

# Bhoj Reddy Engineering College for Women: Hyderabad

## Department of Basic Sciences

Lesson plan of faculty member for the academic year 2016–17

Class: I B Tech  
Subject: Engineering Physics

Branch - Section: ECE-B

Semester: II  
Lectures per week: 4

Lecture Number	Topics to be covered	Date (s)
<b>UNIT-I Principles of Quantum Mechanics</b>		
1	Waves and particles	2 January 2017
2	de-Broglie hypothesis, matter waves	3 January 2017
3	Davisson and Germer experiment	4 January 2017
4	Problems	6 January 2017
5	Heisenberg's uncertainty principle	9 January 2017
6	Consequences of Heisenberg's uncertainty principle	10 January 2017
7	problems	11 January 2017
8	Schrodinger time independent wave equation	13 January 2017
9	Physical significance of wave function	16 January 2017
10	Particle in 1-D potential box	17 January 2017
11	Electron in periodic potential, Kronig-Penny model (qualitative treatment)	18 January 2017
12	E-K curve	20 January 2017
13	origin of energy band formation in solids	23 January 2017
14	Revision	24 January 2017
<b>UNIT-II Semiconductor Physics</b>		
15	Introduction to semiconductors	25 January 2017
16	Fermi level in intrinsic semiconductors	27 January 2017
17	Fermi level in extrinsic semiconductors	30 January 2017
18	Calculation of carrier concentration in intrinsic semiconductors	31 January 2017
19	Calculation of carrier concentration in extrinsic semiconductors P-Type	1 February 2017
20	Calculation of carrier concentration in extrinsic semiconductors N-Type	3 February 2017
21	Direct and indirect band gap semiconductors	6 February 2017
22	problems	7 February 2017
23	Formation of PN junction	8 February 2017
24	open circuit PN junction	10 February 2017
25	energy diagram of PN junction diode	13 February 2017
26	Solar cell: I-V characteristics and applications	14 February 2017
27	Problems	15 February 2017
<b>UNIT – III Dielectric Properties</b>		
28	Electric dipole, dipole moment, dielectric constant, polarizability	17 February 2017
29	Electric susceptibility, displacement vector, electronic, ionic and orientation polarizations	20 February 2017
30	problems	21 February 2017
31	Calculation of electronic polarizability	22 February 2017
32	Calculation of ionic polarizability	24 February 2017
33	Calculation of orientation polarizability	27 February 2017
34	Internal field	28 February 2017
35	Clausius-Mossotti relation	1 March 2017
36	Revision	3 March 2017
37	Revision	10 March 2017

40	Problems	16 March 2017
41	Revision	18 March 2017
<b>UNIT – IV Magnetic Properties &amp; Superconductivity</b>		
42	Permeability, field intensity, magnetic field induction	20 March 2017
43	magnetization, magnetic susceptibility	21 March 2017
44	problems	22 March 2017
45	Origin of magnetic moment	24 March 2017
46	Bohr magneton	27 March 2017
47	Classification of dia, para and ferro magnetic materials on the basis of magnetic moment	28 March 2017
48	problems	29 March 2017
49	Hysteresis curve	31 March 2017
50	Hysteresis curve based on domain theory	3 April 2017
51	soft and hard magnetic materials	4 April 2017
52	Properties of antiferro and ferri magnetic materials	5 April 2017
53	Superconductivity: Superconductivity phenomenon	7 April 2017
54	Meissner effect, applications of superconductivity	10 April 2017
55	Problems	11 April 2017
56	Revision	12 April 2017
<b>UNIT – V Introduction to Nanoscience</b>		
57	Origin of nanoscience, nanoscale	14 April 2017
58	surface to volume ratio, Quantum confinement	17 April 2017
59	dominance of electromagnetic forces	18 April 2017
60	Random molecular motion	19 April 2017
61	Bottomup fabrication: Sol-gel	21 April 2017
62	CVD	24 April 2017
63	PVD techniques	25 April 2017
64	Top-down fabrication: ball mill method	26 April 2017
65	Characterization by XRD, SEM	28 April 2017
66	TEM	1 May 2017
67	Revision	2 May 2017
68	Revision	3 May 2017
69	Revision	5 May 2017
70	Revision	8 May 2017
71	Revision	9 May 2017

**Text book:**

1. Solid State Physics, A. J. Dekkar, Macmillan publishers Ind. Ltd.,
2. Solid State Physics, Chales Kittel, Wiley student edition.
3. Fundamentals of Physics, Alan Giambattisa, BM Richardson and Robert C Richardson, Tata McGraw hill Publishers

Name and signature of the faculty: Vijitha J S

Name and signature of Head of the Department: Padma K