PPH107 PHYSICS LAB II

L T P Cr
0 0 6 3

Course Objective: The student is able to use computer programming for simulation and data analysis.

Laboratory Assignments:

1. To find mean, standard deviation and frequency distribution of an actual data set from any physics experiment.

2. To determine Wien's constant using bisection method and false position method.

3. To solve Kepler's equation by Newton-Raphson method.

4. To solve van der Waals gas equation for volume of a real gas by the method of successive approximation.

5. To interpolate a real data set from an experiment using the Lagrange's method, and Newton's method of forward differences and cubic splines.

6. To fit the Einstein's photoelectric equation to a realistic data set and hence calculate Planck's constant.

7. To find the area of a unit circle by Monte Carlo integration.

8. To simulate the random walk.

9. To study the motion of an artificial satellite by solving Newton's equation for its orbit using Euler method.

10. To study the growth and decay of current in RL circuit containing (a) DC source and (b) AC using Runge Kutta method, and to draw graphs between current and time in each case.

Course Outcomes: Students will be able to

1. write computer programs using FORTRAN 90
2. use different numerical methods to solve problems using computer programs.
3. simulate physical systems using Monte Carlo Method.

Evaluation Scheme:

Sr. No.	Evaluation Elements	Weightage (%)
1	Lab Evaluation	100