MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session – (_2021-2022_)

Name of the Teacher: Dr. Ishita Sharma

Department: Physics

Class: B.Sc (II)

Subject: Physics of Vacuum and Low temperature

Section (s): B.Sc (II)_Honours

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	11th Aug. 2021	31th Aug. 2021	Introduction, classification of vacuum ranges, throughput, Pump speed, speed of exhaust, conductance, ultimate pressure, viscous flow, molecular flow.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems
2	1st Sept. 2021	30th Sept. 2021	Production of Low Pressures: Pump types, Gaede oil-sealed rotating vane pump, Diffusion pump, sputter ion pumps, Gettering, types of getters, Cryogenic pumps. Measurement of Low Pressures: Types of gauges, Mcleod gauge, Pirani gauge, Measurement of ultrahigh vacuum, penning gauge. Methodology of Vacuum systems: Vacuum system, Materials for vacuum system, cleaning and sealing of vacuum system, Leak detection and its location.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems
3	1st Oct. 2021	31th Oct. 2021	Methodology of Vacuum systems: Vacuum system, Materials for vacuum system, cleaning and sealing of vacuum system, Leak	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical

			detection and its location. Various methods for refrigeration, Coefficient of performance, Liquefaction of gases, Joule-Thomson effect,	Problems
4	1st Nov. 2021	30th Nov. 2021	Principle of regenerative cooling, liquefaction of H2 and He, Liquefaction of nitrogen, Solidification of He. Liquid He II, Thermodynamics of λ-transition, Adiabatic demagnetization, Linde's method, Temperatures below 0.01K, Low temperature thermometry and techniques, Use of liquid air and other liquefied gases	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (_2021-2022_)

Name of the Teacher: Dr. Ishita Sharma

Department: Physics

Class: B.Sc (II)

Subject: Statistics and Numerical Techniques

Section (s): B.Sc (II)_Honours

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	03rd Feb. 2022	28th Feb. 2022	Measures of central tendency, Arithmetic mean, median, mode, Geometric mean, Harmonic mean, Quartiles, deciles and percentiles. Measures of dispersion : Standard deviation, mean deviation, semi-interquartile range, coefficient of variation, Moments, Skewness and Kurtosis.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems
2	1st Mar. 2022	31th Mar. 2022	Linear Correlation and Regression for Two Variables only. Conditional probability, probability distributions, Mathematical expectation, Probability and Combinatorial analysis, Characterization of Data, Binomial, Normal and Poisson distributions and their applications	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems
3	1st April 2022	31st April 2022	Estimation of the Precision of a Single Measurement, Measure of consistency of observed fluctuations with expected Statistical fluctuation, chi square, Error	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems

			Propagation, Distribution of time intervals between successive random events. Solution of Algebraic and Transcendental Equations: Bisection Method, Secant Method, Newton-Raphson Method.	
4	1st April 2022	31st April 2022	Interpolation: Finite difference interpolation with equal intervals, Newton' Forward and Backward Interpolation Formulae, Interpolation with unequally spaced points, Lagrange's interpolation formula, Extrapolation. Numerical integration by Trapezoidal, Weddle's and Simpson's rules, Romberg integration. Numerical differentiation by Newtons's forward and backward difference formulae, divided difference formula.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems
5	1st May 2022	25th May 2022	Numerical solution of differential equations, Euler's and Runge-Kutta Method. Method of least-squares fitting of straight line, parabola and exponential curves, least squares fitting for any non-linear function by iterative method.	(i) Lecture method (ii) PPt (iii) Group discussion (iv) Notes, Practicals (v) Numerical Problems