# UNIVERSITY OF MADRAS

## B.Sc. DEGREE COURSE IN MATHEMATICS

**SYLLABUS WITH EFFECT FROM 2020-2021**

**BMA-CSC11**

## CORE-XI: DYNAMICS

**(Common to B.Sc. Maths with Computer Applications)**

**Inst.Hrs : 6** **YEAR: III**

**Credits : 4** **SEMESTER: V**

**Learning outcomes:**

**Students will acquire knowledge of**

- The motion of bodies under the influence of forces.
- Rectilinear motion of particles, Projectiles, Impact and Moment of Inertia of Particles.

**UNIT I**

Kinematics -Basic units – velocity – acceleration- coplanar motion.
Chapter 1 - Section 1.1 to 1.4.

**UNIT II** Work, Energy and power – work – conservative field of force – power – Rectilinear motion under varying Force: Simple harmonic motion ( S.H.M.) – S.H.M. along a horizontal line- S.H.M. along a vertical line
Chapter 11 - Section 11.1to 11.3, Chapter 12 - Section 12.1 to 12.3

**UNIT III**

Projectiles -Forces on a projectile- projectile projected on an inclined plane.
Impact: Impulsive force - impact of sphere - impact of two smooth spheres – impact of a smooth sphere on a plane – oblique impact of two smooth spheres
Chapter 13 - Section 13.1,13.2, Chapter 14 - Section 14.1, 14.5

**UNIT IV**

Circular motion – Conical pendulum – simple pendulum – central orbits -general orbits - central orbits- conic as centered orbit.
Chapter 15 - Section 15.1, 15.2, 15.6
Chapter 16 - Section 16.1 to 16.3

**UNIT V**

Moment of inertia, Perpendicular and parallel axes theorem.
Chapter 17 -Section 17.1, 17.1.1

**Contents and treatment as in**

"Mechanics" – P. Duraipandian, LaxmiDuraipandian ,MuthamizhJayapragasham, S. Chand and Co limited 2008 .

**Reference :**


1. Dynamics – K. ViswanathaNaik and M. S. Kasi, Emerald Publishers.
2. Dynamics – A. V. Dharmapadam, S. Viswanathan Publishers.
3. Mechanics – Walter Grenier


**e-Resources:**

1. https://nptel.ac.in
2. https://www.wikipedia.org