

**Course: Major
Database Technologies**

Semester I	Credits: 2	Subject Code: SMAJCDT123553	Lectures: 30
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Course Outcomes:
At the end of this course, the learner will be able to
<ul style="list-style-type: none"> • CO1: Define NoSQL databases and its emergence. • CO2: Understand NoSQL database characteristics. • CO3: Apply NoSQL specific Data Modeling according to its different types. • CO4: Analyze what database technologies to use, based on their application needs.

Unit 1: Introduction to NOSQL databases	15
<ul style="list-style-type: none"> • Why NoSQL - The value of relational databases, Impedance Mismatch, Attacks of Cluster, Emergence of NoSQL • Aggregate Data Models - Relations, Aggregates, Aggregate oriented and aggregate ignorant databases, Schema less databases, Materialized Views • Distribution Models - Single Server, Sharding, Master-Slave Replication, Peer-to-Peer Replication, Combining Sharding and Replication • Consistency and Version Stamps - Update Consistency, Read Consistency, • Relaxing consistency, The CAP Theorem, Quorums, Version Stamps • Map-Reduce - Basic Map-Reduce, Partitioning and combining. Two stage Map-Reduce. 	

Unit 2: Implementation with NOSQL databases	15
<ul style="list-style-type: none"> • Key-Value Databases (Riak) - What is a Key-Value Store, Features, Suitable Use-Cases, When Not to use • Document Databases (MongoDB) - What is a Document Databases, Document Databases Features, Suitable Use-Cases, When Not to use • Column-Family stores (Cassandra) - What is a Column -Family Store, Features, Suitable Use-Cases, When Not to use • Graph databases - What is a Graph Databases Store, Key-Value Store Features, Suitable Use-Cases, When Not to use • Schema Migrations and Polyglot Persistence - Schema Changes in RDBMS and in NoSQL Data Store, Polyglot Persistence, Polyglot Data Store Usage, Service usage over direct Data Store Usage 	

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Chairperson (HoD)	Computer Science	Ashwini Kulkarni	<i>AK</i> 17/11/23


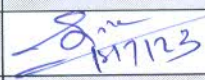
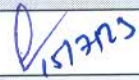
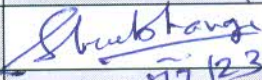
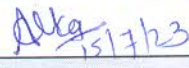
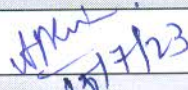
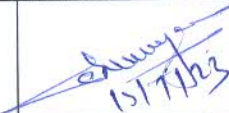
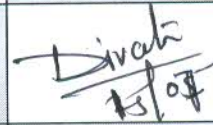
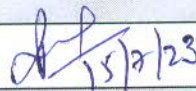
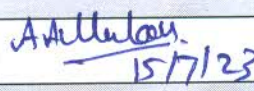
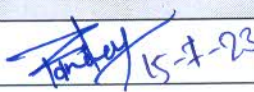



Reference Books:

- Charlie Brooks, Enterprise NoSQL for Dummies, A Willy Brand, Marklogic Special Edition, ISBN: 978-1-118-83261-5 (ebk)
- Pramod Sadalage, Martin Fowler, *NoSQL Distilled*, Pearson Education, ISBN-13: 978-0-321-82662-6

Websites:

<http://nosql-database.org>

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15/7/23

