

GOVERNMENT POLYTECHNIC, NUAPADA

Academic Lesson Plan for Summer semester- 2024(S)

FROM DT. 16-01-2024 TO 26-04-2024

Name of the teaching faculty: Er. Banamali Deep

Department: Mechanical Engineering

Semester: 4th

Subject: Mechanical Engineering Lab-II

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	1 st	1 st	Study of 2-S, 4-S petrol & diesel engine models
2		2 nd	Do
3		3 rd	Do
4		4 th	Do
5		5 th	Do
6		6 th	Do
7	2 nd	1 st	Do
8		2 nd	Do
9		3 rd	Do
10		4 th	Determine the brake thermal efficiency of single cylinder petrol engine.
11		5 th	Do
12		6 th	Do
13	3 rd	1 st	Do
14		2 nd	Do
15		3 rd	Do
16		4 th	Do
17		5 th	Do
18		6 th	Do
19	4 th	1 st	Do
20		2 nd	Determine the brake thermal efficiency of single cylinder diesel engine.
21		3 rd	Do
22		4 th	Do
23		5 th	Do
24		6 th	Do
25	5 th	1 st	Do
26		2 nd	Do
27		3 rd	Do
28		4 th	Do
29		5 th	Do
30		6 th	Do
31	6 th	1 st	Determine the B.H.P, I.H.P BSFC of a multi cylinder engine by Morse test
32		2 nd	Do
33		3 rd	Do
34		4 th	Do
35		5 th	Do
36		6 th	Do
37	7 th	1 st	Do
38		2 nd	Do
39		3 rd	Do
40		4 th	Do
41		5 th	Determine the mechanical efficiency of an air Compressor.
42		6 th	Do
43	8 th	1 st	Do

44		2 nd	Do
45		3 rd	Do
46		4 th	Do
47		5 th	Do
48		6 th	Do
49		9 th	1 st
50	2 nd		Study of pressure measuring devices (manometer, Bourdon tube)
51	3 rd		Do
52	4 th		Do
53	5 th		Do
54	6 th		Do
55	10 th	1 st	Do
56		2 nd	Do
57		3 rd	Do
58		4 th	Do
59		5 th	Verification of Bernoulli's theorem
60		6 th	Do
61	11 th	1 st	Do
62		2 nd	Do
63		3 rd	Do
64		4 th	Do
65		5 th	Do
66		6 th	Do
67	12 th	1 st	Do
68		2 nd	Determination of Cd from venturimeter
69		3 rd	Do
70		4 th	Do
71		5 th	Do
72		6 th	Do
73	13 th	1 st	Do
74		2 nd	Do
75		3 rd	Do
76		4 th	Do
77		5 th	Do
78		6 th	Determination of Cc, Cv, Cd from orifice meter
79	14 th	1 st	Do
80		2 nd	Do
81		3 rd	Do
82		4 th	Do
83		5 th	Do
84		6 th	Do
85	15 th	1 st	Determine of Darcy's coefficient from flow through pipe
86		2 nd	Do
87		3 rd	Do
88		4 th	Do
89		5 th	Do
90		6 th	Do

The lesson plan prepared by the concerned faculty

Er. Banamali Deep

GF, MECHANICAL ENGG. DEPARTMENT

GOVERNMENT POLYTECHNIC, NUAPADA

Academic Lesson Plan for Summer semester- 2024(s)

FROM DT. 16-01-2024 TO 26-04-2024

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.	1 st	1 st	Define fluid
2.		2 nd	Description of fluid properties
3.		3 rd	Density, Specific weight, specific gravity,
4.		4 th	specific volume and solve simple problems.
5.	2 nd	1 st	solve simple problems.
6.		2 nd	Definitions and Units of Dynamic viscosity
7.		3 rd	kinematic viscosity, surface tension
8.		4 th	Capillary phenomenon
9.	3 rd	1 st	Definitions and units of fluid pressure
10.		2 nd	pressure intensity and pressure head
11.		3 rd	Statement of Pascal's Law.
12.		4 th	Concept of atmospheric pressure, gauge pressure
13.	4 th	1 st	vacuum pressure and absolute pressure
14.		2 nd	Pressure measuring instruments Manometers
15.		3 rd	Bourdon tube pressure gauge
16.		4 th	Solve simple problems on Manometer
17.	5 th	1 st	Definition of hydrostatic pressure
18.		2 nd	Total pressure and centre of pressure on immersed bodies
19.		3 rd	Horizontal and Vertical Bodie
20.		4 th	Archimedes 'principle, concept of buoyancy
21.	6 th	1 st	meta center and meta centric height
22.		2 nd	Do
23.		3 rd	Concept of floatation
24.		4 th	Types of fluid flow
25.	7 th	1 st	Continuity equation
26.		2 nd	Statement and proof for one dimensional flow
27.		3 rd	DO
28.		4 th	Bernoulli's theorem(Statement and proof)
29.	8 th	1 st	Applications and limitations of Bernoulli's theorem
30.		2 nd	Venturimeter, pitot tube
31.		3 rd	Solve simple problems
32.		4 th	Solve simple problems, Define orifice
33.	9 th	1 st	Flow through orifice
34.		2 nd	Orifices coefficient & the relation between the orifice coefficients
35.		3 rd	Do
36.		4 th	Classifications of notches & weirs
37.	10 th	1 st	Discharge over a rectangular notch or weir
38.		2 nd	Do
39.		3 rd	Discharge over a triangular notch or weir

40.		4 th	Do
41.	11 th	1 st	Simple problems on above
42.		2 nd	Flow through pipe, Definition of pipe
43.		3 rd	Loss of energy in pipes.
44.		4 th	Do
45.	12 th	1 st	Head loss due to friction
46.		2 nd	Darcy's and Chezy's formula (Expression only)
47.		3 rd	Solve Problems using Darcy's and Chezy's formula.
48.		4 th	Hydraulic gradient and total gradient line
49.	13 th	1 st	Impact of jet on fixed and moving vertical flat plates
50.		2 nd	Derivation of work done on series of vanes.
51.		3 rd	Do
52.		4 th	Derivation of work done on series of vanes
53.	14 th	1 st	Do
54.		2 nd	Condition for maximum efficiency.
55.		3 rd	Impact of jet on moving curved vanes
56.		4 th	illustration using velocity triangles
57.	15 th	1 st	Do
58.		2 nd	derivation of work done,
59.		3 rd	Do
60.		4 th	Explain efficiency.

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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: Industrial Robotics & Automation

Total Periods: 60

Class test: 20

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

40.		4 th	Do
41.	11 th	1 st	Web Based Rapid Prototyping Systems
42.		2 nd	Do
43.		3 rd	Concept of FM process, concurrent tool, production tool
44.		4 th	Rapid prototyping process
45.	12 th	1 st	Concept of SPM
46.		2 nd	General elements of SPM
47.		3 rd	Do
48.		4 th	Productivity improvement by SPM
49.	13 th	1 st	Do
50.		2 nd	Principles of SPM design
51.		3 rd	Do
52.		4 th	Types of maintenance
53.	14 th	1 st	Do
54.		2 nd	Types of maintenance, Repair cycle analysis,
55.		3 rd	Repair complexity, Maintenance manual,
56.		4 th	Do
57.	15 th	1 st	Maintenance records, Housekeeping.
58.		2 nd	Introduction to Total Productive Maintenance (TPM).
59.		3 rd	Do
60.		4 th	Do

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