Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester/Even Semester)
Session – (2025-26)
Odd Semester

Name of the Teacher: Dr. R. Ridhi
Department: Physics Department
Class: B.Sc. III (Hons.) Vth Semester
Subject: Physics of Semiconductors

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken
	From	To		
1	24/07/2025	30/8/2025	Semiconductor materials, Crystal lattices, Ge and Si crystal structure, production of electronic grade Si, Bulk crystal growth, Epitaxial growth, Bonding forces and energy bands in solids, Metals, semiconductors and insulators, Direct and Indirect semiconductors, intrinsic and extrinsic semiconductors, compensation	PPT, Lecture Method, Chart demonstrations for better clarity of the processes and mechanisms.
2	01/09/2025	30/9/2025	Electrons and holes, effective mass, Fermi level, Conductivity and mobility, temperature dependence of Carrier concentration, effect of temperature, doping and field on mobility, Hall effect, Invariance of Fermi level at equilibrium. Excess carriers in semiconductors: Optical absorption, Photoluminescence, Electroluminescence, Carrier lifetime and photoconductivity, photoconductive devices, Diffusion and drift of carriers: Einstein relation, built-in fields in semiconductors with different doping profiles, energy band diagrams, Steady state carrier injection, diffusion length.	Lecture Method (Blended Form), Online Sources, Group Discussion
3	01/10/2025	31/10/2025	Haynes- Shockley experiment (qualitative discussion). pn junction energy band diagrams, forward and reverse-biased junction, calculation of contact potential and depletion width in abrupt junction, Diffusion and drift currents, Reverse-bias breakdown, Zener and Avalanche diode, Diffusion and depletion capacitance of pn junction, varactors..	Lecture Method, Online Sources and Practical demonstrations
4	01/11/2025	10/11/2025	Metal- semiconductor contacts, energy band diagrams of ohmic and rectifying contacts, Schottky diodes	Lecture Method, Online Sources and Group Discussion

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Monthly Teaching Plans (Odd Semester/Even Semester)
Session – (2025-26)
Even Semester

Name of the Teacher: Dr. R. Ridhi
Department: Physics Department
Class: B.Sc. III (Hons.) VI th Semester
Subject: Nuclear Radiations and Detection

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	09/01/2026	31/01/2026	Radioactive decays: Alpha decay, β - , β+ and EC decays, Radioactivity units, gamma rays, Internal conversion, X-rays, Auger electron, Bremesstrahlung, Annhilation radiation. Neutron sources- fission, radioisotope based sources and photoneutron sources, Accelerator based sources. Radiation Interactions: Interaction of light and heavy Charged Particles, Stopping power, energy and range straggling.	PPT, Lecture Method, Chart demonstrations for better clarity of the processes and mechanisms.
2	01/02/2026	28/02/2026	Interaction of Fast Electrons- ionization and radiative loss, backscattering. Interaction of Gamma rays, photoelectric absorption, Compton scattering and pair production. Attenuation coefficient. Interaction of Neutrons, Slowing down power, thermal neutrons, Sources of Background: Natural radioactivity, Air borne radioactivity, Primary and secondary Cosmic rays. General Properties of Radiation Detectors: Modes of detector operation, Current mode, pulse mode, Pulse Height Spectra	Lecture Method, PPT, Online Sources; Group Discussion, Chart demonstrations for better clarity of the processes and mechanisms.
3	01/03/2026	31/03/2026	Energy Resolution, Detection Efficiency, Dead Time paralyzable and non- paralyzable models, Radiation Detectors: Ionization process in gases, Ion pair formation, fano factor, diffusion, charge transfer and recombination, Charge Migration and Collection. Gas-filled detectors: Gas Multiplication, avalanche formation, Regions of detector operation.	Lecture Method, PPT, Online Sources, Chart demonstrations for better clarity of the processes and mechanisms.
4	01/04/2026	29/04/2026	Proportional Counters, fill gases and choice of geometry. Geiger-Mueller counter, Fill Gases and Quenching mechanism, Recovery time and dead time, detection of charged particles, gamma and neutrons rays with G.M. counter, Scintillation Detectors: Organic and Inorganic Scintillators; Characteristics and parameters associated with Gamma ray spectrum Semiconductor detectors. Detection of slow and fast neutrons by neutron-induced reactions.	Lecture Method, PPT, Online Sources; Group Discussion, Chart demonstrations for better clarity of the processes and mechanisms and doubt sessions.

*Dates for even semester are tentative; they can be varied according to Panjab University Academic Calendar Dates