

## Lesson Plan

Name: Dr. Navneet Singh

Class: B.Sc. 5<sup>th</sup> Sem. Sec. A & B

Subject: Solid State Physics

Month: Sept. 2022

	Topic
1 <sup>st</sup> week	Introduction to solids, liquids & gases
	Crystalline & Amorphous solids
	Liquid crystals
2 <sup>nd</sup> week	Crystal structure, unit cell, primitive cell
	Translation Vector, translation operation
	Different crystalline structures with examples
3 <sup>rd</sup> week	Wigner Sietz primitive cell
	Crystalline Symmetry operation for two dimension
	Fivefold symmetry not possible
4 <sup>th</sup> week	Point groups, Bravais lattice in two dimension
	Point groups and Bravais lattice in three dimension
	Numerical problems

Month: Oct. 2022

1 <sup>st</sup> week	Test unit 1
	Miller indices
	Interplanar spacing
2 <sup>nd</sup> week	Properties of Cubic crystal
	Hexagonal closed pack structure in detail
	Diamond structure, Zinc blend, NaCl & CsCl structures
3 <sup>rd</sup> week	X-Ray diffraction and Bragg's Law
	Laue Method, Rotating Crystal method
	Powder method & numericals of diffraction
4 <sup>th</sup> week	K-space and Reciprocal lattice
	Reciprocal Lattice vector & construction of reciprocal lattice
	Properties of reciprocal lattice
	Reciprocal lattices of Sc, FCC & BCC

## Lesson Plan

Name: Dr. Navneet Singh

Class: B.Sc. 5<sup>th</sup> Sem. Sec. A & B

Subject: Solid State Physics

Month: Nov. 2022

1 <sup>st</sup> week	Test unit 2
	Introduction to specific heat, Dulong and Petit's Law
	Derivation of Dulong and Petit's Law
2 <sup>nd</sup> week	Einstein Theory of specific heat
	Debye Model of specific heat
	Debye Model of specific heat
3 <sup>rd</sup> week	Numerical Problems on specific heat
	Test unit 3
	Comparison of specific heat models
4 <sup>th</sup> week	Revision of Unit 1 syllabus
	Revision of Unit 2 syllabus
	Revision of Unit 3 syllabus

Dr. Navneet Singh  
Assistant Professor  
Physics

### Lesson Plan

Name: Ajeet Kumar  
 Class: B.Sc.1 Subject: Physics Month: Sept. 2022

	Topic
7	Scalars and Vectors
8	Scalars and Vectors
9	Scalars and Vectors
10	Gradient
3 <sup>rd</sup> week	Scalars and Vectors
13	Gradient
14	Gradient
15	Divergence
16	Curl and their Significance
17	Vector Integration
4 <sup>th</sup> week	Divergence
20	Curl and their Significance
21	Vector Integration
22	Line surface and volume integral of vector fields
23	Sahidi Diwas
24	Gauss divergence theorem
5 <sup>th</sup> Week	Agarsen Jayanti
27	Line surface and volume integral of vector fields
28	Gauss divergence theorem
29	Stoker's theorem of vectors
30	Numerical Problem

Month: Oct. 2022

Date	Topic
1	Electrostatic field
3	Stoker's theorem of vectors
4	Numerical Problem
5	Dushara
6	Electric Flux
7	Gauss's theorem of electrostatics
8	Application of Gauss's theorem-Electric field due to point charge ,infinite line of charge
10	Electrostatic field
11	Gauss's theorem of electrostatics
12	Application of Gauss theorem-Electric field due to point charge ,infinite line of charge
13	Application of Gauss theorem-uniformly charged spherical shell and solid sphere
14	Application of Gauss theorem-plane charge sheet
15	Application of Gauss theorem-charged conductor
17	Numerical Problem
18	Application of Gauss theorem-uniformly charged spherical shell and solid sphere
19	Application of Gauss theorem-plane charge sheet
20	Electric Potential as line integral of electric field
21	Potential due to a point charge
22-29	Diwali Holidays
31	Application of Gauss theorem-charged conductor

Month: Nov. 2022

Date	Topic
1	Haryana Diwas
2	Panchayat Election
3	Electric dipole
4	Uniformly charged spherical and solid sphere

*Ajeet Kumar*

5	Calculation of electric field from potential
7	Electric Potential as line integral of electric field
8	Potential due to a point charge
9	Electric dipole
10	Numerical problem
11	Capacitance of and isolated spherical conductor
12	Parallel plate
14	Uniformly charged spherical and solid sphere
15	Calculation of electric field from potential
16	Numerical problem
17	Spherical and cylindrical condenser
18	Energy per unit volume in electrostatic field
19	Dielectric medium
21	Capacitance of and isolated spherical conductor
22	Parallel plate
23	Spherical and cylindrical condenser
24	Polarization
25	Displacement vector
26	Gauss's theorem in dielectrics
28	Energy per unit volume in electrostatic field
29	Dielectric medium
30	Polarization

Month: Dec. 2022

Date	Topic
1	Magnetostatics: Biot-Savart's law and its application- straight conductor
2	Circular coil
3	Solenoid carrying current
5	Displacement vector
6	Gauss's theorem in dielectrics
7	Magnetostatics: Biot-Savart's law and its application- straight conductor
8	Divergence and curl of magnetic field
9	Magnetic vector potential
10	Ampere circuital law
12	Circular coil
13	Solenoid carrying current
14	Divergence and curl of magnetic field
15	Magnetic properties of materials :Magnetic intensity
16	Magnetic properties of materials :Magnetic induction
17	Magnetic properties of materials :Permeability
19	Magnetic vector potential
20	Ampere circuital law
21	Magnetic properties of materials :Magnetic intensity
22	Magnetic properties of materials :Magnetic susceptibility
23	Brief introduction of diapaara and ferro-magnetic matirials
24	Numerical Problem
26	Magnetic properties of materials :Magnetic intensity
27	Magnetic properties of materials :Magnetic induction
28	Magnetic properties of materials :Magnetic susceptibility
29	Test
30	Brief introduction of diapaara and ferro-magnetic matirials
31	Numerical Problems

Ajeet Kumar

## Lesson Plan

Name: Murad

Class: B.Sc V<sup>th</sup> (CS)

Subject: Q.M + Solid State (physics both paper)

Month: Sept. 2022

	Topic
1 <sup>st</sup> week	Failure of Classical theory, old quantum theory.
(07-10 Sept)	quantum theory of radiation
2 <sup>nd</sup> week	
12-17	photon, photoelectric effect, Einstein photoelectric equations, Compton theory
3 <sup>rd</sup> week	
19-24	Drawback of old quantum theory, de-broglie Hypothesis, G.P Thomson experiment.
4 <sup>th</sup> week	
26-30 Sept	phase velocity, group velocity & Their Relationship b/w phase velocity and group velocity

Month: Oct. 2022

1 <sup>st</sup> week	
01-08	Heisenberg uncertainty principle, uncertainty principle from de-broglie wave. gamma ray microscope exp.
2 <sup>nd</sup> week	
10-15	Electron diffraction experiment. Time dependent Schrodinger wave eqn.
3 <sup>rd</sup> week	
17-22	Time Independent Schrodinger wave eqn. presentation on Harmonic oscillator.
4 <sup>th</sup> week	
24-31	Vacations

## Lesson Plan

Name:

Class:

Subject:

Month: Nov. 2022

1 <sup>st</sup> week	
01-05	Free particle in one dimensional box, one dimensional single step barrier, Rectangular pot. barrier.
2 <sup>nd</sup> week	
7-12	Crystalline & glassy solids, Crystal structure, unit cell primitive cell, Symmetry operations, Bravais lattice in 2D & 3D, liquid crystal.
3 <sup>rd</sup> week	
14-19	Miller Indices, Interplanar Spacing, ZnS, NaCl, and Diamond structure & X-ray diffraction Method.
4 <sup>th</sup> week	
21-30	Reciprocal lattice & its physical significance, reciprocal lattice vector, Rip lattice to sc lattice, bcc & fcc

presentation on Specific heat

Maxwell  
Depth of program

## Lesson Plan

Name: BHISM NARAYAN

Class: B.Sc. I<sup>st</sup> (Sec-A (1-3)  
Sec-B (4-6))

Subject: Mechanics (Physics-I<sup>st</sup> paper)

Month: Sept. 2022

	Topic
1 <sup>st</sup> week 05-10 <sup>Sept</sup>	Introduction of syllabus: Type of question sets - Mechanics & its types :- Kinematics, Dynamics Statics, Mechanics of a single particle & various terms -
2 <sup>nd</sup> week 12-17	Angular Momentum, work, Energy Power, Kinetic energy, work done in terms of Kinetic energy, conservative force.
3 <sup>rd</sup> week 19-24	Non-conservative force, Potential energy work done in terms of potential energy, Central force, conservation theorem of linear momentum of a particle.
4 <sup>th</sup> week 26-30 <sup>Sept</sup>	Conservation theorem of energy for a particle Mechanics of a system of particles. <del>A</del> Centre of mass & equation of motion. Numerical Problems.

Month: Oct. 2022

1 <sup>st</sup> week 01-08	Conservation theorem for linear momentum & energy for a system of particles. Kinetic energy in terms of c.m. for a system of particles. revision & doubt taken.
2 <sup>nd</sup> week 09-15	Rigid body, relation between $v$ & $\omega$ , (ii) $a$ & $\alpha$ , Torque acting on a rigid body <sup>in terms of</sup> Cartesian co-ordinates. Torque & angular momentum, Kinetic energy of rotating bodies. <sup>Ang.</sup> <sup>Non</sup> <sub>-entire</sub>
3 <sup>rd</sup> week 17-22	Relation betw $\tau$ & $L$ , (ii) $\tau$ and $\alpha$ , K.E & Moment of inertia, angular momentum & ang. Impulse. conservation of ang. Momentum, system of variable mass.
4 <sup>th</sup> week 24-31	Inertial & Non-inertial frame of reference <del>A</del> Pseudo forces.

## Lesson Plan

Name: BHISM NARAYAN

Class: B.Sc. I (Sec. A (1-3)  
Sec. B

Subject: Mechanics (Phy. Paper-I)

Month: Nov. 2022

1 <sup>st</sup> week 01-05	Example, (Numericals) & revision of unit
2 <sup>nd</sup> week 07-12	Test of 1 <sup>st</sup> unit, Rotation of rigid body, moment of inertia, torque, angular momentum, K.E of rotation, Theorems of $\perp$ axis and parallel axes with proof.
3 <sup>rd</sup> week 14-19	Moment of inertia of solid sphere, hollow sphere, spherical shell, solid cylinder, hollow cylinder.
4 <sup>th</sup> week 21-30	Moment of inertia of solid bar of rectangular cross-section, acc. of a body rolling down on an inclined plane. revision of unit & Numerical problem.



## Lesson Plan

Name: Ms. Sharmila

Class: V<sup>th</sup> sem

Month: Sept. 2022

Subject: Quantum Mechanics

	Topic
1 <sup>st</sup> week	Failure of classical theory, Quantum theory of radiation (Introduction to Quantum Theory) Blackbody Radiation
2 <sup>nd</sup> week	Photon, Photoelectric effect and Einstein's photoelectric eq <sup>n</sup> . Compton effect (theory and result)
3 <sup>rd</sup> week	Inadequacy of old quantum theory, De-Broglie hypothesis, wave-particle duality.
4 <sup>th</sup> week	

Month: Oct. 2022

1 <sup>st</sup> week	Experimental verification of wave-particle duality; Davission and Germer's exp., G.P. Thomson's Method, wave packet & wave function
2 <sup>nd</sup> week	Group and phase velocity of wave packet Heisenberg's uncertainty principle, examples of position and momentum uncertainty
3 <sup>rd</sup> week	Applications of uncertainty principle, uncertainty from De-Broglie wave
4 <sup>th</sup> week	(Diwali vacations)

## Lesson Plan

Name: Ms. Sharmila

Class: V<sup>th</sup> sem

Subject: Quantum Mechanics

Month: Nov. 2022

1 <sup>st</sup> week	Time Dependent Schrodinger wave eq., eigen values eigen fun., wave fn, normalization of wave fn, observables & operator, Time Independent Schrodinger wave eq <sup>n</sup> .
2 <sup>nd</sup> week	solution of Schrodinger wave eq <sup>n</sup> for harmonic oscillator; ground state and excited state
3 <sup>rd</sup> week	Applications of Schrodinger wave eq <sup>n</sup> ? Free particle in 1D box (solution of Schrodinger wave eq <sup>n</sup> , eigen fn, eigen values, quantization of energy & momentum.
4 <sup>th</sup> week	one dimensional potential barrier $E > V_0$ Reflection and Transmission coefficient.

## Lesson Plan

Name: AMIT

Class: B.Sc. (NM) 3<sup>rd</sup> Sem

Month: Sept. 2022

Subject: Thermodynamics

{ Sec A - [4+6] }  
{ Sec B - [1+3] }

	Topic
1 <sup>st</sup> week (07-10)	Introduction, Zeroth Law of thermodynamics First law of thermodynamics, conversion between heat and work, various Thermodynamical Process
2 <sup>nd</sup> week (12-17)	Application of First law, work done during isothermal and adiabatic process, Compressibility and Expansion coefficient, Reversible and Irreversible Process.
3 <sup>rd</sup> week (19-24)	Second Law of thermodynamics, Entropy, Entropy changes in reversible and irreversible process. Carnot cycle.
4 <sup>th</sup> week	Carnot Theorem, T-S diagram, Numerical Problem, Unit Test.

Month: Oct. 2022

1 <sup>st</sup> week (01-08)	Unit-II introduction, Third Law of Thermodynamics Absolute Zero, Maxwell Relations.
2 <sup>nd</sup> week (10-15)	Thermodynamic Potentials and Maxwell Relations, Clausius-Clapeyron first equation.
3 <sup>rd</sup> week (17-22)	Application of Maxwell's relation - Joule-Thomson effect, Latent Heat 2 <sup>nd</sup> equation, $C_p - C_v = R$ and $C_p/C_v = \gamma$ Relation.
4 <sup>th</sup> week (24-31)	T.d.s equation.

## Lesson Plan

Name: AMIT

Class: B.Sc. (3rd) Sem

Month: Nov. 2022

Subject: Thermodynamics

{ Sec A - [4 to 6] }  
{ Sec B - [1 to 3] }

1 <sup>st</sup> week 01-05	Numerical Problem, doubt topic, Unit Test
2 <sup>nd</sup> week 07-12	Unit-III introduction, Assumption of Kinetic Theory of Gases, Maxwell's law of distribution of velocities and speeds.
3 <sup>rd</sup> week 14-19	Experimental verification of distribution of velocities, Mean free path, Brownian Motion.
4 <sup>th</sup> week 21-30	Real Gas and van der Waal's equation. Numerical Problem, Unit-IV introduction.

*Amir*

## Lesson Plan

Name: Premkanta Yadav

Class: BSC N.M 3rd sem (CS)

Subject: physics

Month: Sept. 2022

	Topic
1 <sup>st</sup> week	Zeroth law of thermodynamics and temperature. First Law and internal energy. Conversion of heat into work. Various thermodynamic Processes.
2 <sup>nd</sup> week	Application of 1st law: General Relation between $C_p$ & $C_v$ , work done during isothermal and Adiabatic Processes, Compressibility and Expansion Coefficients.
3 <sup>rd</sup> week	Reversible & irreversible processes, Second law and entropy, Carnot's cycle and theorem. Entropy changes in reversible and irreversible processes.
4 <sup>th</sup> week	Entropy-temp. diagram. Third law of thermodynamics, Unattainability of absolute zero, Thermodynamic Potentials, Expression for $C_p - C_v$

Month: Oct. 2022

1 <sup>st</sup> week	Wave optics: Electromagnetic nature of light, definition and Properties of wave-front, Huygen's Principle.
2 <sup>nd</sup> week	Interference by division of Amplitude. Colour of thin film, films, Young's double slit experiment.
3 <sup>rd</sup> week	Lloyd's Mirror and Fresnel's biprism. Phase change on reflection: Stoke's treatment. Problems on interference.
4 <sup>th</sup> week	Diwali vacation

## Lesson Plan

Name: PREMKATA YADAV

Class: B. SC N.M(CS) 3rd sem Subject: PHYSICS

Month: Nov. 2022

1 <sup>st</sup> week	Newton's Rings; measurement of wavelength and refractive index. Michelson's Interferometer - fringe formation. test
2 <sup>nd</sup> week	Fresnel Diffraction: Fresnel Assumption, Fresnel's Half period Zones for Plane wave, Rectilinear Propagation of Light, Theory of a Zone Plate and its application, Multiple Foci of a Zone Plate. test
3 <sup>rd</sup> week	Fraunhofer diffraction: Single slit, double slit and multiple slits, resolving power of grating, Rayleigh Criteria of the limit of resolution.
4 <sup>th</sup> week	Resolving Power of an optical instrument (prism and telescope), Derivation of Maxwell's law of distribution of velocities, Mean free path

## Lesson Plan

Name: ANJU SHARMA

Class: B.Sc. II<sup>nd</sup> Year (A+B)

Subject: Physics

Month: Sept. 2022

	Topic
1 <sup>st</sup> week (7-10) sept.	wave optics: Electromagnetic nature of light Definition & properties of wavefront, Huygens Principle, Interference: division of amplitude & division of wavefront.
2 <sup>nd</sup> week	Young's double slit experiment Lloyd's Mirror Fresnel Biprism
3 <sup>rd</sup> week	Phase change on reflection - Stokes's treatment Interference in thin films: parallel & wedge shape films. Fringes of equal inclination (Haidinger fringes) Fringes of equal thickness (Fizeau fringes)
4 <sup>th</sup> week	Newton's Rings: measurement of wavelength and refractive index Michelson's Interferometer - fringes formation

Month: Oct. 2022

1 <sup>st</sup> week	Fresnel Diffraction: Fresnel Assumptions Fresnel's half period Zones for plane wave
2 <sup>nd</sup> week	Rectilinear propagation of light. Theory of a zone plate
3 <sup>rd</sup> week	Zone plate applications Multiple Foci of a Zone plate
4 <sup>th</sup> week	Qualitative description for Fresnel diffraction pattern of a straight edge. Diffraction at a slit & a wire.

## Lesson Plan

Name:

Class:

Subject:

Month: Nov. 2022

1 <sup>st</sup> week	Fraunhofer diffraction :- Single slit, double slit
2 <sup>nd</sup> week	Multiple slits, various kinds of diffraction grating.
3 <sup>rd</sup> week	Resolving power of grating. Rayleigh criteria of limit of resolution
4 <sup>th</sup> week	Resolving power of an optical instrument (Prism & telescope).