NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
NH-5, SERGARH-756060, BALASORE (ODISHA),
(Approved by AICTE and affiliated to SCTE&VT, Odisha)

LESSON PLAN FOR ENGG. PHYSICS

SL NO.	TOPIC	No. of Periods as per the Syllabus	No. of periods actually needed
1	UNITS & DIMENSIONS	03	03
2	SCALARS & VECTORS	03	03
3	KINEMATICS	06	06
4	WORK & FRICTION	05	05
5	GRAVITATION	05	05
6	OSCILLATIONS & WAVES	06	06
7	HEAT & THERMODYNAMICS	07	07
8	OPTICS	04	04
9	ELECTROSTATICS & MAGNETOSTATICS	07	07
10	CURRENT ELECTRICITY	06	06
11	ELECTROMAGNETISM & ELECTROMAGNETIC INDUCTION	05	05
12	MODERN PHYSICS	03	03
TOTAL		60	60

DISCIPLINE:BASIC SCIENCE	YEAR: FIRST	Name of the Teaching Faculty: Miss Basumati Behera
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	1st	Unit& Dimension: Definition of Physics, measurement, unit, physical quantities, fundamental quantities
	2nd	System of unit (C.G.S,M.K.S,F.P.S,M.K.S.A,S.I System),Matrix prefix, symbols, definition of dimension &dimensional Formula of physical quantities
	3rd	Dimensional equation & principle of homogeneity, checking the dimensional correctness of Physical relation
	4th	Scalar & vector: Definition of scalar &vector quantities, Representation of vector, types of vectors & example
	5th	Triangle law of vector addition, Parallelogram law of vector addition, Resolution vectors
	6th	Vector multiplication, Characteristics of Vector product, Characteristics of Scalar Product
2nd	1st	Kinematics: Concept of rest & motion, Definition & units & dimensional formula of displacement, speed, velocity, acceleration, force
	2nd	Equation of kinematics, Equation of gravity
	3rd	Circular motion, Definition & Units & dimensional formula of angular displacement, angular velocity, angular acceleration
	4th	Relation between- i)Linear &angular velocity, ii) Linear & Angular Acceleration
	5th	Definition & example of projectile, Derive Projectile fired in vertical upward & downward direction
	6th	Expression of equation of trajectory, Time of Flight, Maximum Height ,Horizontal Range for a Projectile fired at an angle, condition for maximum horizontal range
3rd	1st	Work & Friction: Definition & S.I. Units & dimensional formula of work , definition & concept of Friction
	2nd	Types of Friction, Limiting Friction
	3rd	Statement of laws of limiting Friction
	4th	Definition & formula of co-efficient friction, angle of repose, angle of friction
	5th	Method of reduce friction, advantages & disadvantages of reduce friction
	6th	Gravitation:

		Orbit, satellite, Solar system, Statement of Kepler's law of planetary motion
4th	1st	Statement & explanation of Newton's law of gravitation, unit & dimension of gravitation, universal gravitational constant (G)
	2nd	Definition of acceleration due gravity(g), Definition of mass & weight
	3rd	Relation between g & G, Variation of g with altitude
	4th	Variation of g with depth, simple numerical problem
	5th	Oscillation & waves: Definition & example of Simple Harmonic Motion
	6th	Characteristics of Simple Harmonic Motion(Amplitude, Displacement, Velocity, Acceleration, Time period, simple numerical problem
5th	1st	Definition & concept of Wave motion, Types of Wave motion, Transverse & Longitudinal wave motion, comparison between progressive wave & Stationary wave
	2nd	Definition of different wave parameters(amplitude, wave length, frequency, time period)
	3rd	Derivation of relation between velocity, frequency, wave length of wave
	4th	Definition, properties & application of Ultrasonic
	5th	Heat & Thermodynamics: Definition & difference of Heat & Thermodynamics, Units of heat (FPS,MKS,CGS,SI)
	6th	Definition, unit, dimension of specific heat, change of state, latent heat
6th	1st	Concept & definition of Thermal Expansion
	2nd	Expansion of solid, Co-efficient of linear, superficial, cubical of solid
	3rd	Relation between α, β, γ
	4th	Relation between work & heat, Definition of Joule's Mechanical Equivalent of Heat & units
	5th	Statement & derivation of 1st law of Thermodynamics
	6th	Optics: Definition of reflection & refraction, laws of reflection & refraction
7th	1st	Definition & formula of Refractive Index, simple numerical problem, Critical angle & Total Internal Reflection
	2nd	Ray diagram & formula of refraction through Prism

	3rd	Definition, Properties & application of Fiber Optics
	4th	Electrostatics & Magneto-statics: Definition of Electrostatics, Statement & expansion of Coulombs law, unit charge
	5th	Definition ,relation & unit of Absolute & Relative permittivity, Definition of electric potential & electric potential difference,
	6th	Definition, formula & unit of electric field, electric field intensity(E)
8th	1st	Definition & formula & unit of Capacitance ,Series & Parallel Combination of capacitance
	2nd	Definition of magnet, Properties of Magnet, magnetic field, magnetic field intensity
	3rd	Statement & explanation of Coulomb's laws in magnetism
	4th	Properties of Magnetic lines of Force, magnetic flux & magnetic Flux density(B)
	5th	Current Electricity: Definition, formula & unit of Electric Current
	6th	Definition & application of Ohm's law
9th	1st	Series & Parallel combination of resistor
	2nd	Statement & Explanation with diagram of Kirchhoff's law
	3rd	Application of Kirchhoff's law to Wheatstone bridge
	4th	Balanced condition of Wheatstone bridge, problem
	5th	Electromagnetism & Electromagnetic Induction: Definition of Electromagnetism, Force acting on a current carrying conductor placed in a uniform magnetic field
	6th	Fleming left hand rule & Fleming right hand rule
10th	1st	Comparison between Fleming left hand rule & right hand rule
	2nd	Statement of Faraday's law of Electromagnetic induction
	3rd	Statement & properties of Lenz's law
	4th	Modern Physics: Definition of LASER, Laser beam, Principle of laser
	5th	Properties & application of LASER
	6th	Definition of Wireless Transmission- ground wave, sky wave, space wave