**CURRICULAM PLAN OF Dr. VARSHA**

**FOR EVEN SEMESTER 2024-25**

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

**PAPER- DSC- Mathematical Physics-II (2222011201)**

**LEARNING OBJECTIVES**

The emphasis of course is on applications in solving problems of interest to physicists. The course will also expose students to fundamental computational physics skills enabling them to solve a wide range of physics problems. The skills developed during course will prepare them not only for doing fundamental and applied research but also for a wide variety of careers.

**LEARNING OUTCOMES**

After completing this course, student will be able to,

• Use curvilinear coordinates to solve problems with spherical and cylindrical symmetries

• Represent a periodic function by a sum of harmonics using Fourier series

• Obtain power series solution of differential equation of second order with variable coefficient using Frobenius method

• Understand the properties and applications of Legendre polynomials • Learn about gamma and beta functions and their applications

• In the laboratory course, the students will learn to

• Apply appropriate numerical method to solve selected physics problems both using user defined and in-built functions from Scilab/ Python

• Solve non-linear equations

• Perform least square fitting of the data taken in physics lab by user defined functions.

• Interpolate a data by polynomial approximations

• Generate and plot a function by its series representation

• Generate and plot Legendre polynomials and verify their properties.

• Numerically integrate a function and solve first order initial value problems numerically.