

Unit I: Introduction to Kinesiology and Sport Biomechanics

- Meaning and definition of Kinesiology and Sports Biomechanics
- Importance of Kinesiology and Sports Biomechanics to Physical Education Teacher.
- Athletics and Sports Coaches.
- Terminology of Fundamental Movements.
- Fundamental concepts of following terms Axes and Planes, Centre of Gravity, Equilibrium, Line of Gravity

Unit II: Classification of Joints and muscles

- 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 Innovation

Unit III: Mechanical Concepts

- 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

- 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.

Unit V: Biomechanical Analysis

- Biomechanical analysis of walking jogging running jumping - throwing

Reference:

1. Bunn, J. W. (1972).Scientific principles of coaching. Englewood Cliffs, N.J.: Prentice Hall Inc.
2. Hay, J. G. and Reid, J. G.(1982). The anatomical and mechanical basis of human motion Englewood Cliffs, N.J.: prentice Hall Inc.
3. Hay, J. G. (1970). The biomechanics of sports techniques. Englewood Cliffs, N.J.: Prentice Hall, Inc.
4. Simonian, C.(191 1).Fundamentals of sport biomechanics. Englewood Cliffs, N.J.: Prentice Hall Inc.