

GOVERNMENT MILLENNIUM POLYTECHNIC, CHAMBA
 DEPARTMENT OF APPLIED SCIENCES & HUMANITIES
 SUBJECT : MATHEMATICS II
 SESSION : JAN-MAY 2025

LECT NO	NAME OF THE CHAPTER	CONTENT TO BE TAUGHT	LEARNING OBJECTIVES
1		Introduction and discussion on the contents of the syllabus and distribution of marks etc.	
2		Introduction to Matrices, Types of Matrices, algebra of Matrices	
3		Introduction to Determinant, minor, co-factors in a Determinant	
4	DETERMINANT AND MATRICES	Miscellaneous questions on Matrices and Determinant	The students are expected to acquire necessary background in Determinants and Matrices so as to appreciate the importance of the Determinants as the factors that scale different parameterizations so that they all produce same overall integrals, i.e. they are capable of encoding the inherent geometry of the original shape.
5		Elementary properties of Determinant upto 3rd Order	
6		Miscellaneous questions on Elementary properties of Determinant upto 3rd Order	
7		Miscellaneous questions on Linear equations, Crammer rule	
8		Miscellaneous questions on Crammer rule.	
9	DETERMINANT AND MATRICES	DCS	
10		Miscellaneous questions on Crammer rule.	
11		DCS	
12		Inverse of a Matrix	
13	INTEGRAL CALCULUS	Miscellaneous questions on Inverse of a Matrix	
14		Matrix Inverse method to solve a system of linear equations in 3-variable	
15		Miscellaneous questions on Matrix Inverse method to solve a system of Linear equations in 3-variable	
16		DCS	
17		Introduction to Integration, Integration as a inverse operation of differentiation	
18		Simple integration by Substitution	
19		Miscellaneous questions on Integration by substitution and simple integration.	
20		Integration by Parts	
21		Miscellaneous questions on Integration by Parts	
22		Integration by Partial Fraction (For Linear Factors only)	
23		Miscellaneous questions on Integration by Partial Fraction (For Linear Factors only).	
24		Revision on miscellaneous question for class test-I	
25	INTEGRAL CALCULUS	DCS	
26		Revision on miscellaneous question for class test-I	
27		Revision on miscellaneous question for class test-I	
28		Class Test-I	
29		Use of formulae $\int_0^{\pi/2} \sin^n x dx, \int_0^{\pi/2} \cos^n x dx, \int_0^{\pi/2} \sin^m x \cos^n x dx$, for solving problems where m and n are positive integers.	
30		Miscellaneous questions on Use of Standard Integral formulae	
31		Application of Integration to Evaluation of area bounded by a curve and axes.	
32		Sample problems on Application of Integration for Evaluation of area bounded by a curve and axes.	
33		DCS	
34		Application of integration for calculation of Volume of a solid formed by revolution of an area about axes.	
35		Simple problems on Application of Integration for calculation of Volume of a solid formed by revolution of an area about axes.	
36		Revision on miscellaneous question of method of Integration (Substitution method)	
37		Revision on miscellaneous question of method of Integration (by parts method)	
38	INTEGRAL CALCULUS	DCS	
39		Revision on miscellaneous question of method of Integration (Partial fraction method)	
40		Revision on Miscellaneous questions on Use of Standard integral formulae	

The students are expected to learn
 'The cumulative effect of the
 original quantity or equation is
 the Integration'.

		IN
41	Revision on Simple problems on Application of Integration for Evaluation of area bounded by a curve and axes.	
42	Revision on Simple problems on Application of Integration for calculation of Volume of a solid formed by revolution of an area about axes.	
43	DCS	
44	Introduction to Geometry, its connection with Algebra , Basics of Co-ordinate Geometry	
45	Slope of a line, various method to find the slope of a line	
46	Equation of straight line parallel to x axis , parallel to y-axis, point slope form , Miscellaneous questions	
47	Equation of straight line in slope-intercept form , intercept form, two point form, Miscellaneous Questions	
48	DCS	
49	Revision on miscellaneous question for class test-II.	
50	Revision on miscellaneous question for class test-II.	
51	Class Test-II	
52	Equation of straight line in normal form,symmetric form, general form of equation of straight line,Miscellaneous questions	
53	Intersection of two straight lines, Miscellaneous questions	
54	Angle between two lines,Miscellaneous questions	
55	Parallel and perpendicular lines, Perpendicular distance formulae, Miscellaneous questions	
56	DCS	
57	Circle, various terms related to circle . General equation of circle and its characteristics	
58	Equation of circle , given : Centre and radius	
59	Equation of circle , given : Three points lying on it	
60	Equation of circle , given : Co-ordinates of end points of a diameter	
61	DCS	
62	Definition of Conics(Parabola , Ellipse, Hyperbola)	
63	Standard equation of parabola . Miscellaneous questions on parabola when focus , directrices, vertices are given	
64	Standard equation of Ellipse. Miscellaneous questions on Ellipse when foci , directrices, vertices are given	
65	Standard equation of Hyperbola . Miscellaneous questions on Hyperbola when foci , directrices, vertices are given	
66	DCS	
67	Revision on miscellaneous question for House test	
68	Revision on miscellaneous question for House test	
69	Revision on miscellaneous question for House test	
70	House Test	
71	Introduction to Differential Equation, Order and Degree of a Differential Equation	
72	Miscellaneous questions on Order and Degree of a Differential Equation	
73	Solution of first order and first degree differential equation by Variable separable methods	
74	Miscellaneous questions on solution of first order and first degree differential equation by Variable separable methods	
75	DCS	
76	Revision test of UNIT-I	
77	Revision test of UNIT-II	
78	Revision test of UNIT-III	
79	Revision test of UNIT-IV	
80	DCS	

Amandeep
 Signature Of Teacher

KM
 Signature OF IC
 (Applied Sciences)

Department of Applied Science & Humanity, 2nd Semester
FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING :- Lesson plan for the Session Jan-May, 2025

Lecture No.	Topics
1	Unit-1: Overview of Electronic Components & Signals (12 Hrs) 15 Marks
2	Basic Introduction
3	Introduction of Passive Components: R,L,C
4	Introduction of Active Components: Diodes, Transistors, FET
5	MOS and CMOS and their Applications
6	Signals: DC/AC
7	Voltage/current
8	Periodic/nonperiodic signals
9	Average, rms, peak values
10	Different types of signal waveforms
11	Ideal/non-ideal voltage/current sources
12	Independent/dependent voltage sources
13	Independent/dependent current sources
14	Unit-2 : Overview of Analog Circuits (08 Hrs) 10 marks
15	Introduction to Operational Amplifiers
16	Ideal Op-Amp
17	Practical op amp
18	Op loop and closed loop configurations
19	Application of Op-Amp as amplifier
20	Adder
21	Differentiator
22	Integrator
23	Unit-3: Overview of Digital Electronics (10 Hrs) 20 Marks
24	Introduction to Boolean Algebra
25	Electronic Implementation of Boolean Operations
26	Gates-Functional Block Approach
27	Storage elements-Flip Flops-A
28	Functional block approach
29	Counters
30	Ripple Counter
31	Up/down and decade
32	Introduction to digital IC Gates
33	Digital IC Gates of TTL Type

Unit-4: Electric and Magnetic Circuits (12 Hrs) 20 marks

- 31 EMF, Current, Potential Difference
32 Power and Energy

33 M.M.F., magnetic force

34 Permeability, hysteresis loop

35 Reluctance, leakage factor

36 BH curve

37 Electromagnetic induction

38 Faraday's laws of electromagnetic induction, Lenz's law

39 Dynamically induced emf

40 Statically induced emf

41 Equations of self and mutual inductance

42 Analogy between electric and magnetic circuits

Unit-5: A.C. Circuits (14 Hrs) 25 marks

43 Cycle, Frequency

44 Periodic time

45 Amplitude, Angular velocity

46 RMS value, Average value

47 Form Factor, Peak Factor

48 Impedance, phase angle

49 Power factor

50 Mathematical and phasor representation of alternating emf 48 and current

51 Voltage and Current relationship in Star and Delta connections

52 A.C. in resistors

53 Inductors and capacitors

54 A.C in R-L series, R-C series

55 R-L-C series and parallel circuits

56 Power in A.C. Circuits, power triangle

Unit-6: Transformer and Machines (08 Hrs) 10 marks

57 Introduction to Machine

58 General construction and principle of core type of transformers

59 General construction and principle of shell type of transformers

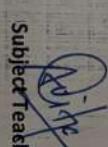
60 Emf equation

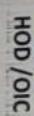
61 Transformation ratio of transformers

62 Auto transformers

63 Basic principle of Electromechanical energy conversion

64 Applications

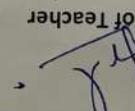

Subject Teacher


HoD /OIC

Lecture NO	Topic NO	Unit-1 : Basics of Ecology (4 hrs)
1	Structure of ecosystem, Biotic & Abiotic components Food chain and food web Aquatic food web Aquatic (Lentic and lotic) and terrestrial ecosystem	1 Structure of ecosystem, Biotic & Abiotic components Food chain and food web Aquatic food web Aquatic (Lentic and lotic) and terrestrial ecosystem
2	Carbon, Nitrogen Cycle Sulphur, Phosphorus cycle,	2 Carbon, Nitrogen Cycle Sulphur, Phosphorus cycle,
3	Global warming -Causes, process, effects, Green House Effect, Ozone depletion.	3 Global warming -Causes, process, effects, Green House Effect, Ozone depletion.
4	Unit- 2 : Air and, Noise Pollution (5 hrs)	4 Unit- 2 : Air and, Noise Pollution (5 hrs)
5	Definition of pollution and pollutant, Natural and manmade sources of air pollution(Refrigerants, I.C., Boiler)	5 Definition of pollution and pollutant, Natural and manmade sources of air pollution(Refrigerants, I.C., Boiler)
6	Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).	6 Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator).
7	Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants.	7 Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants.
8	I.C., Boiler, Noise pollution: sources of pollution, measurement of pollution level.	8 I.C., Boiler, Noise pollution: sources of pollution, measurement of pollution level.
9	Effects of Noise pollution, Noise pollution (Regulation and Control) Rules, 2000.	9 Effects of Noise pollution, Noise pollution (Regulation and Control) Rules, 2000.
10	Sources of water pollution, Types of water pollutants, Characteristics of water pollutants.	10 Sources of water pollution, Types of water pollutants, Characteristics of water pollutants.
11	Turbidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.	11 Turbidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation.
12	Waste Water Treatment: Primary methods: sedimentation, float flocculation	12 Waste Water Treatment: Primary methods: sedimentation, float flocculation
13	Secondary methods: Activated sludge treatment, Trickling filter, Bio-reactor	13 Secondary methods: Activated sludge treatment, Trickling filter, Bio-reactor
14	Tertiary Method: Membrane sepa- ration technology, RO (reverse osmosis).	14 Tertiary Method: Membrane sepa- ration technology, RO (reverse osmosis).
15	Causes, Effects and Preventive measures of Soil pollution.	15 Causes, Effects and Preventive measures of Soil pollution.
16	Causes-Excessive use of Fertilizers, Pesticides and insecticides, Irrigation, E-Waste.	16 Causes-Excessive use of Fertilizers, Pesticides and insecticides, Irrigation, E-Waste.
17	Solar Energy: Basics of Solar energy, Flat plate collector (Liquid & Air).	17 Solar Energy: Basics of Solar energy, Flat plate collector (Liquid & Air).
18	Theory of flat plate coil -lectrolyte, importance of coating, Advanced collector	18 Theory of flat plate coil -lectrolyte, solar dryer, Solar stills, Biomass: Overview of biomass as energy source.
19	Solar pond, Solar water heater, solar dryer, Solar stills, Biomass: Overview of biomass as energy source.	19 Solar pond, Solar water heater, solar dryer, Solar stills, Biomass: Overview of biomass as energy source.
20	Thermal characteristics of biomass as fuel, Aerobic digestion, Biogas production mechanism.	20 Thermal characteristics of biomass as fuel, Aerobic digestion, Biogas production mechanism.
21	Utilization and storage of biogas, Wind energy: Current status and future prospects of wind energy. Wind energy in India.	21 Utilization and storage of biogas, Wind energy: Current status and future prospects of wind energy. Wind energy in India.
22	Environmental benefits and problem of wind energy, New Energy Sources: Need of new sources.	22 Environmental benefits and problem of wind energy, New Energy Sources: Need of new sources.
23	Different types of new energy sources, Applications of Hydrogen energy, Clean energy resources.	23 Different types of new energy sources, Applications of Hydrogen energy, Clean energy resources.
24	Applications of tidal energy conversion, Concept, origin and power plants of geothermal energy.	24 Applications of tidal energy conversion, Concept, origin and power plants of geothermal energy.

Unit-5: Solid Waste Management, ISO 14000 & Environmental Management (8 hrs)	Solid waste generation- Sources and characteristics of : Municipal solid waste	E-waste, bio-medical waste. Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries.	Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill), Hazardous.	Waste Air quality act 2004, air pollution control act 1981 and water pollution and control act 1996.	Structure and role of Central and state pollution control board	Concept of Carbon Credit, Carbon Footprint	Environmental management in fabrication industry.	(Abhishek Vohra) Signature of Teacher	Signature of HOD 
32	ISO14000: implementation in industries, Benefits	31	Environmental management in fabrication industry.	30	Concept of Carbon Credit, Carbon Footprint	31	Environmental management in fabrication industry.	(Abhishek Vohra) Signature of Teacher	Signature of HOD 
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GMP Chamba (H.P)
Lecturer Chemistry
(Abhishek Vohra)
Signature of Teacher



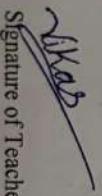
GMP Chamba (H.P)
Lecturer Chemistry
(Abhishek Vohra)
Signature of Teacher

Signature of HOD



Semester - II
ES102 (Introduction to IT Systems)
Subject plan for the Session Jan - June 2025

Lecture No.	Topic	(7hrs.)
	UNIT 1: Basics of Computer System	
1	Block Diagram of Computer System	
2	General Understanding of various hardware components- CPU	
3	Memory, Types of Memory	
4	Display Devices (CRT and LCD Monitors)	
5	Keyboard, Types of Keyboards	
6	Mouse, Types of Mouse	
7	Working, Components of Hard Disk Drive	
	UNIT 2: Software Concepts	(5hrs.)
8	Software and its types	
9	Operating System	
10	Types of Operating System	
11	Functions of Operating System	
12	Booting the system (Cold and warm)	
	UNIT 3: Internet Skills	(7hrs.)
13	Understanding the terminology of internet-web browser	
14	Search Engine, Examples of Search Engine	
15	World Wide Web(WWW)	
16	Types of Networks	
17	Awareness about the government portals (state portals)	
18	Awareness about the government portals (national portals)	
19	Awareness about institute portals	
	UNIT 4: Working with MS- Word	(5hrs.)
20	File Management (Creating new document, saving a document)	
21	Printing a document	
22	Editing a document, use of Home ribbon.	
23	Use of Insert ribbon	
24	Use of Design Layout ribbon	
	UNIT 5: Working with MS- Excel	(5hrs.)
25	Working with spread sheets, entering data into the cells	
26	Merging cells, Formula bar	
27	Usage of simple functions such as sum, average, min, max	
28	Usage of simple functions such as percentage, round, floor, ceiling	
29	Conditional formatting of cells	
	UNIT 6: Information Security	(3hrs.)
30	Concept of online frauds	
31	Threats of online crime	
32	Virus attacks and use of antivirus	


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Lesson Plan

Name of the Faculty : Sh. Omkar Singh
Semester : 2nd Civil Engg. (N-22 Scheme) and Mechatronics (N-22 Scheme)
Subject : Engineering Workshop Practice (Carpentry)
Duration : 14 Weeks

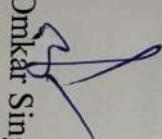
Work load per week 03Hrs Practical + DCS 03 Hrs

Week	Group of the Discipline	Practical Topic
1 st	Group-1	Demonstration of different wood working Tools
	Group-2	
2 nd	Group-3	
	Group-4	
3 rd	Group-5	Demonstration of different wood working Machines
	Group-1	
4 th	Group-2	
	Group-3	
5 th	Group-4	Demonstration of different wood working Processes Plaining
	Group-5	
6 th	Group-1	Demonstration of different wood working Processes Marking
	Group-2	
7 th	Group-3	Demonstration of different wood working Process Turning of wood
	Group-4	
	Group-5	
	Group-1	Job Practice on wood Half Lap Joint

8th	Group-2	Job Practice on wood Half Lap Joint
	Group-3	
9th	Group-4	
	Group-5	Job Practice on wood T-Half Lap Joint
10th	Group-1	
	Group-2	
11th	Group-3	Job Practice on wood T-Half Lap Joint
	Group-4	
11th	Group-5	
	Group-1	
11th	Group-2	
	Group-3	Making of Job by Students by use of
12th	Group-4	above Techniques
	Group-5	
12th	Group-1	
	Group-2	Making of Job by Students by use of
12th	Group-3	above Techniques
	Group-4	
13th	Group-1	
	Group-2	Making of Job by Students by use of
13th	Group-3	above Techniques
	Group-4	
14th	Group-5	Making of Job by Students by use of
	Group-1	above Techniques
14th	Group-2	



HOD/OIC



Sh. Omkar Singh

W/S Instructor Carpentry

Lesson Plan

Name of the Faculty : Sh. Neel Singh

Semester : 1st (N-22 Scheme)

Subject : Engineering Workshop Practice welding

Duration : 14 Weeks

Work load per week : 03Hrs Practical. + 03 Hrs DCS

Week	Group of the Discipline	Practical Topics
1 st	Group-3	Demonstration of different Welding
	Group-4	Tools
2 nd	Group-5	
	Group-1	
3 rd	Group-2	Demonstration of different Welding
	Group-3	Machines
4 th	Group-4	
	Group-5	
5 th	Group-1	
	Group-2	
6 th	Group-3	Demonstration on Arc Welding
	Group-4	
7 th	Group-5	
	Group-1	
	Group-2	
	Group-3	Demonstration on Gas Welding,
	Group-4	
	Group-5	
	Group-1	
	Group-2	
	Group-3	Demonstration on MIG Welding and
	Group-4	MAG Welding

8 th	Group-5		
	Group-1		
	Group-2		
9 th	Group-3	Job Practice of Gas cutting	
	Group-4		
	Group-5		
10 th	Group-1		
	Group-2		
	Group-3	Job Practice of rebuilding broken parts with welding	
11 th	Group-4		
	Group-5		
12 th	Group-1		
	Group-2	Job Practice of Making Lap Joint	
	Group-3		
	Group-4		
	Group-5		
13 th	Group-1		
	Group-2		
	Group-3	Making a Job by Students use of above Techniques	
14 th	Group-4		
	Group-5		
	Group-1		


 Sh. Neel Singh
 W/S Instructor Welding


 OIC

Lesson Plan/ Demonstration Plan

Name of the Faculty : Ajay Sharma
Semester : 2nd (N-22 Scheme)
Subject : Engineering Workshop Practice Sheet Metal
Duration : 14 Weeks

Work load per week : 03Hrs Practical. + 03 Hrs DCS

Week	Group of the Discipline	Practical Topics
1st	Group-4	Introduction of sheet metal workshop
	Group-5	
2 nd	Group-1	Demonstration of different Sheet Metal Tools & Machines
	Group-2	
3 rd	Group-3	Demonstration on Sheet Metal Operation Like sheet cutting, bending, Edging, soldering & brazing, riveting
	Group-4	
4 th	Group-5	Demonstration on Sheet metal cutting machine
	Group-1	
5 th	Group-2	Demonstration of soldering & riveting
	Group-3	
6 th	Group-4	Demonstration of soldering & riveting
	Group-5	
7 th	Group-1	Demonstration of soldering & riveting
	Group-2	
	Group-3	Demonstration of soldering & riveting
	Group-4	
	Group-5	

8 th	Group-1	
	Group-2	
	Group-3	
9 th	Group-4	One simple job involving sheet metal operation like sheet cutting, bending, curling.
	Group-5	
10 th	Group-1	
	Group-2	
11 th	Group-3	
	Group-4	Job Practice of riveting
12 th	Group-5	
	Group-1	
	Group-2	
13 th	Group-3	
	Group-4	Job Practice of soldering
	Group-5	
14 th	Group-1	
	Group-2	
	Group-3	
	Group-4	Making a Job by Students use of above Techniques
	Group-5	
	Group-1	
	Group-2	

OIC
Ajay Sharma

W/S Instructor Sheet Metal

Lesson Plan

Name of the Faculty : Sh. Vijay kumar
Semester : 2nd (N-22 Scheme)
Subject : Engineering Workshop Practice Fitting

Duration : 14 Weeks

Work load per week : 03Hrs Practical. + 03 Hrs DCS

Week	Group of the Discipline	Practical Topic
1 st	Group-2	Demonstration of different Fitting Tools
	Group-3	
	Group-4	
2 nd	Group-5	
	Group-1	
	Group-2	Demonstration of different Drilling machines and power tools
3 rd	Group-3	
	Group-4	
	Group-5	
4 th	Group-1	
	Group-2	Demonstration of operations cutting and sawing
	Group-3	
5 th	Group-4	
	Group-5	
	Group-1	
6 th	Group-2	Demonstration of operations chipping and filling
	Group-3	
	Group-4	
7 th	Group-5	
	Group-1	
	Group-2	Demonstration of operations Drilling and Tapping on mild steel workpiece
8 th	Group-3	
	Group-4	
	Group-5	
9 th	Group-1	
	Group-2	Job Practice (cutting of mild steel workpiece)
	Group-3	
10 th	Group-4	

10 th	Group-5	Job Practice (cutting of mild steel workpiece)
11 th	Group-1	Job Practice (chipping and filing of mild steel workpiece Drilling on mild steel workpiece)
12 th	Group-2	Job Practice (Tapping on mild steel workpiece)
13 th	Group-3	Job Practice (Tapping on mild steel workpiece)
14 th	Group-4	Job Practice (Tapping on mild steel workpiece)
	Group-5	Job Practice (Tapping on mild steel workpiece)
	Group-1	Job Practice (Tapping on mild steel workpiece)
	Group-2	Job Practice (Tapping on mild steel workpiece)
	Group-3	Job Practice (Tapping on mild steel workpiece)

Vijay
OIC

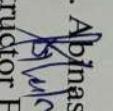
Sh. Vijay kumar

W/S Instructor Fitting

Lesson Plan**Name of the Faculty :** Sh. Abinash thakur**Semester :** 2nd (N-22 Scheme)**Subject :** Engineering Workshop Practice Electrical**Duration :** 14 Weeks**Work load per week :** 03Hrs Practical + 03 Hrs DCS

Week	Group of the Discipline	Practical Topic
1 st	Group-5	One lamp controlled by one switch
	Group-1	
2 nd	Group-2	Lamp circuit connection of lamp and socket by separate switches
	Group-3	
3 rd	Group-4	Connection of tube light
	Group-5	
4 th	Group-1	Simple lamp install bedroom lighting
	Group-2	
5 th	Group-3	Simple lamp circuit install stair case wiring
	Group-4	
6 th	Group-5	Demonstration of measurement of current ,voltage,power and energy and Demonstration of tools used in electrical wiring
	Group-1	
7 th	Group-2	Demonstration of measurement of current ,voltage,power and energy and Demonstration of tools used in electrical wiring
	Group-3	
8 th	Group-4	Demonstration of measurement of current ,voltage,power and energy and Demonstration of tools used in electrical wiring
	Group-5	
9 th	Group-1	Demonstration of measurement of current ,voltage,power and energy and Demonstration of tools used in electrical wiring
	Group-2	
10 th	Group-3	Demonstration of measurement of current ,voltage,power and energy and Demonstration of tools used in electrical wiring
	Group-4	

10 th	Group-3 Group-4	Demonstration of measurement of current ,voltage,power and energy and Demonstration of tools used in electrical wiring
11 th	Group-1 Group-2 Group-3	Demonstration of advance power tools
12 th	Group-4 Group-5	
13 th	Group-2 Group-3 Group-4 Group-5	Demonstration of pneumatic tools and accessories
14 th	Group-1 Group-3 Group-4	Tools for cutting and drilling

Sh. Abinash thakur

 W/S Instructor Electrical