

Course Code	Course Name	Credits
26PE008	Foundation of AI in Sports	04

### Course Objectives

- Introduce the concept, history, and scope of Artificial Intelligence in sports and Physical Education.
- Explain the difference between human intelligence and machine intelligence in sports applications.
- Understand wearable technologies, sensors, and mobile applications for fitness tracking.
- Apply computer vision and video analysis for performance and technique improvement.
- Analyze AI applications in workload monitoring, injury prevention, and health management.
- Evaluate ethical issues, data privacy, and emerging technologies in sports science.

### Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Understand basic concepts and evolution of AI in sports and physical education.
- Apply wearable devices and mobile apps for fitness monitoring and data collection.
- Analyze sports performance using video analysis and motion tracking tools.
- Evaluate athlete workload, recovery, and injury prevention using AI systems.
- Understand ethical considerations in data handling and sports technology use.

**Unit 1- Introduction to AI in Sports:** Meaning and Definition of Artificial Intelligence - History of Technology in Sports - Need and Scope of AI in Physical Education. Understanding the difference between Human Intelligence and Machine Intelligence.

**Unit 2- Wearable Technology and Sensors:** Meaning and Functions of Wearable Devices - Classification of Sensors: Heart Rate Monitors, GPS Trackers, and Accelerometers. Using Mobile Apps for Fitness Tracking and Data Collection.

**Unit 3-. Computer Vision and Video Analysis:** Introduction to Motion Analysis - Use of Cameras in Sports - Basics of Video Feedback for Technique Correction. Understanding Automatic Officiating (Example: VAR and Hawk-Eye).

**Unit 4- AI for Fitness and Health:** Monitoring Athlete Workload - Fatigue and Recovery Tracking using AI. Role of Technology in Injury Prevention and Personalised Diet Planning for Players.

**Unit 5- Ethics and Management:** General Features of Sports Management Software - Ethics of Data Privacy (keeping player info safe). Future Trends: Introduction to Virtual Reality (VR) in Physical Education classes.

### Reference Books:

- 1.Ransdell, L. (2023) – Technology in Physical Education: A Guide for Teachers.
- 2.Baerg, A. (2017) – Big Data, Digits, and Sport. Routledge.
- 3.Miah, A. (2017) – Sport 2.0: Transformations in Control, Health, and Experience. MIT Press.
- 4.Kamlesh, M.L. (2002) – Physical Education: Facts and Foundations. Metropolitan Book Co.
- 5.Ray, G.B. (2021) – Artificial Intelligence in Sports. (Introductory Series).
- 6.Bhatia, K.K. – Educational Technology and Methods of Teaching. Prakash Bros.