Schedule of Teaching Work for Odd Sem (Session 2024-25)

Department of Physics

Name: Dr. Kulwinder Singh Mann

CLASS/SEC	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
B.Sc.IB **(THEORY)** MAJ: *MECHANICS (B)* PHYBH1101T	**RBD (Rigid body motion):** Rotational motion, principal moments and axes. Euler's equations, precession and elementary gyroscope. **FOR (Frame of Reference)**: Concept of stationary universal frame of reference and ether,	**MM Expt.:** Michelson-Morley experiment and its result, **RELATIVITY:** Postulates of special theory of relativity, **LTE:** Lorentz transformations, Observer and viewer in relativity, Relativity of simultaneity, Length, Time, Relativistic addition theorem of velocities,	**RDE:** Relativistic Doppler effect, **$E=mc^2$:**Variation of mass with velocity, mass-energy equivalence, rest mass in an inelastic collision,	**RME:** Relativistic momentum and energy, their transformation , concepts of Minkowski space, four vector formulation.
B.Sc. III, A+B **(THEORY)** **PAPER C:** PHYB3503T- *Nuclear and Radiation Physics*	**NUCLEUS:** Constituents of nucleus and their intrinsic properties, Qualitative facts about size, mass, density, energy, charge. Binding energy, angular momentum, magnetic moment and electric quadruple moments of the nucleus, Wave	**NUCLEAR FORCES:** Properties of nuclear forces, Nonexistence of electrons in the nucleus and neutron-proton model, **MODELS:** Liquid drop model and semi empirical mass formula, Conditions of nuclear stability, Fermi gas model. Nuclear shell model. **MAGIC NUMBERS:**	**RADIOACTIVITY** . Modes of decay and successive radioactivity. Alpha emission. Electron emission, Positron emission. Electron capture, Gamma-ray emission, Internal conversion, Qualitative discussion of alpha, beta and gamma spectra, **Geiger-Nuttal rule,** Neutrino hypothesis of beta decay. Evidence of existence of	**NUCLEAR REACTIONS .** Reaction cross section, Conservation laws. Kinematics of nuclear reaction, Q-value and its physical significance, Compound nucleus, Possible reaction with high energy particles

	mechanical properties of nucleus, average binding energy and its variation with mass numbers,	Experimental evidence of magic numbers and its explanation.	neutrino, Qualitative discussion of alpha and beta decay theories,	
B.Sc.III **PRACTICALS** PHYB3503L (LAB)	1. To draw forward and reverse bias characteristics of a p-n junction diode and draw a load line. 2. To draw the characteristics of a Zener diode 3. To study the stabilization of output voltage of a power supply with Zener diode. 4. Study of a diode as clipping element.	5. To show the variation of resistance of a thermistor with temperature 6. To measure the efficiency and ripple factors for a) Half-wave (b) full wave and (C) bridge rectifier circuits. 7. To study the reduction in the ripple in the rectified output with RC. LC and - filters.	8. Measurement of reverse saturation current in p-n junction diode at various temperatures and to find the approximate value of energy gap. 9. To Plot Common Emitter Characteristics of a transistor (pnp or npn)	10. To study the response of RC circuit to various input voltage (square, sine and triangular) 11. To draw output and mutual Characteristics of an FET and determine its parameters
B.Sc.-I **SEC:** Electronics Workshop-1 PHYBH1107P (LAB) *<u>04Hrs/Week</u>*	1. Draw symbols of various electronic components on drawing sheets. Draw the circuit diagrams of various (Simple to Complex) electronic circuits on drawing sheets. 2. Familiarization of Electronic Measuring Instruments and Components.	3. Testing of electronic components like Resistor, Capacitor, Diode, Transistor using Multimeter. 4. Measurement of resistance, voltage and current using Digital Multimeter. 5. To study the series and parallel combination of a resistor.	6. To study the series and parallel combination of a capacitor. 7. Practice to Solder different components such as resistor, capacitor, diodes and transistors. 8. Sketch, mount, solder and test at least one from following electronic circuit on bread board (Circuits given as a guideline only)	I. How to build a very simple circuit which lights up a single Light Emitting Diode (LED)? II. To build the transistor timer circuit. III. Fire alarm IV. Electronic Eye Controlled Security System Applications

PUNJABI UNIVERSITY, PATIALA

BACHELOR OF SCIENCE

MULTIDISCIPLINARY UG PROGRAMME B.SC. (HONOURS)

UG ROGRAMME TO BE OFFERED BY COLLEGES

SESSION 2024-25, 2025-26, 2026-27 and 2027-28

Code	Title of Paper	Hours (Per Week)	Max Marks			Credits	Examination Time (Hours)
SEMESTER-I			**Total**	**Ext.**	**Int.**		
PHYBH1101T	**MAJ**: Mechanics	04	100	70	30	04	03
PHYBH1103P	**MAJ-LAB:** Physics Laboratory-1	02	50	35	15	01	1.5
PHYBH1104T/P	**MIN**: *Mechanics	05	100	70	30	04	03
PHYBH1105T	**IDC/MDC**:Evolving Universe	02	50	35	15	02	1.5
PHYBH1107P	**SEC**: Electronics Workshop-1	04	50	35	15	02	1.5