

**MULTI DISCIPLINARY COURSE (MDC) FOR 4 YEARS CBCS UNDERGRADUATE PROGRAMME**

**MDCCBCS 1: SPORTS SCIENCE**

Course Title	Credit	Credit Distribution		
		Theory	Tutorial	Practical
<b>SPORTS SCIENCE</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>0</b>

**Unit – 1: (10 Hours)**

Measurement: Physical quantities. Standards and Units. International System of Units. Standards of time, length and mass. Precision and significant figures.  
Projectile motion: Shooting a falling target. Physics behind Shooting, Javelin throw and Discus throw  
Force, Mass, Mass and weight, Newton's laws of motion: Newton's first law, Newton's second law, Newton's third law.  
Implications of Newton's laws in Physical Education and Sports. Levers, Equilibrium, Center of gravity, force centripetal and centrifugal force; Application of biomechanical principles to high jump, throwing movement, like discuss, shotput and javelin

**Unit 2: (10 Hours)**

Conservation laws: Conservation of linear momentum, collisions — elastic and inelastic. Angular momentum, Physics behind Carom, Billiards, Racing  
Physics behind Cycling, rock climbing, Skating, Gravitation: Origin, Newton's law of gravitation. Archimedes's principle, Buoyancy, Physics behind swimming

**Unit 3: (10 Hours)**

Meaning of kinesiology, brief history of Kinesiology, Importance of kinesiology for games and sports; structural & functional classification of muscles. Role of muscles in Physical activity, anatomical standing position, planes and axes of movement. Terminology of fundamental movement.

**Unit 4: (10 Hours)**

Food and Nutrition: Proteins, Vitamins, Fat, Blood Pressure, Problems due to the deficiency of vitamins. Energy: Different forms of Energy, Conservation of energy.  
Physical exercises: Walking, Jogging and Running, Weight management.

**Suggested Books:**

1. Physics for Entertainment-Yakov Perelman, Createspace Independent Pub.
2. Physics Everywhere, Yakov Perelman - Prodinova
3. Mechanics for Entertainment- Yakov Perelman – Prodinova
4. Food Science- Sri Lakshami, New Age Publications
5. Concepts of Physics – HC Verma, Bharati Bhawan
6. An introduction to the Physics of Sports-Vassilios McInnes Spathopoulos, Createspace Independent publishing Platform

Internet resources <https://www.topendsports.com/biomechanics/physics.htm>

<https://www.real-world-physics-problems.com/physics-of-sports.html>

Topics for Self Study: <https://www.real-world-physics-problems.com/physics-of-sports.html>