

DSSEC356 Health Care Analytics

Semester: V	Course Title: Health Care Analytics	Credit:2
CourseCode: DSSEC356		(1 T + 1 P)

Course Outcomes: On successful completion of the course the learner will be able to

CO	COGNITIVE ABILITIES	COURSE OUTCOMES
CO1	REMEMBERING	Recall fundamental concepts, data sources, and tools used in healthcare analytics.
CO2	UNDERSTANDING	Explain techniques for analyzing patient, clinical, and operational healthcare data.
CO3	APPLYING	Apply statistical, machine learning, and predictive models for healthcare decision-making.
CO4	ANALYSING	Analyze electronic health records (EHR), treatment outcomes, and hospital data to extract insights.
CO5	EVALUATING	Evaluate healthcare performance indicators such as patient satisfaction, cost efficiency, and resource utilization.
CO6	CREATING	Design dashboards and predictive models for Improving patient care, hospital operations, and clinical outcomes.

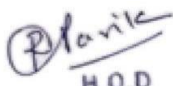
	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	-	-
CO2	2	2	-	1	-
CO3	1	2	2	-	-
CO4	1	2	3	2	1
CO5	1	2	3	1	1
CO6	1	2	3	2	2

Unit No.	Detailed Syllabus	Teaching Hours
I	Healthcare Analytics Tools & Techniques - Introduction to Healthcare Analytics: Importance, applications, and challenges. - Data Collection & Preparation: Sources of healthcare data (EHR, claims, clinical trials, patient surveys), preprocessing and cleaning. - Patient Analytics: Patient demographics, risk stratification, readmission prediction. - Clinical Analytics: Treatment outcome analysis, evidence-based decision support. - Healthcare Metrics Dashboards: Creating dashboards for patient care quality, hospital efficiency, and cost monitoring using Excel, Tableau, or Power BI.	15

II	Applications of Healthcare Analytics in Decision-Making • Predictive Analytics: Disease outbreak prediction, hospital admission forecasting, length of stay analysis. • Operational Analytics: Hospital resource utilization, staff scheduling, supply chain optimization in healthcare. • Financial Analytics in Healthcare: Cost analysis, insurance claim analytics, fraud detection. • Public Health Analytics: Population health monitoring, epidemiological studies. • Mini Project: End-to-end healthcare analytics project using real/simulated data (data import → cleaning → analysis → prediction → dashboard/report).	15
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Suggested Reference Books

1. Healthcare Analytics: From Data to Knowledge to Healthcare Improvement – Hui Yang & Eva K. Lee, Wiley, 2016.
2. Analytics in Healthcare and the Life Sciences – Thomas H. Davenport, Jeanne Harris & John McNeill, Pearson, 2013.
3. Data Science for Healthcare: Methodologies and Applications – Sergio Consoli, Diego Reforgiato Recupero & Milan Petković, Springer, 2019.
4. Practical Predictive Analytics and Decisioning Systems for Medicine – Linda Miner, Gary Miner et al., Academic Press, 2014.
5. Big Data in Healthcare: Statistical Analysis and Applications – Farrokh Alemi & David H. Levy, CRC Press, 2013.


H.O.D
Dept of DATA SCIENCE & ANALYTICS
M.G. Science Institute, Ahmedabad-9.