VEER NARMAD SOUTH GUJARAT UNIVERSITY

Syllabus for B. Sc. Semester VI

Subject: Physics (PHY-6006)

Paper – VI

[2 credit course- 2 hours per week]

Unit – I **Mechanics** **Duration: 15 hrs**

Rotating frames and relative coordinate systems:

Inertial vs non inertial systems (5.1), Translation motion (5.2), rotating coordinate systems (5.3), Foucault pendulum (5.5)

Text book: Classical Mechanics by Gupta, Kumar and Sharma, Pragati Prakashan (26th edition 2012)

The motion of rigid body:

Angular momentum (8.2), kinetic energy (8.3), inertia tensor (8.4), principal axes (8.5), Euler's angle (8.6), Euler's equation of motion (8.10), force-free motion of a symmetrical top (8.11)

Text book: Classical mechanics by G Aruldhas, PHI publications

Unit – II **Mathematical methods** **Duration: 15 hrs**

Fourier series and integrals:

Definitions, Evaluations of coefficients of Fourier series, Cosine and Sine series (7.1), Dirichlet's theorem (7.2), Extension of the interval (7.4)

Complex Variables:

Definition of complex numbers (4.1), equality of complex numbers (4.2), complex algebra (4.3), conjugate complex numbers (4.4), graphical representation of complex numbers (4.5), Geometrical representation of the sum, difference, product and quotient of complex numbers, solved problems on complex numbers (4.6), Functions of complex variable (4.7), Analytical functions, Cauahy – Rienmann condition (4.8)

Text book: Mathematical physics by B S Rajput, Pragati prakashan (17th edition)

Note: Illustrative problems on all the relevant topics should be covered.

REFRENCE BOOKS:

1. University physics by Sears & Zimansky, Pearson
2. University physics by Freedman, Pearson
3. Berkeley physics course volume I, Tata McGraw-Hill Education
4. Classical Mechanics by J. C. Upadhyay, Himalaya publishing house
5. Classical Mechanics by Takwale and Puranik, Tata McGraw-Hill Education
6. Mathematical Methods in Physical Sciences by M Boas, Wiley eastern