Sir Padampat Singhania Education Centre
Kamla Nagar, Kanpur

Lesson Plan

Session 2021- 2022

Class: XI

Subject : Physics
Book : NCERT, SL Arora

Subject Coordinator
Name: Neeraj Chaube

Sign:

Subject Teachers
Name: Mr Neeraj Chaube
Mr Ashish Shukla
Mr Sanjeev Kumar

Sign:

Sir Padampat Singhania Education Centre
Kamla Nagar, Kanpur

Yearly Syllabus/Planning overview
Session: 2021 - 2022

Subject: Physics **Class:** XI **No. of periods:**

Month	Assessed in	Lesson/s to be covered	Period - Count
April	2021	Chapter–1: Physical World	5
May	2021	Chapter–2: Units and Measurements	7
July	2021	Chapter–3: Motion in a Straight Line 24 Chapter–4: Motion in a Plane	12 12
August	2021	Chapter–5: Laws of Motion Chapter–6: Work, Energy and Power	14 12
September	2021	Chapter–7: System of Particles and Rotational Motion	18
October	2021	Chapter–8: Gravitation Chapter–9: Mechanical Properties of Solids	12 08
November	2021	Chapter–10: Mechanical Properties of Fluids Chapter–11: Thermal Properties of Matter	10 08
December	2021	Chapter–12: Thermodynamics Chapter–13: Kinetic Theory	12 08
January	2022	Chapter–14: Oscillations Chapter–15: Waves	12 14
February	2022	Revision	

Sir Padampat Singhania Education Centre
Kamla Nagar, Kanpur
Monthly Syllabus/Planning overview
Session: 2021 - 2022

Subject: Physics **Class:** XI **No. of periods:**

Month	Date/Week		Lesson/s to be covered in classroom
	From	To	
April	19.4.21	24.4.21	Physics-scope and excitement; nature of physical laws;
	26.4.21	30.4.21	Physics, technology and society. Mathematical tools.
May	1.5.21	7.5.21	Units of measurement; systems of units; SI units, fundamental and derived units. Errors in measurement; significant figures. Dimensions of physical quantities, dimensional analysis and its applications.
	10.5.21	30.6.21	Summer Vacation
July	01.7.21	03.7.21	Motion in a straight line: Position-time graph, speed and velocity. Elementary concepts of differentiation and integration
	05.7.21	10.7.21	Uniform and non- uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity - time
	12.7.21	17.7.21	Scalar and vector quantities; general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, relative velocity, Unit vector
	19.7.21	24.7.21	Resolution of a vector in a plane, rectangular components. Scalar and Vector product of vectors.
	26.7.21	31.7.21	Motion in a plane; projectile motion, uniform circular motion.

August	02.8.21	7.8.21	Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion, Impulse, Newton's third law of motion.
	9.8.21	14.8.21	Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication.
	16.8.21	21.8.21	Dynamics of uniform circular motion: Centripetal force, examples of circular motion.
	23.8.21	28.8.21	Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Notion of potential energy, potential energy of a spring,
	30.8.21	31.8.21	Conservative forces: conservation of mechanical energy ; nonconservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.
September	01.9.21	08.9.21	Test-1
	08.9.21	10.9.21	Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod.
	13.9.21	18.9.21	Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.
	20.9.21	27.9.21	Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.
	28.9.21	02.10.21	Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.
October	04.10.21	9.10.21	Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.
	11.10.21	16.10.21	Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite, Geo-stationary satellites.
	18.10.21	23.10.21	Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus.
	25.10.21	12.11.21	Bulk modulus, shear modulus of rigidity, Poisson's ratio; elastic energy.
November	15.11.21	20.11.21	Pascal's law and its applications . Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity,
	22.11.21	27.11.21	Bernoulli's theorem and its applications. Surface energy and surface tension. Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases,

	29.11.21	30.11.21	Cp, Cv - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity.

Month	Date/Week		Lesson/s to be covered in classroom
	From	To	
December	01.12.21	04.12.21	Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. First law of thermodynamics,
	06.12.21	10.12.21	isothermal and adiabatic processes. Second law of thermodynamics, Heat engine and refrigerator. Equation of state of a perfect gas, Kinetic theory of gases - assumptions, concept of pressure.
	13.12.21	20.12.21	Test-2
	21.12.21	25.12.21	Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom. law of equi-partition of energy.
	27.12.21	31.12.21	Periodic motion - time period, frequency, displacement as a function of time, periodic functions. Simple harmonic motion (S.H.M) and its equation; phase;
	31.12.21	08.01.22	oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum. Free, forced and damped oscillations (qualitative ideas only), resonance.
January	10.01.22	15.01.22	Wave motion: displacement relation for a progressive wave, principle of superposition of waves, reflection of waves.
	17.1.22	22.1.22	standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect.
	24.1.22	29.1.22	Revision
	31.1.22	05.2.22	Revision
February	07.02.22	12.02.22	Revision
	14.02.22	19.02.22	Revision
	24.2.22	09.3.22	Annual Examination

Sir Padampat Singhania Education Centre

Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 1: 19th April to 24st April			**Period Count: 5**
PD1	Physics-scope and excitement		
PD2	Nature of physical laws	Numericals	
PD3	Technology and society.	Numericals	
PD4	Mathematical Tools	Numericals	
PD5	Mathematical Tools	Numericals	
WEEK 2: 26th April to 01st May			**Period Count: 6**
PD1	Need for measurement: Units of measurement; systems of units; SI units	Numericals	
PD2	Fundamental and derived units. Length, mass and time measurements;	Numericals	
PD3	accuracy and precision of measuring instruments; errors in measurement;	Revision at Home	
PD4	significant figures.	Numericals	
PD5	Dimensions of physical quantities	NCERT back Questions	
PD6	Continued	Numericals	

Subject coordinator Supervisor Principal/V. Principal

Sir Padampat Singhania Education Centre

Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 3: 3rd May to 8th May		**Period Count:5**	
PD1	Dimensional analysis	Numericals	
PD2	Applications of dimensional analysis; to check the correctness of the given formula	NCERT Questions	
PD3	To derive the relation amongst various physical quantities.	NCERT Questions	
PD4	To change the unit from one system to another	NCERT Questions	
PD5	Numericals	NCERT Questions	
WEEK 4: 1st July to 3rd July		**Period Count: 3**	
PD1	Frame of reference, Motion in a straight line	NCERT Questions	
PD2	Position-time graph, speed and velocity.	NCERT Questions	
PD3	Elementary concepts of differentiation and integration for describing motion.	Revise at Home	

10th may to 30th June Summer vacations

Sir Padampat Singhania Education Centre

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Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 5: 5th July to 10th july			**Period Count: 5**
PD1	Uniform and non- uniform motion.	NCERT Questions	
PD2	Average speed and instantaneous velocity, uniformly accelerated motion.	NCERT Questions	
PD3	velocity - time and position-time graphs.	NCERT Questions	
PD4	Relations for uniformly accelerated motion (graphical treatment).	Revise at Home	
PD5	Numericals		
WEEK 6: 12th July to 17th July			**Period Count: 6**
PD1	Scalar and vector quantities; position and displacement vectors, general vectors and their notations.	Conceptual questions	
PD2	Equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors.	NCERT Questions	
PD3	Relative velocity, Unit vector.	NCERT Questions	
PD4	Numericals		
PD5	Resolution of a vector in a plane, rectangular components.		
PD6	Numericals		

Holiday 10th July- Second Saturday

Subject coordinator Supervisor Principal/V. Principal

Sir Padampat Singhania Education Centre

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Weekly planning overview

Session: 2021- 2022

Subject : Chemistry **Class :** XIth

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 7: 19th July to 24th July		**Period Count: 5**	
PD1	Scalar and Vector product of vectors.		
PD2	Numericals		
PD3	Motion in a plane, cases of uniform velocity and uniform acceleration		
PD4	projectile motion introduction.		
PD5	Derivation of time of flight, maximum height, range and equation of trajectory.		
WEEK 8: 26th july to 31st July		**Period Count: 6**	
PD1	Numericals		
PD2	Numericals		
PD3	uniform circular motion Introduction.		
PD4	Derivation of centripetal acceleration and force.		
PD5	Numericals	NCERT questions	
PD6.	Revision		

Subject coordinator Supervisor Principal/V. Principal

Sir Padampat Singhania Education Centre

Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 9: 2nd August to 7th August		**Period Count: 6**	
PD1	Intuitive concept of force, Inertia, Newton's first law of motion.		
PD2	Momentum and Newton's second law of motion; impulse;	NCERT ques.	
PD3	Numericals		
PD4	Newton's third law of motion.		
PD5	Numericals		
PD6	Law of conservation of linear momentum and its applications.	NCERT questions	
WEEK 10: 9th August to 13th August		**Period Count: 5**	
PD1	Equilibrium of concurrent forces.	Examples	
PD2	Numericlas	Learn at Home	
PD3	Static and kinetic friction, laws of friction, rolling friction, lubrication.	Learn at Home	
PD4	Numericals		
PD5	Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).	NCERT questions	

HOLIDAY: 14th August SECOND SATURDAY

Subject coordinator Supervisor Principal/V. Principal

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Session: 2021- 2022

Subject : Physics **Class :** XIth

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 11: 16th August to 21st August		**Period Count: 5**	
PD1	Numericals based on Dynamics of uniform circular motion	Learn at Home	
PD2	Work done by a constant force and a variable force.	Learn at Home	
PD3	Kinetic energy, work-energy theorem, Numericals		
PD4	Power. Notion of potential energy, potential energy of a spring.	Numericals	
PD5	Numericals based on kinetic and potential energy	NCERT back questions	
WEEK 12: 23rd August to 28th August		**Period Count: 6**	
PD1	conservative forces and nonconservative forces.		
PD2	conservation of mechanical energy (kinetic and potential energies)	Learn at Home	
PD3	Motion in a vertical circle	Learn at Home	
PD4	Numericals based on Motion in a vertical circle	NCERT back questions	
PD5	Elastic and inelastic collisions in one and two dimensions.		
PD6	Numericals based on collision.		

Subject coordinator Supervisor Principal/V. Principal

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Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 13: 30th August to 4th Sept		**Period Count: 6**	
PD1	Centre of mass of a two-particle system, momentum conservation and centre of mass motion	Learn at Home	
PD2	Numericals	Learn at Home	
PD3	Test 1		
PD4	Test 1	Numericals	
PD5	Test 1	NCERT back questions	
PD6	Test 1		
WEEK 14: 6th Sept to 11th Sept		**Period Count: 5**	
PD1	Test 1		
PD2	Test 1	Learn at Home	
PD3	Test 1	NCERT back questions	
PD4	Moment of a force, torque.	NCERT back questions	
PD5	Angular momentum, law of conservation of angular momentum and its applications.		

1st Sept to 8th Sep – Test 1

11th Sept : Second saturday

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Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 15: 13th Sept to 18th Sept		**Period Count: 6**	
PD1	Equilibrium of rigid bodies.	Learn at Home	
PD2	Numericals based on Equilibrium of rigid bodies	Learn at Home	
PD3	Rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.		
PD4	Numericals	Numericals	
PD5	Moment of inertia	NCERT back questions	
PD6	Numericals		
WEEK 16: 20th sep to 25th Sep		**Period Count: 6**	
PD1	Radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).		
PD2	Statement of parallel and perpendicular axes theorems	Learn at Home	
PD3	Derivation of parallel and perpendicular axes theorems		
PD4	Applications	NCERT back questions	
PD5	Numericals	Numericals	
PD6	Numericals	Numericals	

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Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 17: 27th sep to 2nd Oct		**Period Count: 5**	
PD1	Kepler's laws of planetary motion	Learn at Home	
PD2	Universal law of gravitation.	Learn at Home	
PD3	Acceleration due to gravity and its variation with altitude and depth.		
PD4	Numericals	Numericals	
PD5	Gravitational potential energy and gravitational potential.	NCERT back questions	
2nd oct : Gandhi Jayanti			
WEEK 18: 4th Oct to 9th Oct		**Period Count: 5**	
PD1	Numericals based on Gravitational potential energy and gravitational potential.		
PD2	Escape velocity, orbital velocity of a satellite.	Learn at Home	
PD3	Numericals		
PD4	Geo-stationary satellites	NCERT back questions	
PD5	Weightlessness in a satellite		

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Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 19: 11th Oct to 16th Oct		**Period Count: 4**	
PD1	Elastic behavior of materials	Learn at Home	
PD2	Stress-strain relationship	Learn at Home	
PD3	Hooke's law, Young's modulus.	NCERT back questions	
PD4			
PD5			
Dussehra holidays: 14th Oct to 15th Oct			
Week-20; 18th oct to 23rd oct		**Period Count: 6**	
PD1			
PD2	Bulk modulus, shear modulus of rigidity.	Learn at Home	
PD3	Numericals	Revision	
PD4	Poisson's ratio; elastic energy.	Revise	
PD5			
PD6	Revision		

Half yearly examination: 25th Oct to 12th Nov

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Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 21: 15th Nov to 20th Nov		**Period Count: 6**	
PD1	Pascal's law and its applications	Learn at Home	
PD2	Viscosity Introduction	Learn at Home	
PD3	Stokes' law, terminal velocity		
PD4	Numericals	Numericals	
PD5	Streamline and turbulent flow, critical velocity	NCERT back questions	
PD6	Equation of continuity.		
WEEK 22: 22nd Nov to 27th Nov		**Period Count: 6**	
PD1	Bernoulli's theorem and its applications.		
PD2	Numericals	Learn at Home	
PD3	Surface energy and surface tension, angle of contact, excess of pressure across a curved surface		
PD4	Application of surface tension ideas to drops, bubbles and capillary rise.		
PD5	Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water.		
PD6	specific heat capacity; Cp, Cv - calorimetry.	NCERT back questions	

4th to 6th November Diwali Holiday

Sir Padampat Singhania Education Centre

Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 23: 29th Nov to 4th Dec		**Period Count: 6**	
PD1	change of state - latent heat capacity.	Learn at Home	
PD2	Heat transfer-conduction, convection and radiation, thermal conductivity.	Learn at Home	
PD3	qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law.		
PD4	Greenhouse effect	Numericals	
PD5	Numericals	NCERT back questions	
PD6	Numericals	NCERT back questions	
WEEK 24: 6th dec to 11th Dec		**Period Count: 5**	
PD1	Thermal equilibrium and definition of temperature (zeroth law of thermodynamics).		
PD2	Heat, work and internal energy. First law of thermodynamics.	Learn at Home	
PD3	Work done in thermodynamic process and its numericlas (P-V Graph)	Learn at Home	
PD4	Isothermal and adiabatic processes.		
PD5	Work done isothermal and adiabatic process.	NCERT questions	

Sir Padampat Singhania Education Centre

Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 25: 13th Dec to 18th Dec		**Period Count: 6**	
PD1	Test 2	Learn at Home	
PD2	Test 2	Learn at Home	
PD3	Test 2		
PD4	Test 2	Learn reactions	
PD5	Test 2	NCERT back questions	
PD6	Test 2		
11th Dec (Second Saturday) **13th Dec to 20th Dec- Test 2** **WEEK 26: 20th Dec to 25th Dec**		**Period Count:5**	
PD1	Second law of thermodynamics: reversible and irreversible processes.		
PD2	Heat engine, its working, derivation of its efficiency.	Learn at Home	
PD3	Refrigerator its working, derivation of its efficiency.		
PD4	Equation of state of a perfect gas, Kinetic theory of gases - assumptions, concept of pressure.		
PD5	Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only)	NCERT back questions	

25th Dec: Christmas Holiday

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Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 27: 27th Dec to 30th Dec		**Period Count: 4**	
PD1	Periodic motion - time period, frequency, displacement as a function of time, periodic functions. Simple harmonic motion (S.H.M)	Learn at Home	
PD2	Equations of SHM; phase.	Learn at Home	
PD3	Oscillations of a loaded spring- restoring force and force constant.		
PD4	Numericals	NCERT back questions	
31st Dec to 8th Jan : Winter break			
WEEK 28: 10th Jan to 15th jan		**Period Count: 5**	
PD1	Energy in S.H.M. Kinetic and potential energies		
PD2	Simple pendulum derivation of expression for its time period.	Learn at Home	
PD3	Free, forced and damped oscillations (qualitative ideas only), resonance.		
PD4	Numericals		
PD5	Wave motion: Transverse and longitudinal waves, speed of travelling wave.		

15th jan : Second saturday

Sir Padampat Singhania Education Centre

Kamla Nagar, Kanpur

Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 29: 17th Jan to 22nd Jan		**Period Count: 6**	
PD1	Displacement relation for a progressive wave,	Learn at Home	
PD2	Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes	Learn at Home	
PD3	Fundamental mode and harmonics		
PD4	Beats	Questions from NCERT	
PD5	Doppler effect	Questions from NCERT	
PD6	Numericals	Questions from NCERT	
WEEK 30: 24th Jan to 29th Jan		**Period Count: 6**	
PD1	Revision		
PD2	Revision	Learn at Home	
PD3	Revision		
PD4	Revision		
PD5	Revision		
PD6	Revision		

26th jan (Republic Day)

Sir Padampat Singhania Education Centre

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Weekly planning overview

Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 31: 31st Jan to 5th Feb		**Period Count: 6**	
PD1	Revision	Learn at Home	
PD2	Revision	Learn at Home	
PD3	Revision		
PD4	Revision	Numericals	
PD5	Revision	NCERT back questions	
WEEK 32: 7th feb to 12th Feb		**Period Count: 5**	
PD1	Revision		
PD2	Revision	Learn at Home	
PD3	Revision	NCERT ques.	
PD4	Revision		
PD5	Revision		

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Session: 2021- 2022

Subject : Physics **Class :** XI

Period	Topic/s to be covered in classroom	Homework	Status (Yes/No) (Reason if No)
WEEK 31: 14th Feb to 19th Feb		**Period Count: 6**	
PD1	Revision	Learn at Home	
PD2	Revision	Learn at Home	
PD3	Revision		
PD4	Revision	Numericals	
PD5	Revision	NCERT back questions	
WEEK 32: 21st feb to 23rd Feb		**Period Count: 3**	
PD1	Revision		
PD2	Revision	Learn at Home	
PD3	Revision	NCERT ques.	

24th Feb 2022 to 9th March 2022(Annual Examination)