GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Winter semester- 2024-25

Name of the teaching faculty: Er. Michael Suveer **Department: Mechanical Engineering**

Semester: 3rd **Subject: Production Technology**

No. of periods per week: 4 **Total Periods: 60**

End semester exam: 80 **Class test: 20**

Total Marks: 100

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Extrusion: Definition & Classification
2.		2nd	Explain direct, indirect and impact extrusion process.
3.		3rd	Define rolling. Classify it.
4.		4th	Do
5.	2nd	1st	Differentiate between cold rolling and hot rolling process.
6.		2nd	List the different types of rolling mills used in Rolling process.
7.		3rd	Do
8.		4th	Define welding and classify various welding processes.
9.	3rd	1st	Do
10.		2nd	Do
11.		3rd	Explain fluxes used in welding
12.		4th	Explain Oxy-acetylene welding process
13.	4th	1st	Explain various types of flames used in Oxy-acetylene welding process.
14.		2nd	Do
15.		3rd	Explain Arc welding process.
16.		4th	Specify arc welding electrodes
17.	5th	1st	Define resistance welding and classify it.
18.		2nd	Describe various resistance welding processes such as butt welding, spot welding, flash welding, .
19.		3rd	Projection and seam welding
20.		4th	Explain TIG welding process
21.	6th	1st	Explain MIG welding process
22.		2nd	Difference between two
23.		3rd	State different welding defects with causes and remedies.
24.		4th	Define Casting and Classify the various Casting processes.
25.	7th	1st	Do
26.		2nd	Explain the procedure of Sand mould casting.
27.		3rd	Explain different types of molding sands with their composition and properties.
28.		4th	Do
29.	8th	1st	Classify different pattern and state various pattern allowances
30.		2nd	Do
31.		3rd	Classify core
32.		4th	Describe construction and working of cupola
33.	9th	1st	Describe construction and working of crucible furnace
34.		2nd	Explain die casting method
35.		3rd	Do
36.		4th	Explain centrifugal casting such as true centrifugal casting,
37.	10th	1st	Types discussion
38.		2nd	centrifuging with advantages, limitation and area of application
39.		3rd	Explain various casting defects with their causes and remedies
40.		4th	Define powder metallurgy process.

41.	11th	1st	State advantages of powder metallurgy technology technique
42.		2nd	Describe the methods of producing components by powder metallurgy technique
43.		3rd	Application
44.		4th	Strength against forming operations
45.	12th	1st	Explain sintering
46.		2nd	Economics of powder metallurgy
47.		3rd	Describe Press Works: blanking, piercing and trimming.
48.		4th	List various types of die and punch
49.	13th	1st	Explain simple, Compound & Progressive dies
50.		2nd	Do
51.		3rd	Describe the various advantages & disadvantages of above dies
52.		4th	Define jigs and fixtures, State advantages of using jigs and fixtures
53.	14th	1st	State the principle of locations
54.		2nd	Do
55.		3rd	Describe the methods of location with respect to 3-2-1 point location of rectangular jig
56.		4th	Do
57.	15th	1st	List various types of jig and fixtures.
58.		2nd	Revision
59.		3rd	Revision
60.		4th	Previous paper discussion

The lesson plan prepared by the concerned faculty

Michael Suveer

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GF, MECHANICAL DEPARTMENT

GOVERNMENT POLYTECHNIC,NUAPADA

Academic Lesson Plan for Winter semester- 2024-25

Name of the teaching faculty: Er. Michael Suveer **Department: Mechanical Engineering**

Semester: 5th **Subject: Entrepreneurship & Management Studies**

No. of periods per week: 4 **Total Periods: 60**

End semester exam: 80 **Class test: 20**

Total Marks : 100

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Concept /Meaning of Entrepreneurship
2.		2nd	Need of Entrepreneurship
3.		3rd	Characteristics, Qualities and Types of entrepreneur, Functions
4.		4th	Barriers in entrepreneurship
5.	2nd	1st	Entrepreneur's vs. Manager
6.		2nd	Forms of Business Ownership: Sole proprietorship, partnership forms and other
7.		3rd	Types of Industries, Concept of Start-ups
8.		4th	Entrepreneurial support agencies at National, State, District Level(sources): DIC, NSIC,OSIC, SIDBI,
9.	3rd	1st	NABARD, Commercial Banks, KVIC etc.
10.		2nd	Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks
11.		3rd	Business Planning
12.		4th	SSI, Ancillary Units, Tiny Units, Service sector Units
13.	4th	1st	Time schedule Plan, Agencies to be contacted for Project Implementation
14.		2nd	Procedure
15.		3rd	Assessment of Demand and supply and Potential areas of Growth
16.		4th	Identifying Business Opportunity
17.	5th	1st	Discussion of some practical examples
18.		2nd	Final Product selection
19.		3rd	Prelliminary project report
20.		4th	Detailed project report, Techno economic Feasibility
21.	6th	1st	Do
22.		2nd	Project Viability
23.		3rd	Definitions of management, Principles of management
24.		4th	Functions of management (planning, organising, staffing,)
25.	7th	1st	directing and controlling etc.)
26.		2nd	Level of Management in an Organisation
27.		3rd	4 levels of discussion
28.		4th	Production management
29.	8th	1st	Types
30.		2nd	Inventory Management
31.		3rd	Types
32.		4th	Financial Management
33.	9th	1st	Do
34.		2nd	Marketing Management
35.		3rd	Concept of marketing
36.		4th	Human Resource Management
37.	10th	1st	Do
38.		2nd	Leadership
39.		3rd	Qualities

40.		4th	Do
41.	11th	1st	Motivation
42.		2nd	Theories of motivation
43.		3rd	Do
44.		4th	Human relationship and Performance in Organization
45.	12th	1st	Relations with Peers, Superiors and Subordinates
46.		2nd	TQM concepts: Quality Policy, Quality Management, Quality system
47.		3rd	Accidents and Safety, Cause, preventive measures, General Safety Rules ,
48.		4th	Personal Protection Equipment(PPE)
49.	13th	1st	Intellectual Property Rights(IPR), Patents, ,
50.		2nd	Trademarks
51.		3rd	Copyrights
52.		4th	Do
53.	14th	1st	Features of Factories Act 1948 with Amendment (only salient points)
54.		2nd	Features of Payment of Wages Act 1936 (only salient points)
55.		3rd	Concept of IOT, How IOT works
56.		4th	Components of IOT,
57.	15th	1st	Characteristics of IOT, Categories of IOT
58.		2nd	Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare,
59.		3rd	Smart Industry, Smart Agriculture, Smart Energy Management etc
60.		4th	Revision

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Academic Lesson Plan for Winter semester- 2024-25

Name of the teaching faculty: Er. Michael Suveer **Department: Mechanical Engineering**

Semester: 5th **Subject: Mechatronics**

No. of periods per week: 4 **Total Periods: 60**

End semester exam: 80 **Class test: 20**

Total Marks: 100

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Definition of Mechatronics, Advantages & disadvantages of Mechatronics
2.		2nd	Application of Mechatronics, Scope of Mechatronics in Industrial Sector
3.		3rd	Components of a Mechatronics System, examples of different Mechatronics system
4.		4th	Importance of mechatronics in automation
5.	2nd	1st	Defination of Transducers, Classification of Transducers
6.		2nd	Electromechanical Transducers, Transducers Actuating Mechanisms
7.		3rd	Velocity and motion sensors
8.		4th	force and pressure sensors
9.	3rd	1st	Temperature and light sensor
10.		2nd	Displacement &Positions Sensors
11.		3rd	Mechanical Actuators, Machine, Kinematic Link,
12.		4th	Kinematic Pair, Mechanism
13.	4th	1st	Slider crank Mechanism,Gear Drive
14.		2nd	Spur gear, Bevel gear, Helical gear, worm gear
15.		3rd	Examples of all types of gears arrangement
16.		4th	Belt, types of belts
17.	5th	1st	Belt drives,classification
18.		2nd	Power transmission in belt drives
19.		3rd	Bearings, types of bearings
20.		4th	Journal bearing,foot step bearings
21.	6th	1st	Electrical Actuator with Diagrams
22.		2nd	Switches,its types and working
23.		3rd	Relay and its function
24.		4th	Solenoid valve and its function
25.	7th	1st	D.C Motors and A.C Motors
26.		2nd	Its types and working principle
27.		3rd	Comparison between two motors
28.		4th	Stepper Motors and its working
29.	8th	1st	Specification and control of stepper motors
30.		2nd	Servo Motors D.C & A.C
31.		3rd	Working of servo motors
32.		4th	Introduction, Advantages of PLC
33.	9th	1st	Selection and uses of PLC
34.		2nd	Input/output Processing and Programming
35.		3rd	Architecture basic internal structures
36.		4th	Mnemonic
37.	10th	1st	Master and Jump Controllers

38.		2nd	Introduction to Numerical Control of machines
39.		3rd	NC machines AND CNC machines
40.		4th	CAD/CAM , CAD,CAM
41.	11th	1st	Software and hardware for CAD/CAM
42.		2nd	Functioning of CAD/CAM system
43.		3rd	Features and characteristics of CAD/CAM system
44.		4th	Application areas for CAD/CAM
45.	12th	1st	elements of CNC machines
46.		2nd	Introduction to Machine Structure
47.		3rd	Guideways/Slide ways
48.		4th	Introduction and Types of Guideways
49.	13th	1st	Factors of design of guideways
50.		2nd	Drives and Spindle drives
51.		3rd	Feed drive
52.		4th	Spindle and Spindle Bearings
53.	14th	1st	Definition and Function
54.		2nd	laws of robotics
55.		3rd	Types of industrial robots
56.		4th	Explanation of industrial roborts
57.	15th	1st	Robotic systems
58.		2nd	Advantages and Disadvantages of robots
59.		3rd	Previous Semester question discussion 1
60.		4th	Previous Semester question discussion 2

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Academic Lesson Plan for Winter semester- 2024-25

Name of the teaching faculty: Er. Michael Suveer **Department: Mechanical Engineering**

Semester: 3rd **Subject: Workshop-II**

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	Revision of 1st year
2		2nd	Safety precaution
3		3rd	Fitting shop equipment study
4		4th	Do
5		5th	**(Fitting practices)** Preparation of caliper
6		6th	Raw material cutting practice
7	2nd	1st	Do
8		2nd	Submission of job
9		3rd	Preparation of try square
10		4th	Raw material cutting practice
11		5th	Do
12		6th	Do
13	3rd	1st	Do
14		2nd	Do
15		3rd	Submission of job
16		4th	Preparation of hammer
17		5th	Square
18		6th	Hexagonal
19	4th	1st	Geometrical concepts
20		2nd	Do
21		3rd	Do
22		4th	Do
23		5th	Do
24		6th	Job submission
25	5th	1st	**(Smithy Practices)**
26		2nd	Smith shop equipments
27		3rd	Preparation of door ring with hook
28		4th	Do
29		5th	Do
30		6th	Do
31	6th	1st	Do
32		2nd	Job submission
33		3rd	Preparation of hexagonal head bolt
34		4th	Do
35		5th	Do
36		6th	Do
37	7th	1st	Do
38		2nd	Do
39		3rd	Do
40		4th	Job submission
41		5th	Preparation of octagonal flat chisel
42		6th	Do
43	8th	1st	Do
44		2nd	Do

45		3rd	Do
46		4th	Do
47		5th	Do
48		6th	Job submission
49	9th	1st	**(Carpentry Practices),**
50		2nd	Equipment study
51		3rd	Woods for practice
52		4th	Cutting of slot, botch
53		5th	Preparation of mortise Joint
54		6th	Do
55	10th	1st	Preparation of Tenon Joint
56		2nd	Do
57		3rd	Job submission
58		4th	Preparation of single dove tail joint
59		5th	Woods used
60		6th	Dovetail making practice
61	11th	1st	Do
62		2nd	Do
63		3rd	Do
64		4th	Do
65		5th	Job submission
66		6th	**(Welding Practice)**
67	12th	1st	Electrode used
68		2nd	Joining procedure
69		3rd	Butt Joint using Arc Welding
70		4th	Do
71		5th	Do
72		6th	Do
73	13th	1st	Do
74		2nd	Job submission
75		3rd	Lap Joint using ARC Welding
76		4th	Do
77		5th	Do
78		6th	Do
79	14th	1st	Do
80		2nd	Do
81		3rd	Do
82		4th	JOB SUBMISSION
83		5th	Lap Joint using Gas Welding
84		6th	Do
85	15th	1st	Do
86		2nd	Do
87		3rd	Do
88		4th	Do
89		5th	FINAL job submission
90		6th	Student viva voce test

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Academic Lesson Plan for winter semester- 2024-25

Name of the teaching faculty: Michael Suveer Department:Mechanical Engineering

Semester: 1st/2nd Subject: : Workshop Practice

No. of periods per week: 4 Total Periods: 60

Sl. No	Week	Period	Topic to be covered
1	1st	1st	Demonstrate safety practices in the fitting shop.
2		2nd	Do
3		3rd	Do
4		4th	Select suitable holding & clamping devices for fitting jobs
5		5th	Do
6		6th	Do
7	2nd	1st	Select suitable tools like- files, vice, chisels, punch, scriber, hammers, surface plate, V-block, try square, caliper etc.
8		2nd	Do
9		3rd	Do
10		4th	Demonstrate the following operations: Sawing, Chipping, Fitting, Craping,.
11		5th	Demonstrate the following operations: Grinding, Marking, Reaming,
12		6th	Demonstrate the following operations: Tapping, Drilling & Angular cutting.
13	3rd	1st	Introduction of chipping, demonstration on chipping and its applications.
14		2nd	Do
15		3rd	Practical verification
16		4th	Description, demonstration and practice of simple operation of hack saw straight and angular cutting
17		5th	Do
18		6th	Do
19	4th	1st	Introduction and use of measuring tools used in fitting shop like steel rule, measuring tape,.
20		2nd	outside micrometer, vernier caliper and vernier height gauge
21		3rd	Do
22		4th	Description and Demonstration and practice of thread cutting using taps and dies. Job: Cutting & fitting practice on a square of 50mm X 50mm X 8mm MS FlatJob: H-fitting in the mild steel (ms) square. Job: Prepare one job on male female fitting.
23		5th	Job: Angular cutting practice of 45 degree (on the above job).
24		6th	. Job: Preparation of stud (to cut external threads) with the help of dies (mm or BSW).
25	5th	1st	WELDING SHOP Introduction
26		2nd	Concept discussion
27		3rd	Do
28		4th	Introduction to welding, type of welding, common materials that can be welded, introduction to gas welding equipment
29		5th	types of flame, adjustment of flame, applications of gas welding,

30		6th	Welding tools & safety precautions.
31	6th	1st	Introduction to electric arc welding (AC & DC), practice in setting current & voltage for striking proper arc, precautions while using electric arc welding
32		2nd	Do.
33		3rd	Applications of arc welding. Introduction to polarity & their use.
34		4th	Demonstrate & use of the different tools used in the welding shop with sketches, Hand shield, helmet, clipping hammer
35		5th	gloves, welding lead, connectors, aprons, goggles, etc
36		6th	Do
37	7th	1st	Demonstrate of welding defects & various types of joints & end preparation.
38		2nd	Do
39		3rd	Job: Preparation of lap joint by arc welding rod.
40		4th	Do
41		5th	Job: Preparation of Tee joint by arc welding.
42		6th	Do
43	8th	1st	Job: Gas welding practice on worn-out & broken parts.
44		2nd	Job: Preparation of single V or double V butt joint by electric arc welding.
45		3rd	Do
46		4th	Job: Brazing practice. Use of Spelt or (on MS sheet pieces).
47		5th	Do
48		6th	Do
49	9th	1st	Turning shop introduction
50		2nd	Do
51		3rd	Do
52		4th	Safety precaution & safety equipments
53		5th	Do
54		6th	Do
55	10th	1st	Various marking, measuring, cutting & holding tools.
56		2nd	Demonstration of different parts of a lathe
57		3rd	Demonstration on centering & turning operation in a group of 06 students.
58		4th	Job: plain turning, taper turning
59		5th	grooving practices on round bar
60		6th	Do

The lesson plan is **prepared by concerned faculty**

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