

No	Information of Advanced Data Management Techniques I	
1	Unit name:	Advanced Data Management Techniques I
2	Code:	IT-41026
3	Classification:	Engineering subject
4	Credit value:	3
5	Semester/ Year Offered:	1/IV
6	Pre-requisite:	Fulfillment with the basic knowledge of Database Management System
7	Mode of delivery:	Lecture, Practical, Tutorial
8	Assessment system and breakdown of marks:	
	Tutorial:	10%
	Practical:	30%
	Mid-term/ final Examination	60%
9	Academic staff teaching unit:	Department of Information Technology Engineering
10	<p>Course outcome of unit:</p> <p>In this course, students will be able</p> <ul style="list-style-type: none"> -To perform mongodb operations and how to find documents and create complex queries for limiting, skipping, and sorting results -To design the application using indexing ,special index and collection types,aggregation and application design -To know about the setting up a Replica set, component of a Replica sett -To know about the configuring Sharding , choosing a Shard key and Sharding Administration 	
11	<p>Synopsis of unit:</p> <p>The course introduces students to the study of NoSQL databases, its principles and types. The course covers the advanced knowledge about DBMS and SQL languages. It introduces for gaining proficiency with NoSQL, using NoSQL in the Cloud, scalable parallel processing with MapReduce, analyzing big data with Hive, surveying database internals, mastering NoSQL, choosing among NoSQL flavors, coexistence, performance tuning, tools and utilities.</p>	

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Topic:

1. Introduction
 - Let's Get Started
2. Getting Started
 - Documents
 - Collections
 - Databases
 - Getting and Starting MongoDB
 - Basic Operations with the Shell
 - Using the MongoDB shell
3. Creating , Updating and Deleting Documents
 - Inserting and Saving Documents
 - Removing Documents
 - Updating Documents
4. Querying
 - Query Criteria
 - Type-specific Queries
 - Cursors
 - Database Commands
5. Indexing
 - Introducing to Indexing
 - Using explain() and hint()
 - Types of Indexes
 - Index Administration
6. Special Index and Collection Types
 - Capped collections
 - Time-to-Live Indexes
 - Full Text Indexes
 - Geospatial indexes
 - Storing File with GridFS
7. Aggregation
 - The Aggregation Framework
 - Pipeline Operations
 - Map reduce

	<p>Aggregation Commands</p> <p>8. Application Design</p> <ul style="list-style-type: none"> Normalization Versus Renormalization Optimizations for Data Manipulation Planning Out Databases and Collections <p>9. Setting Up a Replica Set</p> <ul style="list-style-type: none"> Introduction to Replication A one minute test Setup Configuring a Replica Set Changing Your Replica set Configuration <p>10. Components of a Replica Set</p> <ul style="list-style-type: none"> Syncing Heartbeats Elections Rollbacks <p>11. Connecting to a Replica Set from your Application</p> <ul style="list-style-type: none"> Client-to Replica Set connections Behavior Custom Replication Guarantees Sending Reads to Secondaries <p>12. Administration</p> <ul style="list-style-type: none"> Replica Set Configuration Manipulating Member State Monitoring Replication
13	<p>Main references:</p> <p>Kristina Chodorow “MongoDB: The Definitive Guide, Second Edition” (2013)</p>
14	<p>Additional references:</p> <p>Shashank Tiwari: “Professional NoSQL”, (2014).</p>