# Government PG College, Ambala Cantt

## Course File (Session 2023-2024)(EVEN SEMESTER)

## Name of professor: Deepak Kumar

## Class: B.Sc III /6th semester/computer science + Non medical

## Subject Name: Dynamics

**Time : 3 Hours**

| B.SC | B.A |
|---|---|
| THEORY: 40 | THEORY: 27 |
| SESSIONAL :10 | SESSIONAL :7 |

**Note**: The examiner is requested to **set nine questions in all**, selecting two questions from each section and one compulsory question consisting of five or six parts distributed over all the four sections. Candidates are required to attempt **five questions** in all, selecting **at least one question** form each section and the compulsory question.

### SECTION -I

Velocity and acceleration along radial, transverse, tangential and normal directions. Relative velocity and acceleration. Simple harmonic motion. Elastic strings.

### SECTION -II

Mass, Momentum and Force. Newton's laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces.

### SECTION -III

Motion on smooth and rough plane curves. Projectile motion of a particle in a plane. Vector angular velocity.

### SECTION -IV

General motion of a rigid body. Central Orbits, Kepler laws of motion. Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate systems.

## Books Recommended:

1. S.L.Loney : An Elementary Treatise on the Dynamics of a Particle and a Rigid Bodies, Cambridge University Press, 1956

2. F. Chorlton : Dynamics, CBS Publishers, New Delhi

3. A.S. Ramsey:

**LESSON PLAN**

| Scheduled Dates | Topic to be covered |
|---|---|
| 1-15 January | Velocity and acceleration along radial, transverse, tangential and normal directions. |
| 16-31 January | Relative velocity and acceleration. Simple harmonic motion. Elastic strings |
| 1-15 February | Mass, Momentum and Force. Newton's laws of motion |
| 16-29 February | Work, Power and Energy. Definitions of Conservative forces and Impulsive forces. |
| 1-15 March | Motion on smooth and rough plane curves. |
| 16-31 March | Projectile motion of a particle in a plane. Vector angular velocity |
| 1-15 April | General motion of a rigid body. Central Orbits, Kepler laws of motion |
| 16-20 April | Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate systems. |
| 21-27 April | test/ Assignment/Revision |