Course code: Course Title	Course Structure			Pre-Requisite
SE328: Sports Business Analytics	L	T	P	NIL
	3	0	2	

Course Objective: This course provides a comprehensive overview on the use of statistics in sports team administration & development, business management, marketing and communication. The course covers the application of analytics in sports team management, revenue generation, ticketing, sponsorship, customer relationship development, media management and tournament organization. The course is case study and project-based involving sports team data analysis and assessment.

S. NO	Course Outcomes (CO)
CO1	Understand the infrastructure and technologies required for processing large scale, real-time sports data.
CO2	Develop advanced skills for data engineering and creating insightful, dynamic visualizations.
CO3	Build advanced models to predict outcomes and recommend optimal decisions in sports scenarios.
CO4	Apply advanced analytics techniques to understand and influence fan behaviour effectively.
CO5	Use advanced financial models and analytics to optimize sports business revenue streams.
CO6	Leverage AI techniques to provide actionable insights and innovations in sports.

S. NO	Contents	Contact Hours
UNIT 1	**Data Architectures in Sports Analytics:** Big Data Ecosystems in Sports: Tools and Technologies (Hadoop, Spark), Real-Time Data Streaming and Processing in Sports (Kafka, Flink), Building and Managing Sports Data Warehouses, Integrating IoT Data from Wearables and Sensors.	8
UNIT 2	**Data Engineering and Visualization:** Advanced Data Cleaning and Transformation Techniques, Building Interactive Dashboards for Sports Management Using Tableau, Power BI, and D3.js, Time Series Analysis for Sports Data (Player Performance, Match Metrics), Spatial Analysis: Heatmap, Zone Control in Team Sports.	8
UNIT 3	**Fan and Social Media Analytics:** Advanced Sentiment Analysis and Natural Language Processing (NLP) for social media data, Building recommendation systems for fan engagement and personalization, measuring and enhancing fan loyalty through multi channel data integration.	6
UNIT 4	**Revenue Optimization and Financial Modeling in Sports:** Dynamic Pricing Models for Tickets and Merchandise, Player Contract Valuation Using Predictive Analytics, Building ROI Models for Sponsorship and Advertisement Campaigns, Optimization for Sports Investments.	8
UNIT 5	**Artificial Intelligence in Sports Analytics:** Deep Learning for Sports Video Analysis: Pose Estimation and Action Recognition, Computer Vision for Player and Ball Tracking Systems, AI Models for Injury Prediction and Recovery Monitoring, Building AI-Driven Virtual Coaching Systems.	6
UNIT 6	**Ethical, Legal, and Strategic Aspects of Sports Analytics:** Ethical Concerns in Player Monitoring and Data Privacy, Legal Framework for Data Usage in Sports Analytics, Strategies for Integrating Analytics into Sports, Organizations' Decision-Making Processes, Building Analytics-Driven Cultures in Teams and Businesses.	6
	TOTAL	42

REFERENCES		
S.No.	**Name of Books/Authors/Publishers**	**Year of Publication / Reprint**
1	Jim Albert, Mark E. Glickman, Tim B. Swartz, Ruud H. Koning, "Handbook of Statistical Methods and Analyses in Sports", Routledge publication, Chapman and Hall/CRC, 1st Edition.	**2017**
2	C. Keith Harrison, Scott Bukstein, "Sport Business Analytics: Using Data to Increase Revenue and Improve Operational Efficiency (Data Analytics Applications)", Auerbach Publications, 1st Edition.	**2016**
3	Benjamin C. Alamar, "Sports Analytics - A Guide for Coaches, Managers, and Other Decision Makers", Columbia University Press.	**2013**