GOVERNMENT POLYTECHNIC,NUAPADA
Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Bimbadhar Sahu
Semester: 4th
No. of periods per week: 4
End semester exam: 80
Total Marks : 100

Department: Mechanical Engineering
Subject: Theory of Machine
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	About Simple Mechanism
2.		2nd	Link ,kinematic chain, mechanism, machine
3.		3rd	Inversion, four bar link mechanism and its inversion
4.		4th	Do
5.	2nd	1st	Lower pair and higher pair
6.		2nd	Do
7.		3rd	Cam and followers
8.		4th	Do
9.	3rd	1st	Friction between nut and screw for square thread, screw jack
10.		2nd	Do
11.		3rd	Bearing and its classification,Description of roller,needleroller&ball bearings.
12.		4th	Do
13.	4th	1st	Torque transmission in flat pivot& conical pivot bearings.
14.		2nd	Do
15.		3rd	Flat collar bearing of single and multiple types.
16.		4th	Torque transmission for single and multiple clutches
17.	5th	1st	Do
18.		2nd	Working of simple frictional brakes
19.		3rd	Working of Absorption type of dynamometer
20.		4th	Do
21.	6th	1st	Concept of power transmission
22.		2nd	Type of drives, belt, gear and chain drive.
23.		3rd	Computation of velocity ratio, length of beltswith and without slip
24.		4th	Ratio of belt tensions, centrifugal tension and initial tension.
25.	7th	1st	Power transmitted by the belt
26.		2nd	Determine belt thickness and width for given permissible stress for open and crossed belt considering centrifugal tension.
27.		3rd	DO
28.		4th	V-belts and V-belts pulleys
29.	8th	1st	Concept of crowning of pulleys.
30.		2nd	Gear drives and its terminology
31.		3rd	Gear trains, working principle of simple, compound, reverted and epicyclic gear trains
32.		4th	Do
33.	9th	1st	Function of governor
34.		2nd	Classification of governor
35.		3rd	Working of Watt, Porter, Proel and Hartnell governors
36.		4th	Do
37.	10th	1st	Do
38.		2nd	Conceptual explanation of sensitivity, stability and isochronisms.

39.		3rd	Do
40.		4th	Function of flywheel
41.	11th	1st	Comparison between flywheel &governor.
42.		2nd	Do
43.		3rd	Fluctuation of energy and coefficient of fluctuation of speed
44.		4th	Do
45.	12th	1st	Concept of static and dynamic balancing
46.		2nd	Static balancing of rotating parts
47.		3rd	Do
48.		4th	Principles of balancing of reciprocating parts
49.	13th	1st	Do
50.		2nd	Causes and effect of unbalance
51.		3rd	Do
52.		4th	Difference between static and dynamic balancing
53.	14th	1st	Introduction to Vibration and related terms
54.		2nd	Do
55.		3rd	Classification of vibration.
56.		4th	Basic concept of natural, forced & damped vibration
57.	15th	1st	Do
58.		2nd	Torsional and Longitudinal vibration
59.		3rd	Do
60.		4th	Causes & remedies of vibration.

The lesson plan prepared by the concerned faculty

16/3/22

Bimbadhar Sahu

Sr.Lect., MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Bimbadhar Sahu
Semester: 6th
No. of periods per week: 4
End semester exam: 80
Total Marks : 100

Department: Mechanical Engineering
Subject: Industrial Engineering & Management
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	About Industrial Engineering &Management
2.		2nd	Selection of Site of Industry.
3.		3rd	Define plant layout.
4.		4th	Describe the objective and principles of plant layout.
5.	2nd	1st	Explain Process Layout, Product Layout and Combination Layout.
6.		2nd	Do
7.		3rd	Techniques to improve layout.
8.		4th	Principles of material handling equipment.
9.	3rd	1st	Describe Plant maintenance.
10.		2nd	Do
11.		3rd	Introduction to Operations Research and its applications.
12.		4th	Do
13.	4th	1st	Define LPP
14.		2nd	Solution of L.P.P. by graphical method.
15.		3rd	Evaluation of Project completion time by Critical Path Method and PERT
16.		4th	Do
17.	5th	1st	Do
18.		2nd	Explain about features of PERT W.R.T CPM
19.		3rd	Solve some numerical
20.		4th	DO
21.	6th	1st	Classification of inventory.
22.		2nd	Objective of inventory control.
23.		3rd	Describe the functions of inventories.
24.		4th	Benefits of inventory control.
25.	7th	1st	Costs associated with inventory
26.		2nd	Terminology in inventory control
27.		3rd	Derive economic order quantity for Basic model.
28.		4th	Solve numerical.
29.	8th	1st	Define and Explain ABC analysis.
30.		2nd	DO
31.		3rd	Define Inspection and Quality control.
32.		4th	Describe planning of inspection.
33.	9th	1st	Describe types of inspection.
34.		2nd	Advantages and disadvantages of quality control.
35.		3rd	Study of factors influencing the quality of manufacture.
36.		4th	Explain the Concept of statistical quality control,
37.	10th	1st	Control charts((X, R,P and C - charts).
38.		2nd	Methods of attributes.
39.		3rd	Concept of ISO 9001-2008.

40.		4th	Quality management system,
41.	11th	1st	Registration /certification procedure.
42.		2nd	Benefits of ISO to the organization.
43.		3rd	JIT, Six sigma,7S, Lean manufacturing
44.		4th	DO
45.	12th	1st	Solve related problems.
46.		2nd	Introduction
47.		3rd	Major functions of production planning and control
48.		4th	DO
49.	13th	1st	Methods of forecasting
50.		2nd	DO
51.		3rd	Routing
52.		4th	Scheduling
53.	14th	1st	Dispatching
54.		2nd	Controlling
55.		3rd	Types of production
56.		4th	Mass production
57.	15th	1st	Batch production
58.		2nd	Job order production
59.		3rd	Principles of product and process planning.
60.		4th	DO

The lesson plan prepared by the concerned faculty

16/3/22

BIMBADHAR SAHU

Sr.Lect, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

me of the teaching faculty: Er. Bimbadhar Sahu — Department: Mechanical Engineering

emester: 4th — Subject: : Theory of Machine and Measurement lab

No. of periods per week: 6 — Total Periods: 90

End semester exam: 75 — Sessional: 25 — Total Marks: 100

Sl. No	Week	Period	Topic to be covered
1	1st	1st	Determination of centrifugal force of a governor
2		2nd	Do
3		3rd	Do
4		4th	Do
5		5th	Do
6		6th	Do
7	2nd	1st	Do
8		2nd	Do
9		3rd	Do
10		4th	Study & demonstration of static balancing apparatus
11		5th	Do
12		6th	Do
13	3rd	1st	Do
14		2nd	Do
15		3rd	Do
16		4th	Do
17		5th	Do
18		6th	Do
19	4th	1st	Study & demonstration of journal bearing apparatus
20		2nd	Do
21		3rd	Do
22		4th	Do
23		5th	Do
24		6th	Do
25	5th	1st	Do
26		2nd	Do
27		3rd	Do
28		4th	Study of different types of Cam and followers
29		5th	Do
30		6th	Do
31	6th	1st	Do
32		2nd	Do
33		3rd	Do
34		4th	Do
35		5th	Do
36		6th	Do
37	7th	1st	Study & demonstration of epicyclic gear train.
38		2nd	Do
39		3rd	Do
40		4th	Do
41		5th	Do
42		6th	Do
43	8th	1st	Do
44		2nd	Do

45		3rd	Do
46		4th	Determination of the thickness of ground M.S flat to an accuracy of 0.02mm using VernierCaliper.
47		5th	Do
48		6th	Do
49	9th	1st	Do
50		2nd	Do
51		3rd	Do
52		4th	Do
53		5th	Do
54		6th	Do
55	10th	1st	Determination of diameter of a cylindrical component to an accuracy of 0.01mm using micrometer
56		2nd	Do
57		3rd	Do
58		4th	Do
59		5th	Do
60		6th	Do
61	11th	1st	Do
62		2nd	Do
63		3rd	Do
64		4th	Determine the heights of gauge blocks or parallel bars to accuracy of 0.02mm using Vernier height gauge.
65		5th	Do
66		6th	Do
67	12th	1st	Do
68		2nd	Do
69		3rd	Do
70		4th	Do
71		5th	Do
72		6th	Do
73	13th	1st	Determine the thickness of ground MS plates using slip gauges.
74		2nd	Do
75		3rd	Do
76		4th	Do
77		5th	Do
78		6th	Do
79	14th	1st	Do
80		2nd	Do
81		3rd	Determination of angel of Machined surfaces of components using sin bar with slip gauges
82		4th	Do
83		5th	Do
84		6th	Do
85	15th	1st	Do
86		2nd	Do
87		3rd	Do
88		4th	Do
89		5th	Do
90		6th	Do

The lesson plan prepared by the concerned faculty

10/3/22

Bimbadhar Sahu

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Banamali Deep
Semester: 4th
No. of periods per week: 4
End semester exam: 80
Total Marks: 100

Department: Mechanical Engineering
Subject: Fluid Mechanics
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Define fluid
2.		2nd	Description of fluid properties
3.		3rd	Density, Specific weight, specific gravity,
4.		4th	specific volume and solve simple problems.
5.	2nd	1st	solve simple problems.
6.		2nd	Definitions and Units of Dynamic viscosity
7.		3rd	kinematic viscosity, surface tension
8.		4th	Capillary phenomenon
9.	3rd	1st	Definitions and units of fluid pressure
10.		2nd	pressure intensity and pressure head
11.		3rd	Statement of Pascal's Law.
12.		4th	Concept of atmospheric pressure, gauge pressure
13.	4th	1st	vacuum pressure and absolute pressure
14.		2nd	Pressure measuring instruments Manometers
15.		3rd	Bourdon tube pressure gauge
16.		4th	Solve simple problems on Manometer
17.	5th	1st	Definition of hydrostatic pressure
18.		2nd	Total pressure and centre of pressure on immersed bodies
19.		3rd	Horizontal and Vertical Bodie
20.		4th	Archimedes 'principle, concept of buoyancy
21.	6th	1st	meta center and meta centric height
22.		2nd	Do
23.		3rd	Concept of floatation
24.		4th	Types of fluid flow
25.	7th	1st	Continuity equation
26.		2nd	Statement and proof for one dimensional flow
27.		3rd	DO
28.		4th	Bernoulli's theorem(Statement and proof)
29.	8th	1st	Applications and limitations of Bernoulli's theorem
30.		2nd	Venturimeter, pitot tube
31.		3rd	Solve simple problems
32.		4th	Solve simple problems, Define orifice
33.	9th	1st	Flow through orifice
34.		2nd	Orifices coefficient & the relation between the orifice coefficients
35.		3rd	Do
36.		4th	Classifications of notches & weirs
37.	10th	1st	Discharge over a rectangular notch or weir
38.		2nd	Do
39.		3rd	Discharge over a triangular notch or weir
40.		4th	Do

41.	11th	1st	Simple problems on above
42.		2nd	Flow through pipe,Definition of pipe
43.		3rd	Loss of energy in pipes.
44.		4th	Do
45.	12th	1st	Head loss due to friction
46.		2nd	Darcy's and Chezy's formula (Expression only)
47.		3rd	Solve Problems using Darcy's and Chezy's formula.
48.		4th	Hydraulic gradient and total gradient line
49.	13th	1st	Impact of jet on fixed and moving vertical flat plates
50.		2nd	Derivation of work done on series of vanes.
51.		3rd	Do
52.		4th	Derivation of work done on series of vanes
53.	14th	1st	Do
54.		2nd	Condition for maximum efficiency.
55.		3rd	Impact of jet on moving curved vanes
56.		4th	illustration using velocity triangles
57.	15th	1st	Do
58.		2nd	derivation of work done,
59.		3rd	Do
60.		4th	Explain efficiency.

The lesson plan prepared by the concerned faculty

Banamali Deep

Banamali Deep

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA
Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Banamali Deep
Semester: 6th
No. of periods per week: 4
End semester exam: 80
Total Marks : 100

Department: Mechanical Engineering
Subject: Automobile Engg. & Hybrid Vehicles
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Automobiles: Definition, need and classification:
2.		2nd	Layout of automobile chassis
3.		3rd	with major components (Line diagram)
4.		4th	Clutch System: Need, Types (Single & Multiple)
5.	2nd	1st	Working principle with sketch
6.		2nd	Gear Box: Purpose of gear box, Construction
7.		3rd	working of a 4 speed gear box
8.		4th	Concept of automatic gear changing mechanisms
9.	3rd	1st	do
10.		2nd	Propeller shaft: Constructional features
11.		3rd	Differential: Need, Types
12.		4th	Working principle
13.	4th	1st	Braking systems in automobiles: Need and types
14.		2nd	Mechanical Brake
15.		3rd	Hydraulic Brake
16.		4th	Air Brake,Air assisted Hydraulic Brake
17.	5th	1st	Vacuum Brake
18.		2nd	Describe the Battery ignition
19.		3rd	Magnet ignition system
20.		4th	Spark plugs: Purpose, construction and specifications
21.	6th	1st	State the common ignition troubles and its remedies
22.		2nd	Description of the conventional suspension system for Rear and Front axle
23.		3rd	Do
24.		4th	Description of independent suspension system used in cars
25.	7th	1st	coil spring and tensionbars
26.		2nd	Constructional features and working of a telescopic shock absorber
27.		3rd	Do
28.		4th	Engine cooling: Need and classification
29.	8th	1st	Describe defects of cooling and their remedial measures
30.		2nd	Do
31.		3rd	Describe the Function of lubrication
32.		4th	Describe the lubrication System of I.C. engine
33.	9th	1st	Do
34.		2nd	Do
35.		3rd	Describe Air fuel ratio
36.		4th	Do
37.	10th	1st	Describe Carburetion process for Petrol Engine
38.		2nd	Do
39.		3rd	Describe Multipoint fuel injection system for Petrol Engine

40.		4th	Do
41.	11th	1st	working principle of fuel injection system for multi cylinder Engine
42.		2nd	Filter for Diesel engine
43.		3rd	working principle of Fuel feed pump
44.		4th	Fuel Injector for Diesel engine
45.	12th	1st	ELECTRIC AND HYBRID VEHICLES
46.		2nd	Introduction, Social and Environmental importance of Hybrid
47.		3rd	Description of Electric Vehicles
48.		4th	operational advantages, present performance
49.	13th	1st	applications of Electric Vehicles
50.		2nd	Battery for Electric Vehicles
51.		3rd	Do
52.		4th	Battery for Electric Vehicles, Battery types and fuel cells.
53.	14th	1st	Do
54.		2nd	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel
55.		3rd	Do
56.		4th	Do
57.	15th	1st	Series configurations; Drive train
58.		2nd	Do
59.		3rd	Solar powered vehicles
60.		4th	Do

The lesson plan prepared by the concerned faculty

Banamali Deep

BANAMALI DEEP

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA
Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Banamali Deep
Semester: 6th
No. of periods per week: 4
End semester exam: 50
Total Marks: 100

Department: Mechanical Engineering
Subject: Automobile Engineering Lab
Total Periods: 60
Sessiona l: 50

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Study of Automobile chassis.
2.		2nd	Do
3.		3rd	Do
4.		4th	Do
5.	2nd	1st	Do
6.		2nd	Do
7.		3rd	Do
8.		4th	Study the differential mechanism of the Tractor.
9.	3rd	1st	Do
10.		2nd	Do
11.		3rd	Do
12.		4th	Do
13.	4th	1st	Do
14.		2nd	Do
15.		3rd	Do
16.		4th	Study the hydraulic braking system of automobile.
17.	5th	1st	Do
18.		2nd	Do
19.		3rd	Do
20.		4th	Do
21.	6th	1st	Do
22.		2nd	Do
23.		3rd	Do
24.		4th	Study the cut section model of carburetorsolex typeand maruti car type.
25.	7th	1st	Do
26.		2nd	Do
27.		3rd	Do
28.		4th	Do
29.	8th	1st	Do
30.		2nd	Do
31.		3rd	Do
32.		4th	Do
33.	9th	1st	Study the fuel pump cut section model.
34.		2nd	Do
35.		3rd	Do
36.		4th	Do
37.	10th	1st	Do

38.		2nd	Do
39.		3rd	Do
40.		4th	Do
41.	11th	1st	Study the actual cut section of gear box.
42.		2nd	Do
43.		3rd	Do
44.		4th	Do
45.	12th	1st	Do
46.		2nd	Do
47.		3rd	Do
48.		4th	Do
49.	13th	1st	Do
50.		2nd	Study of actual car engine.
51.		3rd	Do
52.		4th	Do
53.	14th	1st	Do
54.		2nd	Do
55.		3rd	Do
56.		4th	Do
57.	15th	1st	Do
58.		2nd	Do
59.		3rd	Do
60.		4th	Do

The lesson plan prepared by the concerned faculty

Banamali Deep

Banamali Deep

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA
Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Abhisek Khamari
Semester: 4th
No. of periods per week: 4
End semester exam: 80
Total Marks: 100

Department: Mechanical Engineering
Subject: Manufacturing Technology
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Composition of various tool materials
2.		2nd	Composition of various tool materials
3.		3rd	Physical tool materials
4.		4th	Uses of such tool materials.
5.	2nd	1st	Cutting action of various and tools such as Chisel, hacksaw blade
6.		2nd	Cutting action of various and tools such as dies and reamer
7.		3rd	Turning tool geometry
8.		4th	Purpose of tool angle
9.	3rd	1st	Machining process parameters (Speed, feed and depth of cut)
10.		2nd	Coolants and lubricants in machining and purpose
11.		3rd	Do
12.		4th	Construction and working of lathe and CNC lathe
13.	4th	1st	Major components of a lathe and their function
14.		2nd	Operations carried out in a lathe
15.		3rd	Safety measures during machining
16.		4th	Difference with respect to engine lathe
17.	5th	1st	Major components of a lathe and their function
18.		2nd	Draw the tooling lay out for preparation of a hexagonal bolt & bush
19.		3rd	Applications of shaper
20.		4th	major components of shaper
21.	6th	1st	Automatic table feed mechanism
22.		2nd	construction &working of tool head
23.		3rd	Quick return Mechanism
24.		4th	Specification of shaper
25.	7th	1st	Application area of a planer and its difference with respect to shaper
26.		2nd	Do
27.		3rd	Major components and their functions
28.		4th	The table drive mechanism
29.	8th	1st	Working of tool and tool support
30.		2nd	Clamping of work through sketch.
31.		3rd	Types of milling machine and operations performed by them
32.		4th	Do
33.	9th	1st	CNC milling machine
34.		2nd	Explain work holding attachment
35.		3rd	Construction & working of deviding Head
36.		4th	do
37.	10th	1st	Procedure of simple and compound indexing
38.		2nd	Ilustration of different indexing methods
39.		3rd	Major components and their function
40.		4th	Do

41.	11th	1st	Construction and working of slotter machine
42.		2nd	Construction & working of deviding Head
43.		3rd	do
44.		4th	Do
45.	12th	1st	Tools used in slotter
46.		2nd	Do
47.		3rd	Significance of grinding operations
48.		4th	Manufacturing of grinding wheels
49.	13th	1st	Do
50.		2nd	Specification of grinding wheel
51.		3rd	Do
52.		4th	Surface and centerless grinder
53.	14th	1st	Classification of drilling Machines
54.		2nd	Working of drilling Machines
55.		3rd	Do
56.		4th	Boring
57.	15th	1st	Broaching
58.		2nd	**Surface finishing**
59.		3rd	**Do**
60.		4th	**Do**

The lesson plan prepared by the concerned faculty

Abhisek Khamari

Abhisek Khamari

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Abhisek Khamari
Semester: 6th
No. of periods per week: 4
End semester exam: 80
Total Marks : 100

Department: Mechanical Engineering
Subject: Industrial Robotics & Automation
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Introduction – comparison with traditional machining
2.		2nd	Ultrasonic Machining: principle, Description of equipment, applications
3.		3rd	Do
4.		4th	Described Electric Discharge Machining Process
5.	2nd	1st	Do
6.		2nd	Do
7.		3rd	Wire cut EDM: Principle, applications
8.		4th	Do
9.	3rd	1st	Do
10.		2nd	Explained Abrasive Jet Machining & application.
11.		3rd	Do
12.		4th	Explained Laser Beam Machining & application.
13.	4th	1st	Do
14.		2nd	Explained Electro Chemical Machining & application.
15.		3rd	Do
16.		4th	Explained Plasma Arc Machining & Applications
17.	5th	1st	Do
18.		2nd	Electron Beam Machining
19.		3rd	Do
20.		4th	Processing of plastics.
21.	6th	1st	Introduction – comparison with traditional machining
22.		2nd	Ultrasonic Machining: principle, Description of equipment, applications
23.		3rd	Do
24.		4th	Described Electric Discharge Machining Process
25.	7th	1st	Do
26.		2nd	Do
27.		3rd	Wire cut EDM: Principle, applications
28.		4th	Do
29.	8th	1st	Do
30.		2nd	Explained Abrasive Jet Machining & application.
31.		3rd	Do
32.		4th	Explained Laser Beam Machining & application.
33.	9th	1st	Do
34.		2nd	Explained Electro Chemical Machining & application.
35.		3rd	Do
36.		4th	Explained Plasma Arc Machining & Applications
37.	10th	1st	Do
38.		2nd	Do
39.		3rd	Application AM
40.		4th	Do

61.	11th	1st	Web Based Rapid Prototyping Systems
62.		2nd	Do
63.		3rd	Concept of FM process, concurrent tool, production tool
64.		4th	Rapid prototyping process
65.	12th	1st	Concept of SPM
66.		2nd	General elements of SPM
67.		3rd	Do
68.		4th	Productivity improvement by SPM
69.	13th	1st	Do
70.		2nd	Principles of SPM design
71.		3rd	Do
72.		4th	Types of maintenance
73.	14th	1st	Do
74.		2nd	Types of maintenance, Repair cycle analysis,
75.		3rd	Repair complexity, Maintenance manual,
76.		4th	Do
77.	15th	1st	Maintenance records, Housekeeping.
78.		2nd	Introduction to Total Productive Maintenance (TPM).
79.		3rd	Do
80.		4th	Do

The lesson plan prepared by the concerned faculty

Abhisek Khamari

Abhisek Khamari

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

me of the teaching faculty: Er. Abhisek Khamari **Department: Mechanical Engineering**

emester: 4th **Subject: Mechanical Engineering Lab-2**

No. of periods per week: 6 **Total Periods: 90**

End semester exam: 75 **Sessional: 25Total Marks: 100**

Sl. No	Week	Period	Topic to be covered
1	1st	1st	Study of 2-S, 4-S petrol & diesel engine models
2		2nd	Do
3		3rd	Do
4		4th	Do
5		5th	Do
6		6th	Do
7	2nd	1st	Do
8		2nd	Do
9		3rd	Do
10		4th	Determine the brake thermal efficiency of single cylinder petrol engine.
11		5th	Do
12		6th	Do
13	3rd	1st	Do
14		2nd	Do
15		3rd	Do
16		4th	Do
17		5th	Do
18		6th	Do
19	4th	1st	Do
20		2nd	Determine the brake thermal efficiency of single cylinder diesel engine.
21		3rd	Do
22		4th	Do
23		5th	Do
24		6th	Do
25	5th	1st	Do
26		2nd	Do
27		3rd	Do
28		4th	Do
29		5th	Do
30		6th	Do
31	6th	1st	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test
32		2nd	Do
33		3rd	Do
34		4th	Do
35		5th	Do
36		6th	Do
37		1st	Do
38	7th	2nd	Do
39		3rd	Do
40		4th	Do
41		5th	Determine the mechanical efficiency of an air Compressor.
42		6th	Do
43	8th	1st	Do
44		2nd	Do

45		3rd	Do
46		4th	Do
47		5th	Do
48		6th	Do
49	9th	1st	Do
50		2nd	Study of pressure measuring devices (manometer, Bourdon tube)
51		3rd	Do
52		4th	Do
53		5th	Do
54		6th	Do
55	10th	1st	Do
56		2nd	Do
57		3rd	Do
58		4th	Do
59		5th	Verification of Bernoulli's theorem
60		6th	Do
61	11th	1st	Do
62		2nd	Do
63		3rd	Do
64		4th	Do
65		5th	Do
66		6th	Do
67	12th	1st	Do
68		2nd	Determination of Cd from venturimeter
69		3rd	Do
70		4th	Do
71		5th	Do
72		6th	Do
73	13th	1st	Do
74		2nd	Do
75		3rd	Do
76		4th	Do
77		5th	Do
78		6th	Determination of Cc, Cv, Cd from orifice meter
79	14th	1st	Do
80		2nd	Do
81		3rd	Do
82		4th	Do
83		5th	Do
84		6th	Do
85	15th	1st	Determine of Darcy's coefficient from flow through pipe
86		2nd	Do
87		3rd	Do
88		4th	Do
89		5th	Do
90		6th	Do

The lesson plan prepared by the concerned faculty

Abhisek Khamari

Abhisek Khamari

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA
Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Sidhant Singh Babu
Semester: 4th
No. of periods per week: 4
End semester exam: 80
Total Marks: 100

Department: Mechanical Engineering
Subject: Thermal Engineering II
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	About IC Engine performance
2.		2nd	Explain types of efficiency
3.		3rd	Do
4.		4th	Do
5.	2nd	1st	Define Air & Fuel ratio, CV
6.		2nd	Some Problem solved
7.		3rd	Do
8.		4th	Do
9.	3rd	1st	About Air compressor
10.		2nd	Explain functions of compressor & industrial use.
11.		3rd	Classification of air compressor & operation.
12.		4th	Do
13.	4th	1st	Explain the parts and working principle of reciprocating Air compressor.
14.		2nd	Do
15.		3rd	Explain the terminology of reciprocating compressor.
16.		4th	Explain working Principal of single stage Reciprocating Compressor .
17.	5th	1st	Do
18.		2nd	Explain working Principal of Multistage stage Reciprocating Compressor .
19.		3rd	Solve simple problems
20.		4th	Do
21.	6th	1st	About Steam & Difference between gas &vapours.
22.		2nd	Formation of steam
23.		3rd	Representation on P-V, T-S, H-S, & T-H diagram.
24.		4th	Do
25.	7th	1st	Properties of Steam & Terms
26.		2nd	Do
27.		3rd	Use of steam table &mollier chart for finding unknown properties.
28.		4th	Do
29.	8th	1st	Non flow & flow process of vapour.
30.		2nd	P-V, T-S & H-S, diagram.
31.		3rd	Solve simple problems
32.		4th	Do
33.	9th	1st	About Boiler & Classification
34.		2nd	Do
35.		3rd	Important terms for Boiler.
36.		4th	Comparison between fire tube & Water tube Boiler
37.	10th	1st	Description & working of common boilers.
38.		2nd	Do

39.		3rd	Do
40.		4th	About Boiler Draught system
41.	11th	1st	Description of Boiler mountings & accessories.
42.		2nd	Do
43.		3rd	Do
44.		4th	Do
45.	12th	1st	About Vapour Power Cycle/ Steam Power Cycle
46.		2nd	Explain Carnot cycle with vapour.
47.		3rd	Do
48.		4th	Explain Rankine Cycle.
49.	13th	1st	Do
50.		2nd	Do
51.		3rd	Slove Some Problem
52.		4th	Do
53.	14th	1st	Modes of Heat Transfer.
54.		2nd	Fourier law of heat conduction and thermal conductivity.
55.		3rd	Newton's laws of cooling.
56.		4th	Explain Radiation heat transfer.
57.	15th	1st	Do
58.		2nd	Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility
59.		3rd	Do
60.		4th	Do

The lesson plan prepared by the concerned faculty

Siddhant Singh Babu

Sidhant Singh Babu

PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

ame of the teaching faculty: Er. Sidhanth Singh Babu
emester: 6th
No. of periods per week: 4
End semester exam: 80
Total Marks : 100

Department: Mechanical Engineering
Subject: Power Station Engineering
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	About Power Station Engineering
2.		2nd	Describe sources of energy.
3.		3rd	Do
4.		4th	Explain concept of Central and Captive power station.
5.	2nd	1st	Classify power plants.
6.		2nd	Layout of steam power stations.
7.		3rd	Explain about carnotvapour power cycle
8.		4th	Do
9.	3rd	1st	Explain about Rankine vapour power cycle
10.		2nd	Do
11.		3rd	Do
12.		4th	Solved Simple Problems.
13.	4th	1st	Do
14.		2nd	Do
15.		3rd	List of thermal power stations in the state with their capacities.
16.		4th	About Boiler Accessories
17.	5th	1st	Do
18.		2nd	Do
19.		3rd	Do
20.		4th	Explain Boiler Draught System
21.	6th	1st	About Steam Prime Mover
22.		2nd	Do
23.		3rd	About Condenser
24.		4th	Do
25.	7th	1st	Selection of site for thermal power stations.
26.		2nd	About Nuclear Power Station
27.		3rd	Classify nuclear fuel
28.		4th	Explain fusion and fission reaction.
29.	8th	1st	Explain working of nuclear power plants with block diagram
30.		2nd	Explain the working and construction of nuclear reactor
31.		3rd	Do
32.		4th	Do
33.	9th	1st	Compare the nuclear and thermal plants.
34.		2nd	Explain the disposal of nuclear waste
35.		3rd	Selection of site for nuclear power stations & It list of Presnt
36.		4th	About Diesel Electric Power Station
37.	10th	1st	State the advantages and disadvantages of diesel electric power stations.
38.		2nd	Explain briefly different systems of diesel electric power stations
39.		3rd	Do

40.		4th	Do
41.	11th	1st	Do
42.		2nd	Do
43.		3rd	Selection of site for diesel electric power stations.
44.		4th	Performance and thermal efficiency of diesel electric power stations
45.	12th	1st	Do
46.		2nd	About Gas Turbine Power Station
47.		3rd	Selection of site & Fuels for gas turbine stations.
48.		4th	Elements of simple gas turbine power plants
49.	13th	1st	Do
50.		2nd	Merits, demerits and application of gas turbine power plants.
51.		3rd	About Hydel Power Station
52.		4th	State advantages and disadvantages of hydroelectric power plant.
53.	14th	1st	Classification of hydroelectric Power Station
54.		2nd	explain the general arrangement of storage type hydroelectric project.
55.		3rd	explain its operation.
56.		4th	Do
57.	15th	1st	List of hydro power stations with their capacities and number of units in the state.
58.		2nd	Selection of site of hydel power plant.
59.		3rd	Types of turbines and generation used.
60.		4th	Solve simple problems

The lesson plan prepared by the concerned faculty

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PTGF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA
Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Sidhant Singh Babu
Semester: 6th
No. of periods per week: 4
End semester exam: 50
Total Marks: 75

Department: Mechanical Engineering
Subject: Power Station Engineering Lab
Total Periods: 60
Sessional: 25

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	To study the modern steam power plant with model.
2.		2nd	Do
3.		3rd	Do
4.		4th	Do
5.	2nd	1st	Do
6.		2nd	Do
7.		3rd	To determine the various efficiencies of steam turbine.
8.		4th	Do
9.	3rd	1st	Do
10.		2nd	Do
11.		3rd	Do
12.		4th	Do
13.	4th	1st	Do
14.		2nd	Do
15.		3rd	To study the cooling tower.
16.		4th	Do
17.	5th	1st	Do
18.		2nd	Do
19.		3rd	Do
20.		4th	Do
21.	6th	1st	Do
22.		2nd	Do
23.		3rd	Study of jet condenser
24.		4th	Do
25.	7th	1st	Do
26.		2nd	Do
27.		3rd	Do
28.		4th	Do
29.	8th	1st	Do
30.		2nd	Do
31.		3rd	Study of De-lavel turbine
32.		4th	Do
33.	9th	1st	Do
34.		2nd	Do
35.		3rd	Do
36.		4th	Do

37.	10th	1st	To study the spring loaded safety valve.
38.		2nd	Do
39.		3rd	Do
40.		4th	Do
41.	11th	1st	Do
42.		2nd	Do
43.		3rd	To study the steam generators (boilers)models.
44.		4th	Lancashire boiler
45.	12th	1st	Do
46.		2nd	Do
47.		3rd	Do
48.		4th	Do
49.	13th	1st	Cornish boiler
50.		2nd	Do
51.		3rd	Do
52.		4th	Do
53.	14th	1st	Babcock & Wilcox Boiler
54.		2nd	Do
55.		3rd	Do
56.		4th	Do
57.	15th	1st	Vertical water tube boiler.
58.		2nd	Do
59.		3rd	Do
60.		4th	Do

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GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Summer semester- 2022

Name of the teaching faculty: Er. Sidhant Singh Babu **Department: Mechanical Engineering**

Semester: 4th **Subject: : WORKSHOP PRACTICE-III**

No. of periods per week: 6 **Total Periods: 90**

End semester exam: 50 Sessional: 50 Total Marks: 100

Sl. No	Week	Period	Topic to be covered
1	1st	1st	Job in evolving drilling, boring
2		2nd	Do
3		3rd	Do
4		4th	Do
5		5th	Do
6		6th	Do
7	2nd	1st	Do
8		2nd	Do
9		3rd	Do
10		4th	Do
11		5th	Do
12		6th	Do
13	3rd	1st	Do
14		2nd	Do
15		3rd	Do
16		4th	Internal/External threading on Turning jobs
17		5th	Do
18		6th	Do
19	4th	1st	Do
20		2nd	Do
21		3rd	Do
22		4th	Do
23		5th	Do
24		6th	Do
25	5th	1st	Do
26		2nd	Do
27		3rd	Do
28		4th	Do
29		5th	Do
30		6th	Do
31	6th	1st	Job in evolving use of Capstan and turret lathe (Taper Turning & Chamfering)
32		2nd	Do
33		3rd	Do
34		4th	Do
35		5th	Do
36		6th	Do
37	7th	1st	Do
38		2nd	Do
39		3rd	Do
40		4th	Do
41		5th	Do
42		6th	Do
43	8th	1st	Do
44		2nd	Do

45		3rd	Do
46		4th	All gear lathe, CNC Lathe Trainer Practice
47		5th	Do
48		6th	Do
49	9th	1st	Do
50		2nd	Do
51		3rd	Do
52		4th	Job involving all turning process on MS Rod &aluminum rod for jobs using CNC Lathe trainer.
53		5th	Do
54		6th	Do
55	10th	1st	Do
56		2nd	Do
57		3rd	Do
58		4th	Do
59		5th	Do
60		6th	Do
61	11th	1st	Shaper Preparation of V Block on CI or MS Blocks
62		2nd	Do
63		3rd	Do
64		4th	Do
65		5th	Do
66		6th	Do
67	12th	1st	Do
68		2nd	Do
69		3rd	Do
70		4th	Do
71		5th	Do
72		6th	Do
73	13th	1st	Do
74		2nd	Do
75		3rd	Do
76		4th	Milling Machine Preparation of Spur gear on CI or MS round
77		5th	Do
78		6th	Do
79	14th	1st	Do
80		2nd	Do
81		3rd	Do
82		4th	Do
83		5th	Do
84		6th	Do
85	15th	1st	Do
86		2nd	Do
87		3rd	Do
88		4th	Do
89		5th	Do
90		6th	Do

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PTGF, MECHANICAL DEPARTMENT