MPD-C202 SPORTS BIOMECHANICS AND KINSESIOLOGY

The Course learning outcomes (COs): On completion of the two years M.P.Ed., program, the students will be learning and able to do/perform the following…….

CO-1. Defining the fundamental concepts of sports biomechanics and kinesiology.

CO-2. Identifying the fundamental concepts of muscles with actions.

CO-3. Describing the fundamentals of motions and forces in sports.

CO-4. Discussing the fundamentals of projectile, lever and dynamics.

CO-5. Measuring the advantages of leverage, Newton's laws of motion and various movements, at the time of human motion.

UNIT I – Introduction

Meaning, nature, role and scope of applied kinesiology and Sports Biomechanics.

Meaning of Axis and Planes, Kinematics, Kinetics.

Centre of gravity -Line of gravity plane of the body and axis of motion.

Vectors and Scalars quantity.

UNIT II – Muscle Action

Origin, Insertion and action of muscles: Pectoralis major and minor, Deltoid, Biceps, Triceps (Anterior and Posterior), Trapezius, serratus, Sartorius, Rectus femoris, Abdominis, Quadriceps, Hamstring, Gastrocnemius.

UNIT III – Motion and Force

Meaning and definition of Motion. Types of Motion: Linear motion, angular motion, circular motion, uniform motion.

Principles related to the law of Inertia, Law of acceleration, and law of counter force.

Meaning and definition of force.Force applied at an angle - pressure -friction -Buoyancy, Spin - Centripetal force - Centrifugal force.

UNIT IV – Projectile, Lever and Movement Analysis

Freely falling bodies - Projectiles -Equation of projectiles stability Factors influencing equilibrium - Guiding principles for stability -static and dynamic stability.

Meaning of work, power, energy, kinetic energy and potential energy.

Leverage -classes of lever - practical application.

Water resistance - Air resistance -Aerodynamics.

Biomechanical Analysis of Movements (Running, Walking, Throwing and Jumping).

References: Deshpande S.H. (2002). ManavKriyaVigyan – Kinesiology (Hindi Edition) Amravati:HanumanVyayamPrasarakMandal.

Hoffman S.J. Introduction to Kinesiology (Human Kinesiology publication Inc. 2005

Thomas. (2001). Manual of structural Kinesiology, New York: McGraw Hill.

Uppal, A (2004), Kinesiology in Physical Education and Exercise Science, Delhi Friends publications.

Williams M (1982) Biomechanics of Human Motion, Philadelphia; Saunders Co.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1								
CO 2								
CO 3								
CO 4								
CO 5								