CURRICULAM PLAN OF Dr. VARSHA

FOR EVEN SEMESTER 2024-25

B.Sc. (H) PHYSICS (IST YEAR)

PAPER- DSC- Mathematical Physics-II (2222011201)

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| CONTENT | ALLOCATION OF LECTURES | SCHEDULE FOLLOWED |
| **Orthogonal Curvilinear Coordinates:** Orthogonal Curvilinear Coordinates. Scale factors,element of area and volume in spherical and cylindrical coordinate Systems. Derivation ofGradient, Divergence, Curl and Laplacian in Spherical and Cylindrical Coordinate Systems**Fourier Series:** Periodic functions, Orthogonality of sine and cosine functions, Convergence ofFourier series and Dirichlet Conditions (Statement only), Expansion of periodic functions in aseries of sine and cosine functions and determination of Fourier coefficients, Even and oddfunctions and their Fourier expansions (Fourier Cosine Series and Fourier Sine Series),Parseval's Identity. | (13 Lectures) | 27th JAN and 1-28 FEB, 1st week of MarchDerivations and Numericals |
| Frobenius Method and series solution of Differential Equations: Singular Points of Second Order Linear Differential Equations and their importance, Frobenius method for finding series solution and its applications, Legendre Differential Equations and its solution. Properties of Legendre Polynomials: Rodrigues Formula, Generating Function, Orthogonality of Legendre Polynomials, Simple recurrence relations, Expansion of function in a series of Legendre Polynomials. Some Special Integrals: Beta and Gamma Functions and relation between them, Expression of Integrals in terms of Gamma and Beta Functions. | (17 Lectures) | 2nd week of March, April to 25th MayDerivations andNumericalsClass test on unit endDiscussion ofImportant questions |