

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GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 4TH	Name of the Teaching Faculty: MR. BISWAJIT NAYAK, PTGF IN MECH. ENGG.
Subject: TOM & M LAB (PR. 1)	No. of days/per week class allotted: 06	Semester From date: 16.01.2024 To Date: 26.04.2024 No. of Weeks: 15
PRE- REQUISITE	Basic knowledge about governors, balancing apparatus, gear trains, cams and followers, vernier calliper, vernier height gauge, slip gauges etc.	
COURSE OUTCOMES	CO1: Understand the centrifugal force of a governor. CO2: Understand the cams and followers. CO3: Understand the gear train. Understand the vernier calliper, slip gauges etc.	CO4:

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	2ND	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	3RD	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	4TH	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	5TH	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	6TH	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
2ND	1ST	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	2ND	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	3RD	Determination of centrifugal force of a governor (Hart Nell / Watt/Porter).	Lab Manual / LAB
	4TH	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	5TH	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	6TH	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
3RD	1ST	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	2ND	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	3RD	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	4TH	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	5TH	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
	6TH	Study & demonstration of static balancing apparatus.	Lab Manual / LAB
4TH	1ST	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	2ND	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	3RD	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	4TH	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	5TH	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	6TH	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
5TH	1ST	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	2ND	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	3RD	Study & demonstration of journal bearing apparatus.	Lab Manual / LAB
	4TH	Study of different types of Cam and followers.	Lab Manual / LAB
	5TH	Study of different types of Cam and followers.	Lab Manual / LAB
	6TH	Study of different types of Cam and followers.	Lab Manual / LAB
6TH	1ST	Study of different types of Cam and followers.	Lab Manual / LAB
	2ND	Study of different types of Cam and followers.	Lab Manual / LAB
	3RD	Study of different types of Cam and followers.	Lab Manual / LAB
	4TH	Study of different types of Cam and followers.	Lab Manual / LAB
	5TH	Study of different types of Cam and followers.	Lab Manual / LAB
	6TH	Study of different types of Cam and followers.	Lab Manual / LAB

7TH	1ST	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	2ND	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	3RD	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	4TH	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	5TH	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	6TH	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
8TH	1ST	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	2ND	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	3RD	Study & demonstration of epicyclic gear train.	Lab Manual / LAB
	4TH	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	5TH	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	6TH	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
9TH	1ST	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	2ND	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	3RD	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	4TH	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	5TH	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
	6TH	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using Vernier Caliper.	Lab Manual / LAB
10TH	1ST	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	2ND	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	3RD	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	4TH	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	5TH	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	6TH	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
11TH	1ST	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	2ND	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	3RD	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer.	Lab Manual / LAB
	4TH	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
	5TH	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
	6TH	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
12TH	1ST	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
	2ND	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
	3RD	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
	4TH	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
	5TH	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB

	6TH	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.	Lab Manual / LAB
13TH	1ST	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	2ND	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	3RD	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	4TH	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	5TH	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	6TH	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
14TH	1ST	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	2ND	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	3RD	Determine the thickness of ground MS plates using slip gauges.	Lab Manual / LAB
	4TH	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	5TH	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	6TH	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
15TH	1ST	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	2ND	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	3RD	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	4TH	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	5TH	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB
	6TH	Determination of angel of Machined surfaces of components using sin bar with slip gauges.	Lab Manual / LAB

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Lesson Plan On

(TH-4) THERMAL ENGINEERING II

(4^{TH} SEM)

(Summer - 2024)

Prepared by

Mr. BISWAJIT NAYAK

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

iscipline: ECHANICAL NGG	Semester: 4TH	Name of the Teaching Faculty: MR BISWAJIT NAYAK, GF IN MECH. ENGG.
ubject: HERMAL NGINEERING I (TH.4)	No. of days/per week class allotted: 04	Semester From date: 16.01.2024 To Date: 26.04.2024 No. of Weeks: 15
RE- REQUISITE	Basic knowledge about I.C Engines, Compressors, Steam and its properties, various vapour cycles and their efficiencies.	
COURSE OUTCOMES	CO1: Understanding the power developed in I.C engine and efficiency. CO2: Understanding the principle, performance and application of air compressor. CO3: Determining thermodynamic properties of steam using steam tables & mollier chart. CO4: Comprehending the vapor power cycles and computing work done & efficiencies thereof.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Performance of I.C engine - Briefing And Introduction.	Whiteboard
	2ND	Define mechanical efficiency, Indicated thermal efficiency.	Whiteboard
	3RD	Relative Efficiency, brake thermal efficiency overall efficiency.	Whiteboard
	4TH	Mean effective pressure &specific fuel consumption.	Whiteboard
2ND	1ST	Define air-fuel ratio & calorific value of fuel.	Whiteboard
	2ND	Work out problems to determine efficiencies & specific fuel consumption.	Whiteboard
	3RD	Work out problems to determine efficiencies & specific fuel consumption.	Whiteboard
	4TH	Air Compressor - Introduction.	Whiteboard
3RD	1ST	Explain functions of compressor & industrial use of compressor air.	Whiteboard
	2ND	Classify air compressor & principle of operation.	Whiteboard
	3RD	Classify air compressor & principle of operation.	PPT
	4TH	Describe the parts and working principle of reciprocating Air compressor.	GOOGLE FORMS
4TH	1ST	**QUIZ & ASSIGNMENT-I**	PPT
	2ND	Describe the parts and working principle of reciprocating Air compressor.	Whiteboard
	3RD	Explain the terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered &Volumetric efficiency.	Whiteboard
	4TH	Explain the terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered &Volumetric efficiency.	Whiteboard
5TH	1ST	Derive the work done of single stage & two stage compressor with and without clearance.	Whiteboard
	2ND	Derive the work done of single stage & two stage compressor with and without clearance.	Whiteboard
	3RD	Problem Solving(without clearance only).	GOOGLE FORMS
	4TH	**QUIZ & ASSIGNMENT-II**	Whiteboard
6TH	1ST	Properties of Steam - Introduction.	Whiteboard
	2ND	Difference between gas & vapours.	PPT
	3RD	Formation of steam.	Whiteboard
	4TH	Representation on P-V, T-S, H-S, & T-H diagram.	Whiteboard
7TH	1ST	Representation on P-V, T-S, H-S, & T-H diagram.	Whiteboard
	2ND	Definition & Properties of Steam.	Whiteboard
	3RD	Use of steam table & mollier chart for finding unknown properties.	Whiteboard
	4TH	Use of steam table & mollier chart for finding unknown properties.	Whiteboard
8TH	1ST	Non flow & flow process of vapour.	PPT
	2ND	P-V, T-S & H-S, diagram.	Whiteboard
	3RD	P-V, T-S & H-S, diagram.	

	4TH	Determine the changes in properties & solve simple numerical.	Whiteboard
	1ST	Determine the changes in properties & solve simple numerical.	Whiteboard
TH	2ND	**QUIZ & ASSIGNMENT-III**	GOOGLE FORMS
	3RD	Steam Generator - Introduction.	Whiteboard
	4TH	Classification & types of Boiler.	PPT
	1ST	Important terms for Boiler.	Whiteboard
	2ND	Comparison between fire tube & Water tube Boiler.	Whiteboard
10TH	3RD	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)	PPT
	4TH	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)	PPT
	1ST	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)	PPT
11TH	2ND	Boiler mountings & accessories.	Whiteboard
	3RD	Boiler mountings & accessories.	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-IV**	GOOGLE FORMS
	1ST	Steam Power Cycles - Introduction.	PPT
	2ND	Carnot cycle with vapour.	Whiteboard
12TH	3RD	Derive work & efficiency of the cycle.	Whiteboard
	4TH	Rankine cycle. Representation in P-V, T-S & h-s diagram. Derive Work & Efficiency.	Whiteboard
	1ST	Effect of Various end conditions in Rankine cycle.	Whiteboard
	2ND	Reheat cycle & regenerative Cycle.	Whiteboard
13TH	3RD	Solve simple numerical on Carnot vapour Cycle & Rankine Cycle.	Whiteboard
	4TH	Heat Transfer - Introduction, Modes of Heat Transfer (Conduction, Convection, Radiation).	Whiteboard
	1ST	Fourier law of heat conduction and thermal conductivity (k). Newton's laws of cooling.	Whiteboard
14TH	2ND	Causes & remedies of vibration.	Whiteboard
	3RD	Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law)	Whiteboard
	4TH	Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility.	Whiteboard
	1ST	**QUIZ & ASSIGNMENT-V**	GOOGLE FORMS
15TH	2ND	**REVISION**	
	3RD		
	4TH		

EARNING RESOURCES:

. Text Book Of Thermal Engineering By R.S Khurmi, S Chand Publisher.
. Text Book Of Thermal Engineering By A.S. Sarao, Satya Prakash Publisher.
. Engineering Thermodynamics By P.K. Nag, TMH Publisher.
. Text Book Of Thermal Engineering By Mahesh M Rathore, TMH Publisher.
. Text Book Of Thermal Engineering By A.R. Basu, Dhanpat Rai Publisher.

EBSITE RESOURCES:

tps://www.youtube.com/watch?v=5gxGfim1INo&list=PLbkIghvjQ7P-yPpjEarquTPccR4I0EHPO
tps://www.youtube.com/watch?v=73E_pTp45TE&list=PLodkbwxNgtOpWhqGklrCdN-fso3AJ9q0C

10/07/2024
Sign. Of Concerned Faculty

16/7/24
Principal
G.P. Puri

16/7/24
Sign. Of HOD

Lesson Plan on
(TH-3) FLUID MECHANICS
(4th sem)

(Summer - 2024)

Prepared by
Mrs. SUSHRI PRIYANKA PANIGRAHI

W/S SUPTD. GP,PURI

GOVERNMENT POLYTECHNIC, PURI

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	**Semester:** 4TH	**Name of the Teaching Faculty:** Mrs. SUSHREE PRIYANKA PANIGRAHI, LECTURER IN MECH. ENGG.
Subject: FLUID MECHANICS (TH. 3)	**No. of days/per week class allotted:** 04	**Semester From date:** 16.01.2024 **To Date:** 26.04.2024 **No. of Weeks:** 15
PRE- REQUISITE	Basic knowledge about fluid properties, hydrostatics, kinematics, flow through pipes and impact of jets.	
COURSE OUTCOMES	CO1: Understand the fluid properties and their measurements. CO2: Understanding the types of flows and their impacts. CO3: Realizing conditions for floatation. CO4: Applying Bernoulli's theorem.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Fluid - Introduction.	Whiteboard
	2ND	Define fluid and its properties.	Whiteboard
	3RD	Description of fluid properties like Density, Specific weight, specific gravity, specific volume and solve simple problems.	Whiteboard
	4TH	Description of fluid properties like Density, Specific weight, specific gravity, specific volume and solve simple problems.	Whiteboard
2ND	1ST	Definitions and Units of Dynamic viscosity, kinematic viscosity, surface tension Capillary phenomenon	Whiteboard
	2ND	Definitions and Units of Dynamic viscosity, kinematic viscosity, surface tension Capillary phenomenon	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-I**	GOOGLE FORMS
	4TH	Definitions and units of fluid pressure, pressure intensity and pressure head.	Whiteboard
3RD	1ST	Statement of Pascal's Law.	Whiteboard
	2ND	Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure.	Whiteboard
	3RD	Pressure measuring instruments.	PPT
	4TH	Manometers (Simple and Differential).	Whiteboard
4TH	1ST	Bourdon tube pressure gauge(Simple Numerical).	Whiteboard
	2ND	Solve simple problems on Manometer.	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-II**	GOOGLE FORMS
	4TH	Hydrostatics - Introduction.	Whiteboard
5TH	1ST	Definition of hydrostatic pressure	Whiteboard
	2ND	Total pressure and centre of pressure on immersed bodies(Horizontal and Vertical Bodies)	PPT
	3RD	Problem Solving.	Whiteboard
	4TH	Archimedes 'principle, concept of buoyancy, meta center and meta centric height (Definition only)	PPT
6TH	1ST	Archimedes 'principle, concept of buoyancy, meta center and meta centric height (Definition only)	PPT
	2ND	Concept of floatation	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-III**	GOOGLE FORMS
	4TH	Kinematics of Flow - Introduction.	Whiteboard
7TH	1ST	Types of fluid flow.	PPT
	2ND	Continuity equation(Statement and proof for one dimensional flow).	Whiteboard
	3RD	Continuity equation(Statement and proof for one dimensional flow).	Whiteboard
	4TH	Bernoulli's theorem(Statement and proof).	Whiteboard

8TH	1ST	Bernoulli's theorem(Statement and proof).	Whiteboard
	2ND	Applications and limitations of Bernoulli's theorem (Venturimeter, pitot tube).	Whiteboard
	3RD	Problem Solving.	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-IV**	GOOGLE FORMS
9TH	1ST	Orifices, notches & weirs - Introduction.	PPT
	2ND	Define orifice.	Whiteboard
	3RD	Flow through orifice.	Whiteboard
	4TH	5.3Orifices coefficient & the relation between the orifice coefficients.	Whiteboard
10TH	1ST	Classifications of notches & weirs.	PPT
	2ND	Discharge over a rectangular notch or weir.	Whiteboard
	3RD	Discharge over a triangular notch or weir.	Whiteboard
	4TH	Head loss due to friction: Darcy's and Chezy's formula (Expression only).	Whiteboard
11TH	1ST	Solve Problems using Darcy's and Chezy's formula..	Whiteboard
	2ND	Solve Problems using Darcy's and Chezy's formula..	Whiteboard
	3RD	Hydraulic gradient and total gradient line.	Whiteboard
	4TH	Hydraulic gradient and total gradient line.	Whiteboard
12TH	1ST	**QUIZ & ASSIGNMENT-V**	GOOGLE FORMS
	2ND	Impact of jet on fixed and moving vertical flat plates	PPT
	3RD	Impact of jet on fixed and moving vertical flat plates	PPT
	4TH	Routing, Scheduling, Dispatching	Whiteboard
13TH	1ST	Derivation of work done on series of vanes and condition for maximum efficiency.	Whiteboard
	2ND	Derivation of work done on series of vanes and condition for maximum efficiency.	Whiteboard
	3RD	Impact of jet on moving curved vanes, illustration using velocity triangles, derivation of work done, efficiency.	Whiteboard
	4TH	Impact of jet on moving curved vanes, illustration using velocity triangles, derivation of work done, efficiency.	Whiteboard
14TH	1ST	Impact of jet on moving curved vanes, illustration using velocity triangles, derivation of work done, efficiency.	Whiteboard
	2ND	Conclusion.	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-VI**	GOOGLE FORMS
	4TH	**REVISION**	
15TH	1ST	**REVISION**	
	2ND		
	3RD		
	4TH		

LEARNING RESOURCES:

01. Text Book Of Fluid Mechanics By R.S Khurmi, S Chand Publisher.
02. Text Book Of Fluid Mechanics By R.K. Bansal, Laxmi Publisher.
03. Text Book Of Fluid Mechanics By R.K Rajput, S Chand Publisher.
04. Text Book Of Fluid Mechanics By Modi & Seth, Rajson's Pub. Pvt. Ltd. Publisher.

WEBSITE RESOURCES:

https://www.youtube.com/watch?v=fa0zHI6nLUo&list=PLbMVogVj5nJTZJHsH6uLCO00I-ffGyBEm

https://www.youtube.com/watch?v=iTanaNwMDKo&list=PL9RcWoqXmzaLnlGN39w2-1jyFyl_ALVa3

Lesson Plan on
(TH-1) THEORY OF MACHINE
(4th sem)

(Summer - 2024)

Prepared by
Mr. BISWAJIT NAYAK

PTGF GP,PURI

GOVERNMENT POLYTECHNIC, PURI
DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	**Semester:** 4TH	**Name of the Teaching Faculty:** MR BISWAJIT NAYAK, PTGF IN MECH. ENGG.
Subject: THEORY OF MACHINES (TH.1)	**No. of days/per week class allotted:** 04	**Semester From date:** 16.01.2024 **To Date:** 26.04.2024 **No. of Weeks:** 15
PRE- REQUISITE	Basic knowledge about machine, clutch, brakes, governors, flywheels, friction, power transmission and vibrations.	
COURSE OUTCOMES	CO1: Understanding machine system consisting of different link assemblies as components. CO2: Comprehending Working principle of machine components such as clutch, brakes, bearings based on friction. CO3: Comprehending working principles related to power transmission systems and predicting the work involved and efficiency. CO4:Comprehending working principle in speed and torque regulating devices such as governor and flywheels. CO5:Determination of amount and position of masses required towards static and dynamic balancing. CO6:Comprehending types and causes of vibration in machines and predicting remedial measures.	

Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Simple mechanism - Introduction.	Whiteboard
	2ND	Link ,kinematic chain, mechanism, machine.	Whiteboard
	3RD	Inversion, four bar link mechanism and its inversion.	Whiteboard
	4TH	Inversion, four bar link mechanism and its inversion.	Whiteboard
2ND	1ST	Lower pair and higher pair.	Whiteboard
	2ND	Cam and followers.	Whiteboard
	3RD	Friction - Introduction.	Whiteboard
	4TH	Friction between nut and screw for square thread, screw jack.	Whiteboard
3RD	1ST	Bearing and its classification, Description of roller, needle roller& ball bearings.	Whiteboard
	2ND	Bearing and its classification, Description of roller, needle roller& ball bearings.	Whiteboard
	3RD	Torque transmission in flat pivot& conical pivot bearings.	Whiteboard
	4TH	Torque transmission in flat pivot& conical pivot bearings.	PPT
4TH	1ST	**QUIZ & ASSIGNMENT-I**	GOOGLE FORMS
	2ND	Flat collar bearing of single and multiple types.	PPT
	3RD	Torque transmission for single and multiple clutches.	Whiteboard
	4TH	Torque transmission for single and multiple clutches.	Whiteboard
5TH	1ST	Working of simple frictional brakes.	Whiteboard
	2ND	Working of Absorption type of dynamometer.	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-II**	GOOGLE FORMS
	4TH	Power Transmission - Introduction.	PPT
6TH	1ST	Concept of power transmission.	Whiteboard
	2ND	Type of drives, belt, gear and chain drive.	Whiteboard
	3RD	Computation of velocity ratio, length of belts (open and cross)with and without slip.	PPT
	4TH	Ratio of belt tensions, centrifugal tension and initial tension.	Whiteboard
7TH	1ST	Power transmitted by the belt.Determine belt thickness and width for given permissible stress for open and crossed belt considering centrifugal tension.	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-III**	GOOGLE FORMS
	3RD	Governors and Flywheel - Introduction.	Whiteboard
	4TH	Function of governor	Whiteboard
	1ST	Classification of governor	Whiteboard

8TH	2ND	Working of Watt, Porter, Proel and Hartnell governors.	PPT
	3RD	Working of Watt, Porter, Proel and Hartnell governors.	Whiteboard
	4TH	Conceptual explanation of sensitivity, stability and isochronisms.	Whiteboard
9TH	1ST	Conceptual explanation of sensitivity, stability and isochronisms.	Whiteboard
	2ND	Function of flywheel.	PPT
	3RD	Comparison between flywheel &governor.	Whiteboard
	4TH	Comparison between flywheel &governor.	PPT
10TH	1ST	Fluctuation of energy and coefficient of fluctuation of speed.	Whiteboard
	2ND	**QUIZ & ASSIGNMENT-IV**	GOOGLE FORMS
	3RD	Balancing of Machine - Introduction	Whiteboard
	4TH	Concept of static and dynamic balancing.	Whiteboard
11TH	1ST	Static balancing of rotating parts.	Whiteboard
	2ND	Static balancing of rotating parts.	Whiteboard
	3RD	Principles of balancing of reciprocating parts.	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-V**	GOOGLE FORMS
12TH	1ST	Causes and effect of unbalance.	PPT
	2ND	Difference between static and dynamic balancing.	Whiteboard
	3RD	Vibration of machine parts - Introduction.	Whiteboard
	4TH	Introduction to Vibration and related terms (Amplitude, time period and frequency, cycle)	Whiteboard
13TH	1ST	Battery for Electric Vehicles, Battery types and fuel cells.	Whiteboard
	2ND	Classification of vibration.	Whiteboard
	3RD	Basic concept of natural, forced & damped vibration	PPT
	4TH	Torsional and Longitudinal vibration.	Whiteboard
14TH	1ST	Torsional and Longitudinal vibration.	Whiteboard
	2ND	Causes & remedies of vibration.	Whiteboard
	3RD	**QUIZ & ASSIGNMENT-VI**	GOOGLE FORMS
	4TH	**REVISION**	
15TH	1ST	**REVISION**	
	2ND		
	3RD		
	4TH		

LEARNING RESOURCES:

01. Text Book Of Theory Of Machine By R.S Khurmi, S Chand Publisher.
02. Text Book Of Theory Of Machine By R.k. Rajput, S Chand Publisher.
03. Text Book Of Theory Of Machine By P.L. Balany, Dhanpat Rai Publisher.
04. Text Book Of Theory Of Machine By Thomas Bevan, Pearson Publisher.

WEBSITE RESOURCES:

https://www.youtube.com/watch?v=LR-fKpvSpzo&list=PLiSPNzs4fD9s1yyDVPWYHhQRrouo2J304

https://www.youtube.com/watch?v=pXQCy4RNJ5g&list=PLNyPK_sfNdSSmNpaWkitGnf8cQO7we_G4

10/01/2024

Sign. Of Concerned Faculty

16/01/24

Principal
G.P. Puri

16/01/24

Sign. Of HOD