Course code: Course Title	Course Structure			Pre-Requisite
SE312: Introduction to Health Care Analytics	L	T	P	NIL
	3	1	0	

Course Objective: To describe how data-based healthcare can help in improving outcomes for patient health and to use data analytics to find health concerns and solutions to the problem faced by a patient.

S. NO	Course Outcomes (CO)
CO1	Understand the fundamentals of healthcare data analytics, healthcare policies, and standardized clinical data handling.
CO2	Apply machine learning techniques to preprocess, analyze, and model healthcare data for predictive analytics and evaluate the model performance.
CO3	Analyze and apply IoT, encryption techniques, and visual analytics to enhance healthcare management and decision support systems
CO4	Apply and evaluate deep learning techniques for healthcare analytics to analyze clinical data, biomedical images.
CO5	Apply descriptive, predictive, and prescriptive analytics techniques to analyze and improve healthcare decision-making.

S. NO	Contents	Contact Hours
UNIT 1	**Introduction to Healthcare Data Analytics:** History of Healthcare Analysis, Parameters on Medical Care Systems, Healthcare Policy, Need for Healthcare Analytics, Examples of Healthcare Analytics, Healthcare policy – Handling Patient data: the journey from patient to computer - Standardized clinical codesets - Breaking down healthcare analytics: population, medical task, data format, disease.	8
UNIT 2	**Machine Learning for Healthcare Analytics:** Machine Learning Foundations: Tree-like reasoning, Probabilistic reasoning weighted sum approach, Machine learning pipeline: Loading the data, Cleaning and preprocessing the data, Exploring and visualizing the data, Selecting features, Training the model parameters, Evaluating model performance	8
UNIT 3	**Health Care Management:** IOT – Smart Sensors – Migration of Healthcare Relational Database to NoSQL Cloud Database, Decision Support System, Matrix Block Cipher System, Semantic Framework Analysis, Histogram Bin Shifting and Rc6 Encryption, Visual Analytics for Healthcare	8
UNIT 4	**Deep Learning for Healthcare Analytics:** Introduction on Deep Learning, DFF network, CNN-RNN for Sequences, Biomedical Image and Signal Analysis, Natural Language Processing and Data Mining for Clinical Data, Mobile Imaging and Analytics, Clinical Decision Support System.	10
UNIT 5	**Healthcare Analytics Applications:** Introduction - Descriptive Analytics Applications - Predictive Analytics Applications - Prescriptive Analytics Application.	8
	TOTAL	42

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1.	Vikas (Vik) Kumar, "Healthcare Analytics Made Simple: Techniques in	2018

	Healthcare Computing Using Machine Learning and Python", Packt Publishing Ltd.	
2.	Christo El Morr, Hossam Ali-Hassan, "Analytics in Healthcare: A Practical Introduction", Springer	**2019**
3.	Ivo D. Dinov, "Data Science and Predictive Analytics", Springer, Ann Arbor, MI, USA	**2018**
4.	Hui Yang, Eva K. Lee, "Healthcare Analytics: From Data to Knowledge to Healthcare Improvement", John Wiley & Sons.	**2016**