

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCA41	Data warehousing and Mining & Business Intelligence	3	1	--	3	1	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes	DBMS(MCA33), mathematics	
Course Outcomes	Student Will be able to	
	CO1	Understand Data warehouse characteristics with its different models
	CO2	To design project structure of the data warehouse
	CO3	Apply data warehouse concepts for data analysis and report generation
	CO4	Use conceptualization of BI techniques to make use of relevant theories, concepts and techniques to solve real-world BI problems

Module No.	Unit No.	Topics	Ref.	Hrs.
1		Basic Concepts of Data Warehousing	3	6
	1.1	Introduction, Meaning and characteristics of Data Warehousing,		
	1.2	KDD, Online Transaction Processing (OLTP), Data Warehousing Models.		
	1.3	Data warehouse architecture & Principles of Data Warehousing Data Mining		
2		Data preprocessing	3	6
	2.1	Preprocess the data. Data cleaning Data integration and transformation		
	2.2	Data reduction Dimensionality reduction		
	2.3	Data compression Feature extraction Discretization and concept hierarchy generation		
	2.4	Dimensional Modeling Design		
3		Building a Data Warehouse	3	10
	3.1	Project Structure of the Data warehouse, Data warehousing and Operational Systems, Organizing for building data warehousing,		
	3.2	Important considerations – Tighter integration, Empowerment,		
	3.3	Willingness Business Considerations: Return on Investment Design		
	3.4	Considerations, Technical Consideration, Implementation Consideration, Benefits of Data warehousing.		
4		Business Intelligence-	1,2	6
	4.1	Introduction and overview of BI-Effective and timely decisions,		
	4.2	Data Information and knowledge, BI Architecture, Ethics and BI.		

	4.3	BI Applications- Balanced score card, Fraud detection, Telecommunication Industry, Banking and finance, Market segmentation		
5		Prediction methods and models for BI	2,3	6
	5.1	Data preparation, Prediction methods-Mathematical method		
	5.2	Distance methods, Logic method		
	5.3	heuristic method-local optimization technique, stochastic hill climber, evaluation of models		
6		BI using Data Warehousing	3,4	8
	6.1	Introduction to DW, DW architecture,		
	6.2	ETL Process, Top-down and bottom-up approaches, characteristics and benefits of data mart,		
	6.3	Difference between OLAP and OLTP. Dimensional analysis- Define cubes. Drill- down and roll- up – slice and dice or rotation,		
	6.4	OLAP models- ROLAP and MOLAP.		
	6.5	Define Schemas- Star, snowflake and fact constellations		
			Total	42

References:

- [1] Carlo Vercellis, “Business Intelligence data mining and optimization for decision making”, wiley publication.
- [2] Zbigniew Michlewicz, martin Schmidt, matthew michalewicz, constantin Chiriac, “Adaptive business Intelligence”, Springer-Verlag Berlin Heidelberg, First edition
- [3] Ralph Kimball and Margy Ross, “The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling”, John Wiley and Sons, 2013 , Third Edition
- [4] Chaudhuri and Dayal, “An Overview of Data Warehousing and OLAP Technology”, Sections 1-7 (available on Blackboard)