# Govt. Polytechnic Talwar
## Distt. Kangra H.P. 176096
## Lesson Plan
## (Labs/Workshop)

| Name of Teacher:- Nemjel Choudhary | | Designation:- Senior Lecturer(AS&H) | | |
|---|---|---|---|---|
| Name of Lab/Workshop:- Applied Physics-II Lab | | Class/Branch:- Automobile Engg/ 2nd Semester | Group:- G2 | |
| Sr. No. | Description of Practical job | | Date | Remarks |
| 1 | To verify Ohm's law by plotting graph between current and potential difference | | 28-01-2026<br>04-02-2026 | |
| 2 | To verify laws of resistances in series and parallel combination | | 11-02-2026<br>18-02-2026 | |
| 3 | To verify Kirchhoff's laws using electric circuits | | 25-02-2026<br>11-03-2026 | |
| 4 | To draw V-I characteristics of a semiconductor diode (Ge, Si) and determine its knee voltage | | 18-03-2026<br>25-03-2026 | |
| 5 | To find resistance of a galvanometer by half deflection method | | 01-04-2026<br>08-04-2026 | |
| 6 | To convert a galvanometer into an ammeter | | 22-04-2026 | |
| 7 | To convert a galvanometer into a voltmeter | | 29-04-2026 | |
| 8 | To determine and verify the time period of a cantilever | | 13-05-2026<br>20-05-2026 | |

Signature of Teacher

Signature of HOD

# Govt. Polytechnic Talwar
## Distt. Kangra H.P. 176096
## Lesson Plan
## (Labs/Workshop)

| Name of Teacher:- Nemjel Choudhary | Designation:- Senior Lecturer(AS&H) | Group:- G1 |
|---|---|---|
| Name of Lab/Workshop:- Applied Physics-II Lab | Class/Branch:- Automobile Engg/ 2nd Semester | |

| Sr. No. | Description of Practical Job | Date | Remarks |
|---|---|---|---|
| 1 | To verify Ohm's law by plotting graph between current and potential difference | 02-02-2026 | |
| 2 | To verify laws of resistances in series and parallel combination | 09-02-2026<br>16-02-2026 | |
| 3 | To verify Kirchhoff's laws using electric circuits | 23-02-2026<br>02-03-2026 | |
| 4 | To draw V-I characteristics of a semiconductor diode (Ge, Si) and determine its knee voltage | 09-03-2026<br>16-03-2026 | |
| 5 | To find resistance of a galvanometer by half deflection method | 23-03-2026<br>30-03-2026 | |
| 6 | To convert a galvanometer into an ammeter | 06-04-2026<br>13-04-2026 | |
| 7 | To convert a galvanometer into a voltmeter | 20-04-2026<br>27-04-2026 | |
| 8 | To determine and verify the time period of a cantilever | 11-05-2026<br>18-05-2026 | |

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# LESSON PLAN

**Name of Teacher :- Nemjel Choudhary  Subject: Applied Physics -II  Class: 2nd Semester Automobile Engg.**

| S. No. | Month | Week | Date | Name of Chapter | Contents to be taught | Remarks |
|---|---|---|---|---|---|---|
| 1 | Jan | 5th Week | 28,29 | Wave motion and its applications | Introduction, Wave motion, transverse and longitudinal waves with examples, definitions of wave velocity, frequency and wave length | |
| 2 | Feb. | 1st week | | | | |
| 3 | | 2nd week | 2,3,4,5 | Wave motion and its applications | Sound and light waves and their properties, wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference ,Principle of superposition of waves and beat formation | |
| 4 | | 3rd week | 9,10,11,12 | Wave motion and its applications | Simple Harmonic Motion (SHM): definition, expression for displacement, velocity, acceleration, time period, frequency etc. Free, Forced and Resonant Vibrations and their Examples | |
| 5 | | 4th week | 16,17,18,19 | Wave motion and its applications and Optics | Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound, methods to control reverberation time and their applications. and Ultrasonic wave , basic law optics | |
| 6 | | 5th Week | 23,24,25,26 | Optics | reflection and refraction, refractive index, Images and image formation by mirrors, lens and thin lenses, lens formula, power of lens, magnification. | |
| 7 | March | 1st week | 2,3,5 | Optics | Total internal reflection, Critical angle and conditions for total internal reflection, applications of total internal reflection in optical fibe | |
| 8 | | 2nd week | 9,10,11,12 | Optics | Optical Instruments- simple and compound microscope, astronomical telescope in normal adjustment and their magnifying powers | Class Test - I |
| 9 | | 3rd week | 16,17,18,19 | Optics & Electrostatics | astronomical telescope in normal adjustment and their magnifying powers , Coulomb's law, unit of charge. | |
| 10 | | 4th Week | 23,24,25 | Electrostatics | Electric field, Electric lines of force and their propertiesm,Capacitor and its working, | |
| 11 | | 5th week | 30,31 | Electrostatics | Capacitance and its units. Capacitance of a parallel plate capacitor, Series and parallel combination of capacitors (related numerical), dielectric and its effect on capacitance, dielectric break down | |

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|---|---|---|---|---|---|---|
| 12 | April | 1st week | 1,2 | Current Electricity | Electric Current and its units, Direct and alternating current,Resistance and its units, Specific resistance, Conductance, Specific conductance, Series and parallel combination of resistances. Factors affecting resistance of a wire, carbon resistances and colour coding | |
| 13 | | 2nd week | 6,7,8,9 | Current Electricity | Ohm's law and its verification, Kirchhoff's laws,Concept of terminal potential difference and Electro motive force (EMF), Heating effect of current, Electric power, Electric energy and its units (related numerical problems), Advantages of Electric Energy over other forms of energy | Class Test - II |
| 14 | | 3rd week | 13,16 | Electromagnetism | Types of magnetic materials: dia, para and ferromagnetic with their propertiesMagnetic field and its units, magnetic intensity, magnetic lines of force, magnetic flux and units, magnetization Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor | |
| 15 | | 4th Week | 20,21,22,23 | Semiconductor Physics | Energy bands in solids, Types of materials (insulator, semi-conductor, conductor), intrinsic and extrinsic semiconductors ,p-n junction, junction diode and V-I characteristics | |
| 16 | | 5th week | 27,28,29,30 | Semiconductor Physics | Diode as rectifier – half wave and full wave rectifier (centre taped) ,Photocells, Solar cells; working principle and engineering applications | |
| 17 | May | 1st week | | | | |
| 18 | | 2nd week | **House Test** | | | |
| 19 | | 3rd week | 11,12,13,14 | Modern Physics | Lasers: Energy levels, ionization and excitation potentials; spontaneous and stimulated emission; population inversion, pumping methods, optical feedback. Types of lasers; Ruby, He-Ne and semiconductor, laser characteristics, engineering and medical applications of lasers | |
| 20 | | 4th Week | 18,19,20,21 | Modern Physics | laser characteristics, engineering and medical applications of lasers ,Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture,fiber types, applications in; telecommunication | |
| 21 | | 5th week | 25,26 | Modern Physics | Revision | |

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Govt. Polytechnic Talwar
Distt. Kangra H.P. 176096

## Lesson Plan

Session: January 2026 - June 2026

| Name of Teacher:- Nemjel Choudhary | Designation:-Senior Lecturer (AS&H) | Group:G1 |
|---|---|---|
| Name of Lab/Workshop:- Engineering Mechanics Lab | Class/Branch:- 2nd Sem/Auto Engg. | |

| Sr. No. | Name of Practical | Date | Remarks |
|---|---|---|---|
| 1 | To study various equipment related to Engineering Mechanics. | 05-02-2026 | |
| 2 | To find the M.A., V.R., Efficiency and law of machine for Differential Axle and Wheel. | 19-02-2026 | |
| 3 | To find the M.A., V.R., Efficiency and law of machine for Simple Screw Jack. | 26-02-2026 | |
| 4 | Derive Law of machine using Worm and worm wheel | 05-03-2026 | |
| 5 | Determine resultant of concurrent force system applying Law of Polygon of forces using forcetable. | 12-03-2026 | |
| 6 | Determine resultant of concurrent force system graphically. | 19-03-2026 | |
| 7 | Determine resultant of parallel force system graphically. | 02-04-2026 | |
| 8 | Verify Lami's theorem. | 09-04-2026 | |
| 9 | Study forces in various members of Jib crane. | 16-04-2026 | |
| 10 | Determine support reactions for simply supported beam. | 23-04-2026 | |
| 11 | Obtain support reactions of beam using graphical method. | 30-04-2026 | |
| 12 | Determine coefficient of friction for motion on horizontal and inclined plane. | 07-05-2026 | |
| 13 | Determine centroid of geometrical plane figure | 14-05-2026 | Revision-21/5 |

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# Govt. Polytechnic Talwar
## Distt. Kangra H.P. 176096
## Lesson Plan
Session: January 2026 - June 2026

| Name of Teacher:- Nemjel Choudhary | Designation:-Senior Lecturer (AS&H) | Group:G2 |
|---|---|---|
| Name of Lab/Workshop:- Engineering Mechanics Lab | Class/Branch:- 2nd Sem/Auto Engg. | |

| Sr. No. | Name of Practical | Date | Remarks |
|---|---|---|---|
| 1 | To study various equipment related to Engineering Mechanics. | 07-02-2026 | |
| 2 | To find the M.A., V.R., Efficiency and law of machine for Differential Axle and Wheel. | 12-02-2026 | |
| 3 | To find the M.A., V.R., Efficiency and law of machine for Simple Screw Jack. | 21-02-2026 | |
| 4 | Derive Law of machine using Worm and worm wheel | 28-02-2026 | |
| 5 | Determine resultant of concurrent force system applying Law of Polygon of forces using forcetable. | 07-03-2026 | |
| 6 | Determine resultant of concurrent force system graphically. | 28-03-2026 | |
| 7 | Determine resultant of parallel force system graphically. | 18-04-2026 | |
| 8 | Verify Lami's theorem. | 25-04-2026 | |
| 9 | Study forces in various members of Jib crane. | 25-04-2026 | |
| 10 | Determine support reactions for simply supported beam. | 02-05-2026 | |
| 11 | Obtain support reactions of beam using graphical method. | 02-05-2026 | |
| 12 | Determine coefficient of friction for motion on horizontal and inclined plane. | 16-05-2026 | |
| 13 | Determine centroid of geometrical plane figure | 23-05-2026 | |

Signature of Teacher

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# LESSON PLAN

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|---|---|
| **Name of Faculty** | **Rajni Sharma** |
| **Department** | **Applied Science & Humanities** |
| **Semester** | **2nd (Automobile Engg.)** |
| **Subject** | **Mathematics - II** |
| **Lesson Plan for the Duration** | **27 Jan. 2026 to 27 May 2026** |

| Week | Unit | Details |
|---|---|---|
| 1st (27Jan. - 02Feb.) | Determinants | Determinants: Elementary properties of determinants upto 3rd order, consistency of equations, Crammer's rule. |
| 2nd (03 Feb. - 09 Feb.) | Matrices | Matrix: Algebra of matrices, Inverse of a matrix, matrix |
| 3rd(10 Feb.- 17 Feb.) | Matrices | Matrix: Matrix inverse Method to solve a system of linear equations in 3 variables. |
| 4th (18 Feb. - 24Feb.) | Intergral Calculus | Intergration as inverse operation of differentiation. |
| 5th (25 Feb. - 03 Mar.) | Intergral Calculus | Simple intergration by substitution, by parts and by partial fraction(for linear factors only. |
| 6th(05 Mar. - 11 Mar.) | Intergral Calculus | Use of formulas for solving problems. When m, are positive integers. |
| 7th (12 Mar. -19 Mar.) | Intergral Calculus | Applications for: (i) simple problems on evaluation of area bounded by a curve and axis . |
| 8th (20 Mar. - 28 Mar.) | Intergral Calculus | Applications for: (ii)Calculation of volume of a solid formed by revolution of an area about axis. |
| 9th (30 Mar. - 06 April) | Co-ordinate Geometry | Co-ordinate Geometry<br>Equations of straight lines in various standard forms (without proof), intersection of two straight lines . |
| 10th (07 April - 16 April) | Co-ordinate Geometry | Angle between two lines .Parallel and perpendicular lines,Perpendicular Distance formula |
| 11th (17 April - 23 April) | Co-ordinate Geometry | General equation of a circle and its characteristics. To find the equation of a circle given: center and radius, Three points lying on it, coordinates of end points of a diameter. |
| 12th (24 April - 30 May) | Co-ordinate Geometry | Definition of conics( parabola,Ellipse,Hyperbola) their standard equations without proof. |
| 13th (02 May - 08 May) | Co-ordinate Geometry | Problems on conics when their foci, directrices or vertices are given. |
| **House Test Second Week of May** | | |
| 14th(18 May - 26 May) | Differential Equations | Solution of first order and first degree differential equation by variable separation |

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GP Talwar

Dept. of Applied Science

Lession Plan Subject: FEEE

Civil/AutomobileEngg. 2nd Semester Session : 27th Jan to 27 th May 2026

Total theory periods /week: 4

| S.no/unit | Month /week | Lecture | | Reference books |
|---|---|---|---|---|
| 1 | Jan/4th | 1 | UNIT I :Overview of Electronic Components & Signals:introduction | 1.Basic Electronics and linear Circuits |
| | | 2 | Passive Components: Resistances, Capacitors, Inductors. | By:NN Bhargava |
| | | 3 | Active Components: Transistors, FET, MOS | |
| | | 4 | Active Components: CMOS and their Applications. | |
| | Feb/1st | 5 | Signals: DC/AC, voltage/current, periodic/non- periodic signals | |
| | | 6 | average, rms, peak values, different types of signal waveforms | |
| | | 7 | Ideal/non-ideal voltage/current sources. | |
| | | 8 | independent/dependent voltage current sources. | |
| 2 | Feb/2nd | 9 | UNIT II: Overview of Analog Circuits :Introduction | 2.Basic Electrical and Electronics Engineering |
| | | 10 | Operational Amplifiers-Ideal Op-Amp, | |
| | | 11 | Practical op amp, Open loop and closed loop configurations | By: Jegathesan |
| | | 12 | Application of Op-Amp as amplifier. | |
| | Feb/3rd | 13 | Application of Op-Amp as amplifier, adder. | |
| | | 14 | Application of Op-Amp as differentiator and integrator. | |
| 3 | Feb/3rd | 15 | UNIT III :Overview of Digital Electronics: Introduction to Boolean Algebra | |
| | | 16 | Electronic Implementation of Boolean Operations | |
| | Feb/4th | 17 | Gates-Functional Block Approach | |
| | | 18 | Storage elements-Flip Flops-A Functional block approach | |
| | | 19 | Counters:Ripple | |
| | | 20 | Up/Down counter | |
| | Mar /1st | 21 | Decade counter | |
| | | 22 | Introduction to digital IC gates (TTL types) | |
| 4 | Mar /1st | 23 | Unit IV :Electric and Magnetic Circuits:Introduction | |
| | | 24 | EMF, Current, Potential Difference, | |
| | Mar/2nd | 25 | Power and energy | 3. Basic Electrical Engineering |
| | | 26 | M.M.F, magnetic force, permeability, | |
| | | 27 | hysteresis loop, reluctance, leakage factor | By: Ritu Sahdev |
| | | 28 | BH curve,Electromagnetic induction | |
| | Mar /3rd | 29 | Faraday's laws of electromagnetic induction,Lenz'S law | |
| | | 30 | Dynamically induced emf; Statically induced emf | |
| | | 31 | Equations of self and mutual inductance. | |
| | | 32 | Analogy between electric and magnetic circuits. | |
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|---|---|---|---|---|
| | Mar /4th | 33 | Unit V: A.C. Circuits:*Introduction* | 4.Digital Electronics |
| | | 34 | Cycle, Frequency, Periodic time, Amplitude, Angular velocity, | By: K S Jamwal |
| | | 35 | RMS value, Average value, Form Factor, Peak Factor | |
| | | 36 | impedance, phase angle, and power factor | |
| | April /1st | 37 | Mathematical and phasor representation of alternating emf and current | |
| | | 38 | Voltage and Current relationship in Star and Delta connections | |
| | | 39 | A.C in resistors, inductors and capacitors | |
| | | 40 | A.C in R-L series, R-C series | |
| | April /2nd | 41 | A.C in R-C series | |
| | | 42 | A.C in R-L-C series . | 5.Fundamentals of Operational Amplifiers & Applications |
| 6 | April /2nd | 43 | A.C in R-L-C parallel circuits. | By: Dr.K.R.Valluvan) |
| | | 44 | Power in A. C. Circuits. | |
| | April/3rd | 45 | Power in A. C. Circuits, power triangle. | |
| | | 46 | Unit VI :Transformer and Machines:Introduction | 6.Fundamental of Electrical and |
| | April /4th | 47 | General construction and principle of core | Electronics Engg. |
| | | 48 | General construction and principle of shell type of transformers; | By: Avnish Paul |
| | May/1st | 49 | Emf equation and transformation ratio of transformers | |
| | | 50 | Auto transformers | |
| | | 51 | Basic principle of Electromechanical energy conversion. | 7.Fundamental of Electrical and |
| | May/2nd | | House test | Electronics Engg. |
| | May/3rd | 53 | Revision | By: R S Barwal and R.Choudhary |
| | | 54 | Revision | |
| | | 55 | Revision | |
| | May/4th | 56 | Revision | |

Vijay Singh Raghwa
Lecturer Electronics

HOD

**Govt. Polytechnic Talwar**

**Department of Applied sciences and humanities**

**LESSON PLAN**

**lame of Teacher :-** Vinay Kumar Guleria **Subject:** Engg. Mechanics **Class:** 2nd sem Semester Auto Eng

| S. No. | No. of Lectures | Name of Chapter | Contents to be taught | Remarks |
|---|---|---|---|---|
| 1 | 12 | **Unit- 1 Basics of Mechanics & Force System** | Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics. Space, time, mass, particle, flexible body and rigid body. Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derivedunits. Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force, Principle of transmissibility of force, Force system and its classification. Resolution of a force - Orthogonal components of a force, moment of a force, Varignon's Theorem. Composition of forces – Resultant, analytical method for determination of resultant for concur- rent, non-concurrent and parallel co-planar force systems – Law of triangle, parallelogram and polygon of forces. | |
| 2 | 11 | **Unit- 2 Equilibrium** | Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical meth-ods of analyzing equilibrium. Lami's Theorem – statement and explanation, Application for various engineering problems. Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical point load, uniformly distributed load), Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load. Beam reaction graphically for simply supported beam subjected to vertical point loads only. | |
| 3 | 11 | **Unit- 3 Friction** | Friction and its relevance in engineering, types and laws of friction, limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose, relation between co-efficient of friction and angle of friction. Equilibrium of bodies on level surface subjected to force parallel and inclined to plane. Equilibrium of bodies on inclined plane subjected to force parallel to the plane only. | |
| 4 | 11 | **Unit 4 - Centre of Gravity** | Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle). Centroid of composite figures composed of not more than two geometrical figures.Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre ofGravity of composite solids composed of not more than two simple solids. | |
| 5 | 11 | **Unit- 5 Simple Lifting Machines** | Simple lifting machine, load, effort, mechanical advantage, applications and advantages. Velocity ratio, efficiency of machines, law of machine. Ideal machine, friction in machine, maximum Mechanical advantage and efficiency,conditions for reversibility.Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Simple screw jack | |

27/1/2026

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**GOVT.POLYTECHNIC TALWAR**

**DEPARTMENT OF APPLIED SCIENCES AND HUMANITIES**

**LESSON PLAN**

Name of Teacher :- Nidhi Katoch  Subject: Environmental Science  Class: 2nd Semester Automobile Engg.

| S.N. | Month | Week | Date | Name of Chapter | Contents to be taught | Remarks |
|---|---|---|---|---|---|---|
| 1 | January | 5th week | 30 | UNIT - I: Ecosystem | Structure of ecosystem, Biotic & Abiotic components Food chain and food web | |
| 2 | February | 1st week | 2,6 | | Aquatic (Lentic and Lotic) and terrestrial ecosystemCarbon, Nitrogen, Sulphur, Phosphorus cycle. | |
| 3 | | 2nd Week | 9,13 | | Global warming -Causes, effects, process, Green House Effect, Ozone depletion. | |
| 4 | | 3rd week | 16,20 | Unit– 2 Air and, Noise Pollution | Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler) , | |
| 5 | | 4th week | 23,27 | | Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler. | |
| 6 | March | 1st week | 2,6 | | Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollu-tion, Noise pollution (Regulation and Control) Rules, 2000 | |
| 7 | | 2nd Week | 9,13 | | Sources of water pollution, Types of water pollutants, Characteristics of water pollutants Tur-bidity, pH, total suspended solids, total solids BOD and COD | Class Test - I |
| 8 | | 3rd week | 16,20 | Unit- 3 Water and Soil Pollution | Definition, calculation. 62 Waste Water Treatment: Primary methods: sedimentation, froth floatation, Secondary meth- ods: Activated sludge treatment, | |
| 9 | | 4th week | 23,27 | | Trickling filter, Bioreactor, Tertiary Method: Membrane separation technology, RO (reverse osmosis). | |
| 9 | | 5th week | 30 | | Causes, Effects and Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste. | |
| 10 | April | 2nd Week | 6,10 | | Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate col- lector. | Class -Test -II |
| 11 | | 3rd week | 13,17 | Unit– 4 Renewable sources of Energy | Importance of coating. Advanced collector. Solar pond. Solar water heater, solar dryer.Solar stills.Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion. | |
| 12 | | 4th week | 20,24 | | Biogas production mechanism. Utilization and storage of biogas. Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy. | |
| 13 | | 5th week | 27 | | New Energy Sources: Need of new sources. Different types new energy sources. Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.) Concept, origin and power plants of geothermal energy | |
| 14 | May | 1st week | 4,8 | Unit-5 Solid Waste Management, ISO 14000 & Environmental Management | 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. | |
| | | 2nd Week | | | | House Test |
| 15 | | 3rd week | 18,22 | | 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 act1996.Structure and role of Central and state pollution control board. | |
| | | 4th week | 25 | | Concept of Carbon Credit, Carbon Footprint. Environmental management in fabrication industry.ISO14000: Implementation in industries, Benefits. | |

Nidhi 27/01/2026

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