DYAL SINGH COLLEGE, KARNAL

2023-24 (ODD SEM)

Lesson Plan

Name of the teacher: **Dr. Devinder Singh**

Class and Section: **B.Sc. - 5th Semester (NM, CS, FS)**

Subject: **Nuclear Physics (PH-502)**

Week	Date	Topics
1	24.07.2023 to 29.07.2023	Introduction, Nuclear composition - proton-electron hypothesis and proton-neutron hypothesis.
2	01.08.2023 to 05.08.2023	Nuclear mass and binding energy, systematics of nuclear binding energy, nuclear stability.
3	07.08.2023 to 12.08.2023	Nuclear size, spin, parity, statistics, Nuclear magnetic dipole moment and qudrupole moment.
4	14.08.2023 to 18.08.2023	Detrimination of nuclear mass by Bain-Bridge spectrometer, Bain-Bridge and Jordan mass spectrograph, Determination of charge by Mosley Law, Determination of size of nucleus by Rutherford Back Scattering.
5	21.08.2023 to 26.08.2023	Alpha-disintegration and its theory. Energeties of alpha-decay. Origin of continuous beta spectrum (neutrino hypothesis), types of beta-decay and energetics ot beta-decay.
6	28.08.2023 to 02.09.2023	Nature of gamma rays. Energetics of gamma rays. Interaction of heavy, charged particles (Alpha particles) Energies loss of heavy Charged particle (idea of Bethe formula, no derivation).
7	04.09.2023 to 09.09.2023	Range and straggling of alpha particles. Geiger-Nuttal law. Interaction of light charged particle (beta-particle). Energy loss of beta-particles(ionization). Range of electrons, absorption of beta particles.
8	11.09.2023 to 16.09.2023	Interaction of Gamma Ray: Passage of Gamma radiations through matter (Photoelectric. Compton and pair production effect) electron-position annihilation. Absorption of Gamma rays (Mass attenuation coefficient) and its application.
9	18.09.2023 to 22.09.2023	Linear accelerator and Tendem acclerator.
10	25.09.2023 to 30.09.2023	Cyclotron and Betatron acclerators,
11	03.10.2023 to 07.10.2023	Ionization chamber, proportional counter. GM. Counter (detailed study),
12	09.10.2023 to 14.10.2023	Seintillation counter and semicounductor detector.
13	16.10.2023 to 21.10.2023	Nuclear reactions, Elastic scattering, Inelastic scattering, Nuclear disintegration, photonuclear reaction, Radiative capture Direct-reaction, Heavy ion reactions and spallation reactions.
14	23.10.2023 to 31.10.2023	Conservation laws, Q-value and reaction threshold, Nuclear fission and fusion reactors, (Principle, construction, working and uses).
15	02.11.2023 to 09.11.2023	Sessional Exams
16	10.11.2023 to 16.11.2023	Diwali Break
17	17.11.2023 to 24.11.2023	Revision

Dr. Devinder Singh

DYAL SINGH COLLEGE, KARNAL

2023-24 (EVEN)

Lesson Plan

Name of the teacher: **Dr. Devinder Singh**

Class and Section: **B.Sc. - 6th Semester (NM, CS, FS)**

Subject: **Solid State and Nano Physics (PH-601)**

Week	Date	Topics
1	01.01.2024 to 06.01.2024	Crystalline and glassy forms, liquid crystals, crystal structure, periodicity, lattice and basis, Crystal translational vectors and axes. Unit cell and Primitive cell, Winger Seitz primitive cell,
2	08.01.2024 to 13.01.2024	Symmetry operations for a two and three dimensional crystal, Bravais lattices in two and three dimensions.
3	15.01.2024 to 20.01.2024	Crystal planes and Miller indices, Interplaner spacing, Crystal structures of Zinc Sulphide, Sodium Chloride and Diamond.
4	22.01.2024 to 27.01.2024	X-ray diffraction, Bragg's law and experimental X-ray diffraction methods.
5	29.01.2024 to 03.02.2024	K-space and reciprocal lattice and its physical significance. Reciprocal lattice vectors.
6	05.02.2024 to 10.02.2024	Need of reciprocal lattice. Reciprocal lattice to a s.c. lattice, b.c.c. lattice and f.c.c lattice.
7	12.02.2024 to 17.02.2024	Historical introduction, Survey of superconductivity, Super conducting systems, High T_c Super conductors.Isotopic Efect,
8	19.02.2024 to 23.02.2024	Critical Magnetic Ficld. Meissner Effect, London Theory and Pippards' equation. Classification of Superconductors (Type I and Type II),
9	26.02.2024 to 02.03.2024	BCS Theory of Superconductivity, Flux quantization, Josephson Effect (AC and DC),
10	04.03.2024 to 09.03.2024	Practical applications of superconductivity and their limitations, Power application of superconductors.
11	11.03.2024 to 16.03.2024	Definition, Length scale, Importance of Nano-scale and technology.
12	18.03.2024 to 22.03.2024	History of Nanotechnology, Benefits and challenges in molecular manufacturing.
13	23.03.2024 to 31.03.2024	Holi Break
14	01.04.2024 to 06.04.2024	Molecular assembler concept, Understanding advanced capabilities.Vision and objective of Nano-technology,
15	08.04.2024 to 13.04.2024	Nanotechnology in different fields, Automobile, Nanotechnology in Electronics, Nano-biotechnology, Materials, Medicine.
16	15.04.2024 to 20.01.2024	Sessional Exams
17	22.04.2024 to 30.04.2024	Revision

Dr. Devinder Singh

DYAL SINGH COLLEGE, KARNAL

2023-24 (ODD SEM)

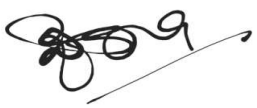
Lesson Plan

Name of the teacher: **Dr. Devinder Singh**

Class and Section: **UG - 1st Semester**

Subject: **BASIC IT TOOLS (B-SEC-103)**

Week	Date	Topics
1	24.07.2023 to 29.07.2023	Introduction to Computer: Evolution of Computers & its applications, Computer and Latest IT gadgets.
2	01.08.2023 to 05.08.2023	IT gadgets and their applications, Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices.
3	07.08.2023 to 12.08.2023	Computer Memory & storage, Application Software, Systems Software, Utility Software.
4	14.08.2023 to 18.08.2023	Open source and Proprietary Software, Mobile Apps.
5	21.08.2023 to 26.08.2023	Introduction to Operating System Operating System, Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets.
6	28.08.2023 to 02.09.2023	User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties, Changing System Date and Time, Changing Display Properties.
7	04.09.2023 to 09.09.2023	To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions.
8	11.09.2023 to 16.09.2023	Introduction to Internet and WWW Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology.
9	18.09.2023 to 22.09.2023	Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address, ISP and Role of ISP.
10	25.09.2023 to 30.09.2023	Internet Protocol, Modes of Connecting Internet (Hotspot, Wi-Fi, LAN Cable, Broadband, USB Tethering), Identifying and uses of IP/MAC/IMEI of various devices.
11	03.10.2023 to 07.10.2023	Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Exploring the Internet, Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages.
12	09.10.2023 to 14.10.2023	E-mail, Social Networking and e-Governance Services Structure of E-mail, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Searching emails, Attaching files with email, Email Signature.
13	16.10.2023 to 21.10.2023	Social Networking & e-Commerce, Facebook, Twitter, LinkedIn, Instagram, Instant Messaging (WhatsApp, Facebook Messenger, Telegram), Introduction to Blogs, Basics of E-commerce, Netiquettes.
14	23.10.2023 to 31.10.2023	Overview of e-Governance Services like Railway Reservation, Passport, e-hospital, Accessing e-Governance Services on Mobile, Digital Locker.
15	02.11.2023 to 09.11.2023	Sessional Exams
16	10.11.2023 to 16.11.2023	Diwali Break
17	17.11.2023 to 18.11.2023	MDC Seesional Exam, Distribution and Discussion of Sessional Exam Sheets
18	20.11.2023 to 24.11.2023	Revision



Dr. Devinder Singh

DYAL SINGH COLLEGE, KARNAL

2023-24 (EVEN)

Lesson Plan

Name of the teacher: **Rajesh Arora**

Class and Section: **B.Sc. - 6th Semester (NM, CS, FS)**

Subject: **Atomic and Molecular Spectroscopy (PH-602)**

Week	Date	Topics
1	01.01.2024 to 06.01.2024	Orbital magnetic dipole moment (Bohr megnaton), behavior of magnetic dipole in external magnetic filed; Larmors' precession and theorem. Penetrating and Non-penetrating orbits, Penetrating orbits on the classical model; Quantum defect
2	08.01.2024 to 13.01.2024	Spin orbit interaction energy of the single valance electron, spin orbit interaction for penetrating and non-penetrating orbits. quantum mechanical relativity correction, Hydrogen fine spectra.
3	15.01.2024 to 20.01.2024	Main features of Alkali Spectra and their theoretical interpretation, term series and limits, Rydeburg-Ritze combination principle, Absorption spectra of Alkali atoms.
4	22.01.2024 to 27.01.2024	Observed doublet fine structure in the spectra of alkali metals and its Interpretation, Intensity rules for doublets, comparison of Alkali spectra and Hydrogen spectrum .
5	29.01.2024 to 03.02.2024	Essential features of spectra of Alkaline-earth elements, Vector model for two valance electron atom: application of spectra. Coupling Schemes;LS or Russell – Saunders Coupling Scheme and JJ coupling scheme, Interaction energy in L-S coupling (sp, pd configuration), Lande interval rule.
6	05.02.2024 to 10.02.2024	Equivalent and non-equivalent electrons, Two valance electron system-spectral terms of non-equivalent and equivalent electrons, comparison of spectral terms in L-S And J-J coupling.
7	12.02.2024 to 17.02.2024	Hyperfine structure of spectral lines and its origin; isotope effect, nuclear spin,
8	19.02.2024 to 23.02.2024	Zeeman Effect (normal and Anomalous),Experimental set-up for studying Zeeman effect, Explanation of normal Zeeman effect(classical and quantum mechanical)
9	26.02.2024 to 02.03.2024	Explanation of anomalous Zeeman effect(Lande g-factor), Zeeman pattern of D1 and D2 lines of Na atom, Paschen-Back effect of a single valence electron system.
10	04.03.2024 to 09.03.2024	Weak field Stark effect of Hydrogen atom, Introduction of early observations, emission and absorption spectra, atomic spectra, wave number, spectrum of Hydrogen atom in Balmer series, Bohr atomic model(Bohr's postulates) , spectra of Hydrogen atom.
11	11.03.2024 to 16.03.2024	Explanation of spectral series in Hydrogen atom, un-quantized states and continuous spectra, spectral series in absorption spectra, effect of nuclear motion on line spectra (correction of finite nuclear mass)
12	18.03.2024 to 22.03.2024	Variation in Rydberg constant due to finite mass, short comings of Bohr's theory, Wilson sommerfeld quantization rule, de-Broglie interpretation of Bohr quantization law, Bohr's corresponding principle
13	23.03.2024 to 31.03.2024	Holi Break
14	01.04.2024 to 06.04.2024	Sommerfeld's extension of Bohr's model, Sommerfeld relativistic correction, Short comings of Bohr-Sommerfeld theory.
15	08.04.2024 to 13.04.2024	Vector atom model; space quantization, electron spin, coupling of orbital and spin angular momentum, spectroscopic terms and their notation, quantum numbers associated with vector atom model, transition probability and selection rules.
16	15.04.2024 to 20.01.2024	Sessional Exams
17	22.04.2024 to 30.04.2024	Revision

Rajesh Arora

DYAL SINGH COLLEGE, KARNAL

2023-24 (ODD SEM)

Lesson Plan

Name of the teacher: **Rajesh Arora**

Class and Section: **B.Sc. - 5th Semester (NM, CS, FS)**

Subject: **Quantum and Laser Physics (PH-501)**

Week	Date	Topics
1	24.07.2023 to 29.07.2023	Overview, scale of quantum physics, boundary between classical and quantum, phenomena, Photon, Photoelectric effect, Compton effect (theory and result), Frank- Hertz experiment.
2	01.08.2023 to 05.08.2023	de-Broglie hypothesis. Davisson and Germer experiment, ·G.P. Thomson experiment. Phase velocity, group velocity and their relation. Heisenberg's uncertainty principle.
3	07.08.2023 to 12.08.2023	Time energy and angular momentum, position uncertainty. Uncertainty principle from de Broglie wave. (Wave-particle duality). Gamma Ray Microscope.
4	14.08.2023 to 18.08.2023	Electron diffraction from a slit. Derivation of 1-D time-dependent Schrodinger wave equation (subject to force, free particle). Time independent Schrodinger wave equation.
5	21.08.2023 to 26.08.2023	Eigen values, eigen functions, wave functions and its significance, Orthogonality and Normalization of function.
6	28.08.2023 to 02.09.2023	Concept of observer and operator. Expectation values of dynamical quantities, probability current density
7	04.09.2023 to 09.09.2023	Application of Schrodinger wave equation: solution of Schrodinger wave equation, eigen functions, eigen values, quantization of energy and momentum, nodes and anti nodes, zero point energy, potential step, potential barrier and harmonic oscillator.
8	11.09.2023 to 16.09.2023	Absorption and emission of radiation, Main features of a laser: Directionality, high intensity, high degree of coherence.
9	18.09.2023 to 22.09.2023	Spatial and temporal coherence, Einstein's coefficients and possibility of amplification, momentum transfer, life time of a level.
10	25.09.2023 to 30.09.2023	Kinetics of optical absorption ((two and three level rate equation, Fuchbauer landerburg formula).population inversion: A necessary condition for light amplification, resonance cavity.
11	03.10.2023 to 07.10.2023	Laser pumping, Threshold condition for laser emission, line broadening mechanism
12	09.10.2023 to 14.10.2023	Homogeneous and inhomogeneous line broadening (natural, collision and Doppler broadening).
13	16.10.2023 to 21.10.2023	He-Ne laser and RUBY laser (Principle, Construction and working)
14	23.10.2023 to 31.10.2023	Optical properties of semiconductor (Principle, Construction and working), Applications of lasers in the field of medicine and industry.
15	02.11.2023 to 09.11.2023	Sessional Exams
16	10.11.2023 to 16.11.2023	Diwali Break
17	17.11.2023 to 18.11.2023	MDC Seesional Exam, Distribution and Discussion of Sessional Exam Sheets
18	20.11.2023 to 24.11.2023	Revision

Rajesh Arora

Rajesh Arora

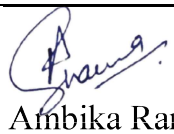
DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.A.Subject: SEC 103

Week 1 (July 24-29)	Introduction to Computer: Computer and Latest IT gadgets
Week 2 (August 1-5)	Evolution of Computers & its applications, IT gadgets and their applications
Week 3 (August 7-12)	Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Application Software, Systems Software, Utility Software
Week 4 (August 14-18)	Open source and Proprietary Software, Mobile Apps, Introduction to Operating System Operating System, Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets
Week 5 (August 21-26)	User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties
Week 6 (August 28-September 2)	Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions
Week 7 (September 4 -9)	Introduction to Internet and WWW Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology
Week 8 (September 11 -16)	Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address
Week 9 (September 18 -22)	ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering)
Week 10 (September 25 - 30)	Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.),
Week 11 (October 3-7)	Exploring the Internet, Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages
Week 12 (October 9-14)	E-mail, Social Networking and e-Governance Services Structure of E-mail, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox,
Week 13 (October 16 - 21)	Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Searching emails, Attaching files with email
Week 14 (October 23-31)	Email Signature, Social Networking & e-Commerce, Facebook, Twitter, Linkedin, Instagram, Instant Messaging (Whatsapp, Facebook Messenger, Telegram), Introduction to Blogs

Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Basics of E-commerce, Netiquettes, Overview of e-Governance Services like Railway Reservation, Passport, eHospital, Accessing e-Governance Services on Mobile, Digital Locker



Dr. Ambika Rani
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: MDC **Subject: Physics**

Week 1 (July 24-29)	Physics-Nature, scope & excitement, Major discoveries in physics,
Week 2 (August 1-5)	major contribution by Indian Physicists, Fundamental physical constants, Physics in relation to other sciences
Week 3 (August 7-12)	Impact of physics on society and on latest development in science &technology, System of Measuring Units-Need for measurement, measuring process, concept of mass, length, time; Fundamental and derive units, system of units
Week 4 (August 14-18)	Concepts of error, types of error (only definition), Accuracy and precision in measurement, least count and applications of measuring instruments -Vernier calliper.
Week 5 (August 21-26)	Screw Gauge, Motion of objects in one dimension- position of the object, origin/reference point, frame of reference
Week 6 (August 28-September 2)	definitions and examples of motion in one, two and three dimension, Scalar and Vector quantities, description of motion along a straight line- distance and displacement
Week 7 (September 4 -9)	uniform motion and non-uniform motion, average and instantaneous speed, average and instantaneous velocity, Acceleration;
Week 8 (September 11 -16)	graphical analysis of straight line motion- distance- time graph, velocity-time graph.
Week 9 (September 18 -22)	equation of motions and their applications, Causes of motion-concept of force, Newton's Ist law of motion, inertia and mass
Week 10 (September 25 -30)	Newton's 2 nd law of motion, momentum and force; 3 rd law of motion, daily life applications of Newton's laws of motion, Universal law of gravitation and its importance.
Week 11 (October 3-7)	Acceleration due to gravity and free fall of a body; mass and weight of an object on earth and moon, concept of thrust and pressure and importance in daily life.
Week 12 (October 9-14)	Buoyancy and Archimedes principle-the physics behind floating of objects on water, Work, energy, types of energy-Kinetic energy and Potential energy
Week 13 (October 16 - 21)	P.E. of an object at a height; law of conservation of energy and its applications, Conservation of linear and angular momentum
Week 14 (October 23-31)	Collision (elastic and inelastic), Conservation laws in collisions-importance in daily life; concepts of centre of mass-Physics behind cycling, rock climbing and skating.
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Revision and discussion of important topics

Dr. Heena
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.A.Subject: SEC 103

Week 1 (July 24-29)	Introduction of syllabus , discussion of exam pattern, internal, practicals
Week 2 (August 1-5)	Introduction to Computer: Computer and Latest IT gadgets, Evolution of Computers & its applications, IT gadgets and their applications
Week 3 (August 7-12)	Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Application Software, Systems Software, Utility Software
Week 4 (August 14-18)	Open source and Proprietary Software, Mobile Apps, Introduction to Operating System Operating System, Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets
Week 5 (August 21-26)	User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties
Week 6 (August 28-September 2)	Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions
Week 7 (September 4 -9)	Introduction to Internet and WWW Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology
Week 8 (September 11 -16)	Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address
Week 9 (September 18 -22)	ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering)
Week 10 (September 25 -30)	Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.),
Week 11 (October 3-7)	Exploring the Internet, Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages
Week 12 (October 9-14)	E-mail, Social Networking and e-Governance Services Structure of E-mail, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox,
Week 13 (October 16 - 21)	Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Searching emails, Attaching files with email
Week 14 (October 23-31)	Email Signature, Social Networking & e-Commerce, Facebook, Twitter, Linkedin, Instagram, Instant Messaging (Whatsapp, Facebook Messenger, Telegram), Introduction to Blogs
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Basics of E-commerce, Netiquettes, Overview of e-Governance Services like Railway Reservation, Passport, eHospital, Accessing e-Governance Services on Mobile, Digital Locker

NidhiJast
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.SC 3RD SEM Subject: PHYSICS

Week 1 (July 24-29)	Introduction of Syllabus,Unit-1: Interference I Interference by Division of Wave front: Young's double slit experiment, Conditions of interference, coherence
Week 2 (August 1-5)	Fresnel's biprism,Applications of Fresnel's Biprism,Lloyd'smirror,Difference between Bi-prism and Llyod mirror fringes
Week 3 (August 7-12)	phase change on reflection,Numerical Problems on Unit 1.
Week 4 (August 14-18)	Unit 2: Introdcution Interference II Interference by Division of Amplitude,Plane parallel thin film
Week 5 (August 21-26)	difference between interference and diffraction, production of colors in thin films,
Week 6 (August 28-September 2)	classification of fringes in films,Newton's rings due to reflected light
Week 7 (September 4 -9)	Newton's rings due to transmittedlight,Applications of Newton's rings
Week 8 (September 11 -16)	Interferometer: Michelson's interferometer,applications of Michelson's interferometer (i) Standardization of a meter (ii) determination of wavelength.
Week 9 (September 18 -22)	numerical Problems on Unit 2,Revision of Unit 1 &2
Week 10 (September 25 -30)	Unit- 3: Introduction Diffraction I Fresnel's diffraction, Fresnel's assumptions ,half period zones
Week 11 (October 3-7)	rectilinear propagation of light, zone plate,Diffraction at a straight edge
Week 12 (October 9-14)	diffraction due to a narrow slit,diffraction due to a narrow wire, circular slit
Week 13 (October 16 - 21)	Unit -4: Diffraction II Fraunhofferdiffraction,single-slit diffraction,
Week 14 (October 23-31)	double-slit diffraction,N-slit diffraction
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	plane transmission granting spectrum,dispersive power of grating,resolving power of telescope , grating,Rayleigh's criterion

NidhiJast
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) EVEN Semester

Class: B.SC 4TH SEM Subject: PHYSICS

Week 1 (January 1-6)	Introduction of syllabus,Polarization: Polarisation by reflection, refraction and scattering
Week 2 (January 8-13)	Malus Law, Phenomenon of double refraction,Huygen's wave theory of double refraction (Normal and oblique incidence)
Week 3 (January 15-20)	Analysis of polarized Light.,Nicol prism, APPLICATIONS OF NICOL PRISM
Week 4 (January 22-27)	Quarter wave plate, half wave plate, production and detection of (i) Plane polarized light
Week 5 (January 29- February 3)	production and detection of (ii) circularly polarized light, (iii) elliptically polarized light
Week 6 (February 5-10)	Optical activity,Fresnel's theory of optical rotation,Specific rotation, Polarimeters (half shade), Polarimeters (Bi-quartz)
Week 7 (February 12-17)	Fourier theorem and Fourier series,evaluation of Fourier coefficient,importance and limitations of Fourier theorem
Week 8 (February 19-23)	even and odd functions,Fourier series of functions f(x) between (i) 0 to 2pi, Fourier series of functions f(x) between (ii)–pi to pi
Week 9 (February 26 March 2)	Parseval identity for Fourier Series, Fourier series of functions f(x) between (iii) 0 to pi,Fourier series of functions f(x) between –L to L
Week 10 (March 4-9)	complex form of Fourier series,Application of Fourier theorem for analysis of complex waves: solution of triangular and rectangular waves
Week 11 (March 11-16)	Fourier transforms and its properties, Fourier integrals,
Week 12 (March 18-22)	Application of Fourier transform (i) for evaluation of integrals, for solution of ordinary differential equations, to the following functions: 1. f(x)= e- x2/2
Week 13 (March 23-31)	Holi Break
Week 14 (April 1-6)	Matrix methods in paraxial optics, effects of translation and refraction,
Week 15 (April 8-13)	derivation of thin lens and thick lens formulae, unit plane,nodal planes,
Week 16 (April 15-20)	Optical fiber, Critical angle of propagation, Mode of Propagation, Acceptance angle, Fractional refractive index change, Numerical aperture,
Week 17 (April 22- 30)	Types of optics fiber, Normalized frequency, Fractional refractive index change, Numerical aperture, Applications, Fiber optic Communication.

NidhiJast
Assistant Professor
Department of Physics

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.Sc. Life Science Section B **Subject: SEC 101**

Week 1 (July 24-29)	
Week 2 (August 1-5)	Operating System - Definition, Functions, Types of Operating System, Basics of Popular Operating Systems
Week 3 (August 7-12)	The User Interface, Exploring Computer, Icons, taskbar, desktop, Using Menu and Menu-selection, managing files and folders
Week 4 (August 14-18)	Control panel – display properties, add/remove software and hardware, Running an Application, Using help, Creating Short cuts, Basics of O.S Setup; Common utilities
Week 5 (August 21-26)	Word Processing - Introduction to Word Processing, Menus, Creating, Editing & Formatting Document, Spell Checking, Printing, Views
Week 6 (August 28-September 2)	Word Art, Mail Merge, Macros, Inserting hyperlinks, Searching for text, Creating bookmarks
Week 7 (September 4 -9)	Tables, Modifying page setup, Applying document themes, Applying document style sets, Inserting headers and footers, Restricting editing, ,
Week 8 (September 11 -16)	Protect a document with a password, Track changes, Manage tracked changes, Adding comments, Managing comments,
Week 9 (September 18 -22)	Spread Sheet: Elements of Electronics Spread Sheet, Applications, Creating and Opening of Spread Sheet
Week 10 (September 25 -30)	Menus, Manipulation of cells: Enter texts numbers and dates, Cell Height and Widths, Copying of cells,
Week 11 (October 3-7)	Mathematical, Statistical and Financial function, Drawing different types of charts, Sort and Filter Data.
Week 12 (October 9-14)	Presentation Software: Creating, modifying and enhancing a presentation
Week 13 (October 16 - 21)	Delivering a presentation, Using sound, animation and design templates in presentation
Week 14 (October 23-31)	Working with Objects, Hyperlinks and Action Buttons, Proofing and Printing.
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Revision and discussion of important topics

Dr. Heena,
Assistant Professor,
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.Sc. 3rd Sem **Subject: Physics (Computer Programming & Thermodynamics)**

Week 1 (July 24-29)	Computer organization, Binary representation, Algorithm development, Flow charts and their interpretation.
Week 2 (August 1-5)	FORTRAN Preliminaries: Integer and floating point arithmetic expression, built in functions
Week 3 (August 7-12)	executable and non-executable statements, input and output statements, Formats, IF, DO and GO TO statements
Week 4 (August 14-18)	Dimension arrays, statement function and function subprogram.
Week 5 (August 21-26)	Algorithm, Flow Chart and Programming for Print out of natural numbers
Week 6 (August 28-September 2)	Range of the set of given numbers, Ascending and descending order
Week 7 (September 4 -9)	Mean and standard deviation, Least square fitting of curve, Roots of quadratic equation
Week 8 (September 11 -16)	Product of two matrices, Numerical integration (Trapezoidal rule and Simpson 1/3 rule) .
Week 9 (September 18 -22)	Thermodynamic system and Zeroth law of thermodynamics. First law of thermodynamics and its limitations, reversible and irreversible process.
Week 10 (September 25 -30)	Second law of thermodynamics and its significance, Carnot theorem, Absolute scale of temperature, Absolute Zero and magnitude of each division on work scale and perfect gas scale
Week 11 (October 3-7)	Joule's free expansion, Joule Thomson effect, Joule-Thomson (Porous plug) experiment, conclusions and explanation, analytical treatment of Joule Thomson effect.
Week 12 (October 9-14)	Entropy, calculations of entropy of reversible and irreversible process , T-S diagram, entropy of a perfect gas, Nernst heat law(third law of thermodynamics)
Week 13 (October 16 - 21)	Liquefaction of gases, (oxygen, air, hydrogen and helium), Solidification of He below 4K, Cooling by adiabatic demagnetization. Derivation of Clausius-Clapeyron and Clausius latent heat equation and their significance,
Week 14 (October 23-31)	Specific heat of saturated vapours,phasediagrame and triple point of a substance, development of Maxwell thermodynamical relations, Thermodynamical functions: Internal energy (U), Helmholtz function (F), Enthalpy (H), Gibbs function (G) and the relations between them
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Derivation of Maxwell thermodynamical relations from thermodynamical functions, Application of Maxwell relations, derivation of Stefans law, adiabatic compression and expention of gas & deduction of theory of Joule Thomson effect.

Dr. Ambika Rani
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.A.Subject: SEC 103

Week 1 (July 24-29)	
Week 2 (August 1-5)	Introduction to Computer: Computer and Latest IT gadgets, Evolution of Computers & its applications, IT gadgets and their applications
Week 3 (August 7-12)	Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Application Software, Systems Software, Utility Software
Week 4 (August 14-18)	Open source and Proprietary Software, Mobile Apps, Introduction to Operating System Operating System, Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets
Week 5 (August 21-26)	User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties
Week 6 (August 28-September 2)	Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions
Week 7 (September 4 -9)	Introduction to Internet and WWW Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology
Week 8 (September 11 -16)	Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address
Week 9 (September 18 -22)	ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering)
Week 10 (September 25 -30)	Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.),
Week 11 (October 3-7)	Exploring the Internet, Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages
Week 12 (October 9-14)	E-mail, Social Networking and e-Governance Services Structure of E-mail, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox,
Week 13 (October 16 - 21)	Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Searching emails, Attaching files with email
Week 14 (October 23-31)	Email Signature, Social Networking & e-Commerce, Facebook, Twitter, Linkedin, Instagram, Instant Messaging (Whatsapp, Facebook Messenger, Telegram), Introduction to Blogs
Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Basics of E-commerce, Netiquettes, Overview of e-Governance Services like Railway Reservation, Passport, eHospital, Accessing e-Governance Services on Mobile, Digital Locker

Dr. Heena
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

Lesson Plan (2023-24) ODD Semester

Class: B.A.Subject: SEC 103

Week 1 (July 24-29)	Introduction to Computer: Computer and Latest IT gadgets
Week 2 (August 1-5)	Evolution of Computers & its applications, IT gadgets and their applications
Week 3 (August 7-12)	Basics of Hardware and Software, Central Processing Unit, Input devices, Output devices, Computer Memory & storage, Application Software, Systems Software, Utility Software
Week 4 (August 14-18)	Open source and Proprietary Software, Mobile Apps, Introduction to Operating System Operating System, Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets
Week 5 (August 21-26)	User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties
Week 6 (August 28-September 2)	Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions
Week 7 (September 4 -9)	Introduction to Internet and WWW Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology
Week 8 (September 11 -16)	Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address
Week 9 (September 18 -22)	ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering)
Week 10 (September 25 - 30)	Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.),
Week 11 (October 3-7)	Exploring the Internet, Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages
Week 12 (October 9-14)	E-mail, Social Networking and e-Governance Services Structure of E-mail, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox,
Week 13 (October 16 - 21)	Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Searching emails, Attaching files with email
Week 14 (October 23-31)	Email Signature, Social Networking & e-Commerce, Facebook, Twitter, Linkedin, Instagram, Instant Messaging (Whatsapp, Facebook Messenger, Telegram), Introduction to Blogs

Week 15 (November 2-9)	Sessional Exams
Week 16 (November 10-16)	Diwali Break
November 17	Sessional MDC
November 18	Revision / Distribution of sessional exams answer sheets
Week 17 (November 20-24)	Basics of E-commerce, Netiquettes, Overview of e-Governance Services like Railway Reservation, Passport, eHospital, Accessing e-Governance Services on Mobile, Digital Locker

Dr. Rubi
Assistant Professor
Physics Department

DYAL SINGH COLLEGE, KARNAL

2023-24

Lesson Plan

Name of the teacher: **Dr. Rajni Seth**

Class and Section: **B.Sc. - Ist Semester(Physical Science with Chemistry Major)**

Week	Date	Topics
1	03.08.2023 to 05.08.2023	Rigid body, Moment of Inertia, Radius of Gyration, Theorems of perpendicular and parallel axis (with proof),
2	10.08.2023 to 12.08.2023	Moment of Inertia of ring, Disc, Angular Disc, Solid cylinder, Solid sphere, Hollow sphere, Rectangular plate,
3	17.08.2023 to 19.08.2023	Square plate, Solid cone, Triangular plate, Torque, Rotational Kinetic Energy,Angular momentum, Law of conservation of angular momentum,
4	24.08.2023 to 26.08.2023	Rolling motion, condition for pure rolling, acceleration of body rolling down an inclined plane, Fly wheel, Moment of Inertia of an irregular body. Numericals and revision
5	31.08.2023 to 02.09.2023	Deforming force, Elastic limit, stress, strain and their types, Hooke's law, Modulus of rigidity, Relation between shear angle and angle of twist, elastic energy stored/volume in an elastic body,
6	07.09.2023 to 09.09.2023	Elongation produced in heavy rod due to its own weight and elastic potential energy stored in it, Tension in rotating rod, Poisson's ratio and its limiting value, Elastic Constants and their relations.
7	14.09.2023 to 16.09.2023	Torque required for twisting cylinder, Hollow shaft is stiffer than solid one. Bending of beam, bending moment and its magnitude, Flexural rigidity, Geometrical moment of inertia for beam of rectangular cross-
8	21.09.2023 to 23.09.2023	Bending of cantilever (loaded by a weight W at its free end), weight of cantilever uniformly distributed over its entire length. Dispersion of a centrally loaded beam supported at its ends, determination of elastic constants for material of wire by Searle's method.Numericals and revision
9	28.09.2023 to 30.09.2023	Michelson's Morley experiment and its outcomes, Postulates of special theory of relativity, Lorentz Transformations, Simultaneity and order of events,
10	05.10.2023 to 07.10.2023	Lorentz contraction, Time dilation, Relativistic transformation of velocity, relativistic addition of velocities, variation of mass-energy equivalence,
11	12.10.2023 to 14.10.2023	relativistic Doppler effect, relativistic kinematics, transformation of energy and momentum, transformation of force, Problems of relativistic dynamics.Numericals and revision

DYAL SINGH COLLEGE, KARNAL

2023-24

Lesson Plan

Name of the teacher: **Dr. Rajni Seth**

Class and Section: **B.Sc. - Ist Semester(Physical Science with Chemistry Major)**

12	19.10.2023 to 21.10.2023	aw of gravitation, Potential and field due to spherical shell and solid sphere
13	26.10.2023 to 28.10.2023	Motion of a particle under central force field, Two body problem and its reduction to one body problem and its solution, compound pendulum or physical pendulum in form of elliptical lamina and expression of time
14	2.11.2023 to 09.11.2023	Internal Assesment Exams
15	10.11.2023 to 16.11.2023	Diwali Vacations
16	17.11.2023 to 18.11.2023	determination of g by means of bar pendulum, Normal coordinates and normal modes, Normal modes of vibration for given spring mass system,
17	23.11.2023 to 30.11.2023	possible angular frequencies of oscillation of two identical simple pendulums of length (l) and small bob of mass (m0 joined together with spring of spring constant (k).Numericals and revision

DYAL SINGH COLLEGE, KARNAL

2023-24

Lesson Plan

Name of the teacher: **Dr. Rubi**

Class and Section: **B.Sc. - Ist Semester(Physical Science with Computer Major)**

Week	Date	Topics
1	Week 1(July 24-29)	Rigid body, Moment of Inertia, Radius of Gyration, Theorems of perpendicular and parallel axis (with proof),
2	Week 2(August 1-5)	Moment of Inertia of ring, Disc, Angular Disc, Solid cylinder, Solid sphere, Hollow sphere, Rectangular plate,
3	Week 3(August 7-12)	Square plate, Solid cone, Triangular plate, Torque, Rotational Kinetic Energy,Angular momentum, Law of conservation of angular momentum,
4	Week 4(August 14-18)	Rolling motion, condition for pure rolling, acceleration of body rolling down an inclined plane, Fly wheel, Moment of Inertia of an irregular body. Numericals and revision
5	Week 5(August 21-26)	Deforming force, Elastic limit, stress, strain and their types, Hooke's law, Modulus of rigidity, Relation between shear angle and angle of twist, elastic energy stored/volume in an elastic body,
6	Week 6(August 28-Sept.2)	Elongation produced in heavy rod due to its own weight and elastic potential energy stored in it, Tension in rotating rod, Poisson's ratio and its limiting value, Elastic Constants and their relations.
7	Week 7(September 4-9)	Torque required for twisting cylinder, Hollow shaft is stiffer than solid one. Bending of beam, bending moment and its magnitude, Flexural rigidity, Geometrical moment of inertia for beam of rectangular cross-
8	Week 8(September 11-16)	Bending of cantilever (loaded by a weight W at its free end), weight of cantilever uniformly distributed over its entire length. Dispersion of a centrally loaded beam supported at its ends, determination of elastic constants for material of wire by Searle's method.Numericals and revision
9	Week 9(September 18-22)	Michelson's Morley experiment and its outcomes, Postulates of special theory of relativity, Lorentz Transformations, Simultaneity and order of events,
10	Week 10(September 25-30)	Lorentz contraction, Time dilation, Relativistic transformation of velocity, relativistic addition of velocities, variation of mass-energy equivalence,
11	Week 11(October 3-7)	relativistic Doppler effect, relativistic kinematics, transformation of energy and momentum, transformation of force, Problems of relativistic dynamics.Numericals and revision

DYAL SINGH COLLEGE, KARNAL

2023-24

Lesson Plan

Name of the teacher: **Dr. Rubi**

Class and Section: **B.Sc. - Ist Semester(Physical Science with Computer Major)**

12	Week 12(October 9-14)	aw of gravitation, Potential and field due to spherical shell and solid sphere
13	Week 13(October 16-21)	Motion of a particle under central force field, Two body problem and its reduction to one body problem and its solution, compound pendulum or physical pendulum in form of elliptical lamina and expression of time
14	Week 14(October 23-31)	determination of g by means of bar pendulum, Normal coordinates and normal modes, Normal modes of vibration for given spring mass system,
15	Week 15(November 2-9)	Sessional Exams
16	Week 16(November 10-16)	Diwali Vacations
17	17-Nov	Sessional MDC
18	18-Nov	Revision / Distribution ofsessional exams answer sheets
19	Week 17(November 20-24)	possible angular frequencies of oscillation of two identical simple pendulums of length (l) and small bob of mass (m0 joined together with spring of spring constant (k).Numericals and revision

DYAL SINGH COLLEGE, KARNAL

2023-24

Lesson Plan

Name of the teacher: **Dr. Rajni Seth**
Class and Section: **B.Sc. 4th sem**
Subject: Phys**ics (Paper: Thermodynamics & Statistical Physics)**

Week	Date	Topics
1	Week 1(January 1-6)	Microscopic and Macroscopic systems, events mutually exclusive, dependent and independent. Probability, statistical probability, A- priori Probability and relation between them, probability theorems
2	Week 2(January 8-13)	some probability considerations, combinations possessing maximum probability, combination possessing minimum probability, Tossing of 2,3 and any number of Coins, Permutations and combinations
3	Week 3(January 15-20)	distributions of N = 2,3,4) distinguishable and indistinguishable particles in two boxes of equal size, Micro and Macro states, Thermodynamical probability, Constraints and Accessible states, Statistical fluctuations
4	Week 4(January 22-27)	General distribution of distinguishable particles in compartments of different sizes, Condition of equilibrium between two systems in thermal contact-- β parameter, Entropy and Probability (Boltzman's relation)
5	Week 5(January 29-Feb.3)	Postulates of statistical physics, Phase space, Division of Phase space into cells, three kinds of statistics, basic approach in three statistics. M. B. statistics applied to an ideal gas in equilibrium
6	Week 6(February 5-10)	speed distribution law & velocity distribution law. Expression for average speed, r.m.s. speed, average velocity, r. m. s. velocity, most probable energy & mean energy for Maxwellian distribution
7	Week 7(February 12-17)	Need for Quantum Statistics: Bose-Einstein energy distribution law, Application of B.E. statistics to Planck's radiation law B.E. gas,
8	Week 8(February 19-23)	F.D. gas and Degeneracy, Fermi energy and Fermi temperature, Fermi Dirac energy distribution law, Fermi Dirac gas and degeneracy,
9	Week 9(February 26-March 2)	Zero point energy, Zero point pressure and average speed (at 0 K) of electron gas, Specific heat anomaly of metals and its solution
10	Week 10(March 4-9)	M.B. distribution as a limiting case of B.E. and F.D. distributions, Comparison of three statistics

DYAL SINGH COLLEGE, KARNAL

2023-24

Lesson Plan

Name of the teacher: **Dr. Rajni Seth**
Class and Section: **B.Sc. 4th sem**
Subject: Phys**ics (Paper: Thermodynamics & Statistical Physics)**

11	Week 11(March 11-16)	Specific heat at low temperature, Einstein theory of specific heat,Criticism of Einstein theory,
12	Week 12(March 18-22)	Debye model of specific heat of solids, success and shortcomings of Debye theory, comparison of Einstein and Debye theories.
13	Week 13(March 23-31)	Holi Break
14	Week 14(April 1-6)	Dulong and Petit law. Derivation of Dulong and Petit law from classical physics
15	Week 15(April 8-13)	Fermi energy and Fermi temperature, Fermi Dirac energy distribution law for electron gas in metals
16	Week 16(April 15-20)	Degeneracy and B.E. Condensation, Fermi- Dirac energy distribution law
17	Week 17(April 22-30)	Revision