Course code: Course Title	Course Structure			Pre-Requisite
SE333: Artificial Intelligence for Sports	L	T	P	NIL
	3	0	2	

Course Objective: The course will discuss the theory, development and application of Artificial Intelligence (AI) in sports.

S. NO	Course Outcomes (CO)
CO1	Understand the basic applications of AI in sports industry.
CO2	Apply AI-driven techniques to track and enhance athlete rehabilitation and performance management.
CO3	Analyze different game strategies for demonstrating AI's role in optimizing performance.
CO4	Design and develop innovative solutions for fan engagement.
CO5	Evaluate the latest trends of AI for sports analytics.

S. NO	Contents	Contact Hours
UNIT 1	**Foundations of AI in Sports:** The foundational and advanced applications of AI in the sports industry, with a strong emphasis on practical, real-world applications, their historical and evolving roles in sports, followed by modules on data collection.	7
UNIT 2	**AI for Recovery Monitoring:** AI-driven recovery monitoring, a practical application that is increasingly important in the sports industry.	7
UNIT 3	**Tactical AI in Sports:** Explore game strategy analysis and tactical decision-making using reinforcement learning and real-time game analytics, demonstrating the immediate relevance of AI in sports.	9
UNIT 4	**AI in Fan Engagement and Ethics:** Fan engagement and innovations such as AI-powered broadcasting, personalized recommendations, and Augmented Reality/ Virtual Reality experiences. Ethical considerations, including data privacy and AI fairness, hands-on training in AI tools like TensorFlow, OpenCV, and specialized sports analytics software.	9
UNIT 5	**AI Trends and Innovations:** Applications of AI in sports analytics. Latest trends in Artificial Intelligence in Olympics Sports. Overview of use of AI in sports equipments and wearables.	10
	TOTAL	42

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Duarte Araujo, Micael Couceiro, Ludovic Seifert, Hugo Sarmento, Keith Davids, "Artificial Intelligence in Sport Performance Analysis", Routledge, 1st Edition.	2021
2	Rajalingappaa Shanmugamani, "Deep Learning for Computer Vision: Expert techniques to train advanced neural networks using TensorFlow and Keras", Packt Publishing.	2018
3	Ulf Brefeld, Jesse Davis, Jan Van Haaren, Albrecht Zimmermann, "Machine Learning and Data Mining for Sports Analytics", Springer Cham, 1st Edition.	2018

4	Jan Van Haaren, Albrecht Zimmermann, Joris Renkens, Guy Van den Broeck, Tim Op De Beéck, Wannes Meert, and Jesse Davis, "Machine learning and data mining for sports analytics".	**2013**