LESSON PLAN

Program Name	Diploma (Auto Engg., Archi Asst., Civil Engg., Computer Engg. & Electrical Engg)
Course/Subject Name	Environmental Science
Course/Subject Code	AU102(Theory)
Course/Subject Coordinator Name	Mrs. Puja Verma

Evaluation scheme

S.No.	Subject Name	Study Scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
1.	Environmental Science	2(Theory)	40	-	60	-

Reference books		
	(i)	S C Sharma & M.P. Poonia, Environmental Studies, Khanna Publishing House, New Delhi
	(ii)	C.N.R Rao, Understanding Chemistry, University Press (India) Pvt. Ltd. 2011
	(iii)	Nazaroff, William, Cohen,Lisa , Envir Engi. Sci. Willy New York, 2000, ISBN10: 0471144940
	(iv)	OP Gupta, Elements of Environmental Pollution Control, Khanna Publishing House New Delhi
	(v)	Keshav Kant , Air Pollution and Control, Khanna Publishing House, New Delhi (2018)
Open Source Software and Website Address	(i)	www.eco-prayer.org
	(ii)	www.cpcp.nic.in
	(iii)	www.indianenvironmentalportal.org.in

Course Outcomes: After the completion of the course the student will be able to:

CO1	Understand the ecosystem and terminology and solve various engineering problems by applying ecosystem knowledge to produce eco friendly products.
CO2	Understand the suitable air, extent of noise pollution , and control measure and acts.
CO3	Understand the water and soil pollution , and control measure and acts.
CO4	Understand different renewable energy resources and use efficient process of harvesting.
CO5	Understand solid waste management , ISO 140000 & environmental management.

Teaching Plan:

Lecture No.	Name of topic	Actual date	Remarks
1	**Unit-1 Ecosystem:** Structure of ecosystem, biotic and abiotic component.		
2	Food chain and food web, Aquatic and terrestrial ecosystem (lentic and lotic)		
3	Carbon, nitrogen, sulphur and phosphorus cycle.		
4	Global warming (cause, effect and process), green house effect and ozone depletion.		
5	**Unit-2 Air and Noise Pollution:** Pollution and pollutant (definition), source of air pollution(natural and man made. Air pollutant (types).		
6	Particulate pollutants: Effects and control (Bag filter, cyclone separator & electrostatic precipitator).		
7	Gaseous pollution control (Absorber, catalytic converter).		
8	Effects of air pollution due to refrigerants, I.C, Boiler. Noise Pollution (Source).		
9	Noise Pollution (Measurement and effects),Noise Pollution Rules 2000 (Regulation and control)		
10	**Unit-3 Water and Soil Pollution:** Water pollution(Source), water pollutants types & Characteristics (turbidity, pH, total suspended solids (definition and calculation)).		
11	Water pollutants Characteristics BOD and COD (definition and calculation)).		
12	Waste water treatment (Primary methods: sedimentation & froth floatation).		
13	Secondary methods: Activated Sludge treatment, trickling filter and bioreactor)		
14	Waste water treatment (Tertiary methods: membrane separation technology and RO (reverse osmosis))		
15	Soil pollution (Causes, effect and preventive measure), causes: excessive use of fertiliser, pesticite and insecticide, irrigation and e-waste.		
16	**Unit-4 Renewable Source of energy:** Solar energy (basics).Theory of Flat plate collector (liquid & air).		
17	Importance of coating, advanced collector, solar(pond, water heater, dryer &stills)		
18	Biomass(as energy source, thermal characteristics as fuel, anaerobic digestion). Biogas (production mechanism & utilization and storage).		
19	Wind energy (current status and future prospects, environmental benefits and problems), Wind energy in India		
20	New energy sources (Need, types), Applications (Hydrogen energy, ocean energy, tidal energy)		
21	Geothermal energy (Concept, origin and power plants)		

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22	Unit-5 Solid waste management, ISO 14000 & environmental management: Solid waste source & characteristics (Municipal, e waste, biomedical).
23	Industries metallic and non metallic waste(lubricants, plastic and rubber).
24	Collection & disposal : MSW(3R, principles, energy recovery, sanitary landfill), Hazardous Waste.
25	Air quality act 2004, air pollution control act 1981. Water pollution & control act 1996.
26	Structure and role of central and state pollution control board. Carbon credit concept, carbon footprint.
27	Environmental management in fabrication industry.
28	ISO 14000: Implementation in industry and benefits.

Assignments:

Assignment serial	Contents of syllabus covered	Proposed	Actual date	Remarks
A-1	Ecosystem, Air and noise Pollution	2nd week of March 2025		
A-2	Water and Soil Pollution, Renewable Source of Energy	2nd Week of April 2025		
A-3	Solid Waste Management, ISO 14000 & Environmental management	1st Week of May		

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed/ Academic Calander	Actual date	Remarks
CT-I	30% of the syllabus	3rd Week of March 2025		
CT-II	Next 30% of the syllabus	3rd Week of April 2025		
House Test	80% of the syllabus	2nd Week of May 2025		

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Signature of Teacher
27/1/2025
(PUJA VERMA)

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Sr. No.	Week	Name of the Chapter	Contents to be taught	Actual Date when content was taught	Remarks (If any)
1	1st	Determinants	Introduction,Definition of Determinant,Value of determinant of order2x2 and concept of minors and cofactors. Problems of 2x2 derminants regarding finding the value,minors and cofactors.		
2		Determinants	Value of determinant of order 3x3 .Problems of 3x3 derminants regarding finding the value,minors and cofactors. Sarrus method to find the value of 3x3 determinant.Properties of Determinants		
3		Determinants	Problems to evaluate the value of determinants without expanding,i.e., by using properties of derminants.Application of Determinants in solving a system of non-homogenous & Non-homogenous linear equations in two and three variables,i.e., Cramer's Rule.		
4		Determinants	Application of Determinants in solving a system of homogenous linear equations in two and three variables,i.e., Cramer's rule. And problems of solving a system of homogenous linear equations.		
5		Matrices	Introduction,Definition of Matrices, Order of a Matrix, Types of Matrices,i.e., Square Matrix , Row matrix , Column Matrix ,Zero Matrix , Diagonal Matrix, Scalar Matrix and Unit Matrix. Equal Matrices and operation on Matrices, i.e., Addition and Subtraction of two Matrices .Problems related to Equal Matrices and operation on Matrices, i.e., Addition and Subtraction of two Matrices.		
6		Matrices	Construction of a Matrix whose ij th element is given,and problems related to commutativity. Associativity, existance of identity and existance of inverse over the operation addition.		
7		Matrices	Matrix Multiplication and problems of matrices related to matrix multiplication. Matrix Polynomial and also problems related to matrix polynomial.		
8	2nd	Matrices	Transpose of a matrix , Symmetric and Skew- Symmetric Matrices.Problems related to express a square matrix as sum of symmetric and skew-symmetric matrix.		
9		Matrices	Adjoint and Inverse of a Matrix, Problems related to find adjoint and inverse of a Matrix.		
10		Matrices	Matrix Method to solve a system of non-homogenous linear equations and problems related to matrix method.		
11		Matrices	Matrix Method to solve a system of homogenous linear equations and problems related to matrix method.		
12	3rd	Matrices and Determinants	Miscellaneous Problems related to Matrices and Determaints.		
13		Matrices and Determinants	Revision of the unit.		
14		Integral Calculus	Introduction, Definition and basic formulae of integrations and simple problems		
15		Integral Calculus	Integration by the method substitution and problems based on this method.		
16		Integral Calculus	Integration by the method partial fraction (for linear factors only) and problems based on this method.		
18	4th	Integral Calculus	Integration by the method by parts and problems based on this method.		
19		Integral Calculus	Revision to prepare the students for class test		
20		Integral Calculus	Problems of integration to be solved by the method integrating by parts		
21		Integral Calculus	Integration of Trigonometric functions by using trigonometric formulae.		
22		Integral Calculus	Various Problems of integration		
23	5th	Integral Calculus	Some special methods of integrating trigonometric functions		
24		Integral Calculus	Definite integral, Definite integral as limit of a sum and simple problems related to definite integrals.		
25		Integral Calculus	Properties of Definite Integrals and problems based on properties of definite integrals.		
26		Integral Calculus	Problems to evaluate definite integarls		
27		Integral Calculus	Standard formulae to evaluate special type of trigonometric intrgrals .		
28	6th	Integral Calculus	Various Problems of integration		
29		Integral Calculus	Various Problems of integration		
30		Integral Calculus	Application of integration to find the area under the curve and problems .		
31		Integral Calculus	Simple problems on evaluation of area bounded by a curve and axis.		
32		Integral Calculus	Application of integration to calculate volume of a solid formed by revolution of an area about axis.		
33	7th	Integral Calculus	Mixed problems of application of integartion.		
34		Integral Calculus	Revision of the chapter Application of Integration .		
35		Integral Calculus	Revision of the chapter Application of Integration .		
36		Integral Calculus	Revision of the chapter Application of Integration .		
37		Integral Calculus	Revision of the chapter Application of Integration .		
38	8th	Straight Line	Introduction, Slope of a Straight line, Condition for Parallel and Perpendicular lines and equation of a straight line in different forms ,i.e., point slope form,slope intercept form ,intercept form and two points form, normal form. Simples problems related to write the equation of straight lines.		
39		Straight Line	Reduction of the general equation of a straight line to various standard lines and various related problems.		
40		Straight Line	Angle between two lines, condition of concurrency of three lines and related problems.		
41		Straight Line	Problems related to find the equation of a line which is parallel /perpendicular to the given line,problems related to find the point of intersection of two straight lines.		
42		Straight Line	Revision of the chapter		
43	9th	Straight Line	Revision of the chapter		
44		Circle	Definition, equation of a circle in different forms. i.e., standard form, central form, general form ,diameter form and related problems.		
45		Circle	Miscellaneous Problems related to Straight lines and circles .Revision of Straight lines and circles .		

46		Circle	Definition, equation of a circle in different forms, i.e., standard form, central form, general form ,diameter form and related problems.		
47	10th	Circle	Miscellaneous Problems related to Straight lines and circles .Revision of Straight lines and circles .		
48		Circle	Miscellaneous Problems related to Straight lines and circles .Revision of Straight lines and circles		
49		Circle	Revision of the chapter		
50		Circle	Revision of the chapter		
51		Circle	Revision of the chapter		
52		Conics	Definition, Standard form and problems related to Parabola		
53	11th	Conics	Definition, Standard form and problems related to Ellipse		
54		Conics	Definition, Standard form and problems related to Hyperbola.		
55		Conics	Miscellaneous Problems related to Parabola, Ellipse and Hyperbola .		
56		Conics	Revision of the unit(Parabola, Ellipse and Hyperbola).		
57		Conics	Revision of the chapter		
58	12th	Conics	Revision of the chapter		
59		Conics	Revision of the chapter		
60		Differential Equations	Introduction , Definition and Type of differential equations. Order and Degree of a Differential Equation		
61		Differential Equations	Linear and Non-linear Differential Equations and related problems.		
62		Differential Equations	Formation of Differentail equation and related problems.		
63	13th	Differential Equations	Solution of first order and first degree differential equation by variable separable method.		
64		Differential Equations	Homogeneous equations and solution of homogenous equations.		
65			Revision to prepare the students for Final Examination		
66			Revision to prepare the students for Final Examination		
67			Revision to prepare the students for Final Examination		
68	14th		Revision to prepare the students for Final Examination		
69			Revision to prepare the students for Final Examination		
70			Revision to prepare the students for Final Examination		

Subject Teacher

HOD
Applied Sci. & Hum.

LESSON PLAN

Program Name	CIVIL ENGG
Course/Subject Name	Applied Physics-II
Course/Subject Code	BS-104 & BS-106
Course/Subject Coordinator Name	Monika

Evaluation scheme

S.No.	Subject Name	Study scheme (Hrs/Week)	Marks in evaluation scheme			
			Internal Assessment		External Assessment	
			Theory	Practical	Theory	Practical
I.	Applied physics-II & Applied Physics-II lab	TH [3+1(DCS) + 2 (Lab)	40	40	60	60
Reference books			(i) Fundamental of Physics By Halliday/Resnick/Walker			
			(ii) New simplified Physics by S.L.Arora			
			(iii) Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi			
			(iv) Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi			

Course Outcomes: After the completion of the course the student will be able to

CO1	Describe waves and wave motion, periodic and simple harmonic motions and solve simple problems.
CO2	Explain ultrasonic waves and engineering, medical and industrial applications of Ultrasonic. Apply acoustics principles to various types of buildings for best sound effect.
CO3	Describe the refractive index of a liquid or a solid and will be able to explain conditions for total internal reflection.
CO4	Define capacitance and its unit, explain the function of capacitors in simple circuits, and solve simple problems.
CO5	Differentiate between insulators, conductors and semiconductors, and define the terms: potential, potential difference, electromotive force.
CO6	Express electric current as flow of charge, concept of resistance, measure of the parameters: electric current, potential difference, resistance.
CO7	Explain the operation of appliances like moving coil galvanometer, simple DC motors.
CO8	Illustrate the conditions for light amplification in various LASER and laser based instruments and optical devices.
CO9	Appreciate the potential of optical fiber in fields of medicine and communication.

Teaching Plan:

Lecture No.	Topic Covered	Actual Date	Remarks
1	UNIT - 1: Wave motion and its applications- Wave motion, transverse and longitudinal waves with examples.		
2	Definitions of wave velocity, frequency and wavelength and their relationship		
3	Sound and light waves and their properties		
4	Wave equation ($y = r \sin \omega t$) amplitude, phase, phase difference, Principle of superposition of waves and beat formation		
5	Simple Harmonic Motion (SHM): definition, expression for displacement, velocity		
6	Acceleration, time period, frequency of SHM, Free, forced and		

#	Topic		
	resonant vibrations and their examples.		
7	Acoustics of buildings – reverberation, reverberation time, echo, noise, coefficient of absorption of sound		
8	Methods to control reverberation time and their applications.		
9	Ultrasonic waves – Introduction and properties, engineering and medical applications of ultrasonic.		
10	UNIT - 2: Optics -Basic optical laws- reflection and refraction		
11	Refractive index, Images and image formation by mirrors,		
12	Lens and thin lenses, lens formula, power of lens, magnification		
13	Total internal reflection, Critical angle and conditions for total internal reflection, applications of total internal reflection in optical fiber.		
14	Optical Instruments- simple and compound microscope		
15	Astronomical telescope in normal adjustment and their magnifying power		
16	UNIT - 3: Electrostatics- Coulomb's law, unit of charge.		
17	Electric field, Electric lines of force and their properties.		
18	Electric flux, Electric potential and potential difference		
19	Gauss's law		
20	Capacitor and its working, Capacitance and its units. Capacitance of a parallel plate capacitor		
21	Series and parallel combination of capacitors (related numerical)		
22	Dielectric and its effect on capacitance, dielectric break down		
23	UNIT - 4: Current Electricity- Electric Current and its units, Direct and alternating current.		
24	Resistance and its units, Specific resistance, Conductance, Specific conductance,		
25	Series and parallel combination of resistances.		
26	Factors affecting resistance of a wire, carbon resistances and color coding.		
27	Ohm's law and its verification		
28	Kirchhoff's laws, Concept of terminal potential difference and Electromotive force (EMF)		
29	Heating effect of current, Electric power, Electric energy and its units (related numerical problems)		
30	Advantages of Electric Energy over other forms of energy.		
31	UNIT - 5: Electromagnetism- Types of magnetic materials: dia, para and ferromagnetic with their properties.		
32	Magnetic field and its units, magnetic intensity, magnetic lines of force. magnetic flux and units, magnetization		
33	Lorentz force (force on moving charge in magnetic field), Force on current carrying conductor.		
34	Moving coil galvanometer; principle, construction and working		
35	Conversion of a galvanometer into ammeter and voltmeter.		
36	UNIT - 6: Semiconductor Physics-Energy bands in solids, Types of materials (insulator, semiconductor, conductor)		
37	Intrinsic and Extrinsic semiconductors. p-n junction		
38	Junction diode and V-I characteristics		
39	Diode as rectifier – half wave and full wave rectifier (center taped).		
40	Photocells, Solar cells; working principle and engineering applications.		
41	UNIT - 7: Modern Physics- Lasers: Energy levels, ionization and		

Monika

	excitation potentials; spontaneous and stimulated emission		
42	Population inversion, pumping methods, optical feedback.		
43	Types of lasers; Ruby, He-Ne Laser		
44	Semiconductor laser and engineering and medical applications of lasers. laser characteristics		
45	Fiber Optics: Introduction to optical fibers, light propagation, acceptance angle and numerical aperture		
46	Fiber types, applications in; telecommunication, medical and sensors.		

Assignments:

Assignment serial	Contents of syllabus covered	Proposed date	Actual date	Remarks
A-1	Wave motion and its applications & Optics			
A-2	Electrostatics & Current electricity			
A-3	Semiconductor & Modern Physics			

House Test/Class Test:

House/Class Test	Contents of syllabus covered	Proposed date	Actual date	Remarks
CT-I	30% of the syllabus	3rd week of March 2025		
CT-II	Next 30% of the syllabus	3rd week of April 2025		
House Test	80% of the syllabus	2ndweek of May2025		

Lab Plan:

Exp. No.	Name of experiment	Actual date G-1	G-2	Remarks
1	To determine and verify the time period of cantilever			
2	To verify laws of refraction (Snell's law) using a glass slab.			
3	To draw V & I characteristics of semiconductor diode (Ge, Si) and determine its Knee voltage			
4	To verify Ohm's law by plotting graph between current and potential difference.			
5	To verify laws of resistances in series and parallel combination.			
6	To verify Kirchhoff's laws using electric circuits.			
7	To find resistance of a galvanometer by half deflection method.			
8	To convert a galvanometer into an ammeter.			

(Signature of Teacher)   (Signature of HOD)