Semester – IV Theory Courses

BPD-C402 KINESIOLOGY AND BIOMECHANICS

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

CO-1.Memorizing the fundamental concepts of anatomy, physiology, kinesiology and biomechanics.

CO-2. Describing the fundamental concepts of Kinematics and Kinetics of Human Movement.

CO-3. Explaining the fundamentals of Mechanical Concepts.

CO-4. Describing the fundamentals of Kinematics and Kinetics of Human Movement.

CO-5. Establishing the concept of leverage, Newton's laws of motion and projectile during performing sports skills.

Unit – I Introduction to Kinesiology and Sports Biomechanics (10 Hrs.)

Meaning and Definition of Kinesiology and Sports Biomechanics

Importance of Kinesiology and Sports Biomechanics to Physical Education Teacher, Athletes and Sports Coaches.

Terminology of Fundamental Movements

Fundamental concepts of following terms – Axes and Planes, Centre of Gravity, Equilibrium, Line of Gravity

Unit – II Fundamental Concept of Anatomy and Physiology (15 Hrs.)

Classification of Joints and Muscles

Types of Muscle Contractions

Posture – Meaning, Types and Importance of good posture.

Fundamental concepts of following terms- Angle of Pull, All or None Law, Reciprocal Innervation

Unit – III Mechanical Concepts (15 Hrs.)

Force - Meaning, definition, types and its application to sports activities

Lever - Meaning, definition, types and its application to human body.

Newton's Laws of Motion – Meaning, definition and its application to sports activities.

Projectile – Factors influencing projectile trajectory.

Unit – IV Kinematics and Kinetics of Human Movement (15 Hrs.)

Linear Kinematics – Distance and Displacement, speed and velocity, Acceleration

Angular kinematics – Angular Distance and Displacement, Angular Speed and velocity, Angular Acceleration.

Linear Kinetics – Inertia, Mass, Momentum, Friction.

Angular Kinetics – Moment of inertia, Couple, Stability.

Reference:

Bunn, J. W. (1972).*Scientific principles of coaching.* Englewood Cliffs, N.J.: Prentice Hall Inc.

Hay, J. G. & Reid, J. G.(1982).*The anatomical and mechanical basis of human motion.* Englewood Cliffs, N.J.: prentice Hall Inc.

Hay, J. G. & Reid, J. G.(1988).*Anatomy, mechanics and human motion.* Englewood Cliffs, N.J.: prentice Hall Inc.

Hay, J. G. (1970).*The biomechanics of sports techniques*. Englewood Cliffs, N.J.: Prentice Hall, Inc.

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