PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
PANIPAT
DEPARTMENT OF APPLIED SCIENCES & HUMANITIES

LESSON PLAN

Name: -Nitin Sharma **Subject Name: - Semiconductor Physics**

Branch/Semester: -2nd Sem. (Session 2023-24) **Subject Code:- BS-115A**

Sr. No.	Lecture No.	Description of Topic	Lecture plan date	Methodology	Course Outcome
1	L1	Introduction-CO, Subject, Books, Exam pattern	12/02/24	Discussion and Board	
2	L2	Crystalline and Amorphous solids, Crystal Structure.	14/02/24	Lecture method	**CO1**
3	L3	lattice translation vector, symmetry operations, space lattice, basis.	15/02/24	Lecture method	
4	L4	Unit cell and Primitive cell, Fundamental types of lattices: two-dimensional	16/02/24	Lecture method	
5	L5	Three dimensional Bravais lattices; Characteristics of Unit cells.	19/02/24	Lecture method	
6	L6	Simple Cubic (SC), Body Centred Cubic (BCC),	21/02/24	Lecture method	
7	L7	Face Centred Cubic (FCC)	22/02/24	Lecture method	
8	L8	Hexagonal Close Packed (HCP) structure	23/02/24	Lecture method	
9	L9	Simple crystal structures: Sodium Chloride, Cesium Chloride, Diamond	26/02/24	Lecture method	

10	L10	Miller Indices	28/02/24	Lecture method	**CO1**
11	L11	Drawing of Miller Planes	01/03/24	Lecture method	
12	L12	Bonding in Solids	01/03/24	Flip Learning	
13	L13	Point defects in crystals: Schottky and Frenkel defects.	04/03/24	Lecture method	
14	L14	Revision	06/03/24	Lecture method	
15	L15	Need and origin of Quantum concept	07/03/24	Lecture method	**CO2**
16	L16	Wave-particle duality	11/03/24	Lecture method	
17	L17	Phase velocity and group velocity	13/03/24	Lecture method	
18	L18	Uncertainty Principle and its Applications.	14/03/24	Lecture method	
19	L19	Schrodinger's wave equation: time-dependent, time – independent; Physical Significance of wave function □.	15/03/24	Lecture method	
20	L20	Revison of unit - II	18/03/24	Lecture method	
21	L21	PROBLEMS	27/03/24	Lecture method	

22	L22	Bloch theorem, Kronig-Penney Model (qualitative)	28/03/24	Lecture method	
23	L23	CONT..... , Kronig-Penney Model	29/03/24	Lecture method	
24	L24	E versus k diagram	01/04/24	Lecture method	
25	L25	Brillouin Zones	03/04/24	Lecture method	
26	L26	Concept of effective mass of electron.	04/04/24	Lecture method	
27	L27	Distinction between metals, insulators and semiconductors	05/04/24	Lecture method	
28	L28	Hall effect and its Applications	08/04/24	Lecture method	
29	L29	Classical free electron theory: electrical conductivity in metals.	10/04/24	Lecture method	
30	L30	Thermal conductivity in metals.	11/04/24	Lecture method	**CO3**
31	L31	Wiedemann-Franz law	12/04/24	Lecture method	
32	L32	Success and drawbacks of free electron theory	15/04/24	Flip Learning	
33	L33	Quantum free electron theory: wave function, eigen values	18/04/24	Lecture method	
34	L34	Density of states	19/04/24	Lecture method	
35	L35	Fermi-Dirac distribution function	22/04/24	Lecture method	
36	L36	Fermi energy and its importance, Thermionic Emission (qualitative).	24/04/24	Lecture method	
37	L37	Conduction in Semiconductors.	01/05/24	Lecture method	
38	L38	Carrier concentration in intrinsic semiconductors	02/05/24	Lecture method	
39	L39	Extrinsic Semiconductors: Carrier Concentration n-type semiconductors,	03/05/24	Lecture method	
40	L40	Carrier Concentration in p-type semiconductors	13/05/24	Lecture method	

41	L41	**Introduction to lasers**	15/05/24	Lecture method	**CO4**
42	L42	Semiconductor Devices: The p-n junction.	16/05/24	Lecture method	
43	L43	Current-voltage characteristics of p-n junction.	17/05/24	Lecture method	
44	L44	The Transistor: Bipolar Junction Transistor (BJT)	20/05/24	Lecture method	
45	L45	Field Effect Transistor (FET)	22/05/24	Lecture method	
46	L46	Field Effect Transistor (FET) Characteristics	24/05/24	Lecture method	
47	L47	Metal-Semiconductor Junction (Ohmic and Schottky);	27/05/24	Lecture method	
48	L48	Semiconductor Laser	28/05/24	Lecture method	

***Highlighted part represents Content beyond Syllabus topics**

*** Quizzes on Saturdays**

Subject In charge