MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session–(2024-2025)

Name of the Teacher: Dr. Monika
Department: Department of Physics
Class: B.Sc. III non-medical
Subject: Electronics and Solid State Devices-1 (Paper B)
Section (s): Non-medical

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
Odd semester				
1.	15th July 2024	31th August 2024	CRO, Block diagram, construction and principle of working, Use of CRO for frequency, time period, special features of dual trace, phase measurements. Energy band diagrams in semiconductors, Direct and indirect semiconductors, Formula to calculate Position of Fermi level in p and n semiconductors, Barrier formation, energy band diagram of p-n junction, Formula for Depletion width, current flow mechanism in forward and reverse biased diode, V-I characteristics. Static and dynamic resistance, Depletion and diffusion capacitance, zener diode, voltage regulation circuit using zener diode, LED, photodiode and solar cell.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems
2.	1th Sept. 2024	30th Sept. 2024	Diode circuits, Clipping circuits, Rectification: half wave, full wave and bridge rectifiers, filter circuits (C, LC and π filters). Rectification efficiency and ripple factor in LC filter , voltage multiplier circuits. Bipolar Junction transistors: Structure and working, different currents in transistor, switching action.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) online material
3.	1st Oct. 2024	31st Oct. 2024	Characteristics of CB, CE and CC configurations, Active, cutoff and	(i) Lecture method

			saturation regions, Load line analysis of transistors, Q-point, Transistor biasing and stabilization of operating point, fixed bias, collector to base bias, bias circuit with emitter resistor, voltage divider biasing circuit.	(ii) Group discussion (iii) Notes (iv) Numerical Problems (v) online material
4.	1st Nov. 2024	18th Nov. 2024	Working analysis of CE amplifier using h-parameters, current, voltage and power gain, input and output impedance. Class A, B and C amplifiers.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems

Class: B.Sc. II computer applications
Subject: Statistical Physics and thermodynamics-1 Section (s) Voc

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
Odd semester				
1.	15/07/2024	31/8/2024	Basic ideas of Statistical Physics, Scope of Statistical Physics, basic ideas about probability, distribution of four distinguishable particles in two compartments of equal size. Concept of macrostates, microstates, thermodynamic probability	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems
3.	01/9/2024	30/9/2024	Effects of constraints on the system, distribution of n particles in two compartments, deviation from the state of maximum probability, equilibrium state of dynamic system, distribution of distinguishable n particles in k compartments of unequal sizes.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems
4.	01/10/2024	31/10/2024	Phase space and its division into elementary cells, three kinds of statistics. The basic approach in the three statistics. Maxwell-Boltzman statistics applied to an ideal gas in equilibrium, experimental verification of Maxwell-Boltzman's law of distribution of molecular speeds.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems
5.	01/11/2024	18/11/2024	Need of quantum statistics--B.E. statistics, derivation of Planck's law of radiation, deduction of Wien's displacement law and Stefan's law from Planck's law, F.D. statistics, Comparison of M.B., B.E. and F.D. statistics.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session–(2024-2025)

Name of the Teacher: Dr. Monika
Department: Department of Physics
Class: B.Sc. III non-medical
Subject: Electronics and Solid State Devices-II (Paper B)
Section (s): Non-medical

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
Odd semester				
2.	10th January 2025	31st January 2025	Structure and working of JEFT, characteristics, drain and transconductance curve, FET amplifier and its voltage gain, Structure and working of MOSFET. Feed back in amplifiers, voltage gain of negative feedback amplifier, advantages of negative voltage feedback, negative current feedback circuit, emitter follower.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems
2.	1th February 2025	28th February 2025	Theory of sinusoidal oscillations, loop gain and phase, Lead-lag RC circuit, Wein bridge oscillator. Barkhausen criterion of sustained oscillations, positive feedback amplifier, LC oscillators, Colpitts and Hartley oscillators. Operational amplifier (black box approach) : Characteristics of ideal and practical opamp 741, open-loop and closed-loop gain, characteristics and applications - inverting and non-inverting amplifiers	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) online material
3.	1st March 2025	31st March 2025	adder, subtractor, differentiator and integrator, Comparator, Timer IC555, pin diagram and its applications as astable and monostable multivibrator. Analog and digital circuits, binary numbers, decimal to binary	(iii) Lecture method (iv) Group discussion (iii) Notes (iv) Numerical Problems

			conversions, AND, OR, NOT gates, NAND NOR gates as universal gates, XOR and XNOR gates. De Morgan's theorem, Simplification of logic circuit using Boolean algebra, Minterms and Maxterms,	(v) online material
4.	1st April 2025	26th April 2025	Conversion of a truth table into an equivalent logic circuit by Sum of products method. (Book 3) Analog and digital communication systems, Amplitude and Frequency modulation, Power in AM wave, generation and detection, Brief account of Satellite communication, Sky-wave communication, and mobile communication.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes (v) Numerical Problems

Class: B.Sc. II computer applications
Subject: Statistical Physics and thermodynamics-II Section (s) Voc

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	10/01/2025	28/2/2025	Statistical definition of entropy, change of entropy of a system, additive nature of entropy, law of increase of entropy, reversible and irreversible processes with examples. Work done in a reversible process. Examples of increase of entropy in natural processes. Entropy and disorder. Brief review of the terms and Laws of Thermodynamics, Carnot's Cycle. Entropy changes in Carnot's Cycle.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) Class tests and doubt sessions
2.	01/03/2025	31/03/2025	Applications of thermodynamics to thermoelectric effect, change of entropy along a reversible path in a P.V. diagram, entropy of a perfect gas. Equation of state of ideal gas from simple statistical consideration. Heat death of the universe. Derivation of Maxwell's thermodynamical relations and applications, cooling produced by adiabatic stretching, adiabatic compression, change of internal energy with volume.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems (v) Class Tests and doubt sessions
3.	01/4/2025	26/4/2025	Expression for (Cp-Cv), change of state and Clayperon Equation. Thermodynamical treatment of Joule-Thomson effect. Use of Joule-Thomson effect for liquification of helium. Production of very low temperature by adiabatic demagnetisation.	(i) Lecture method (ii) Group discussion (iii) Notes (iv) Numerical Problems v) Class tests and doubt sessions