Course: Major
Database Technologies

Semester I	Credits: 2	Subject Code: SMAJCDT123553	Lectures: 30

Course Outcomes:

At the end of this course, the learner will be able to

- 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
- 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
- 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	

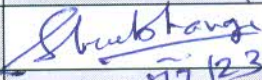| Board of Studies	Department	Name	Signature
Chairperson (HoD)	Computer Science	Ashwini Kulkarni	
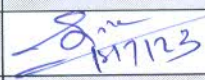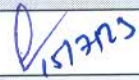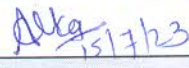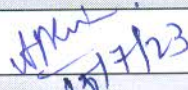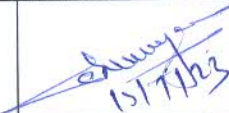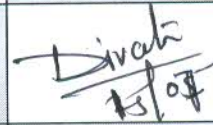
Reference Books:

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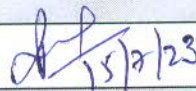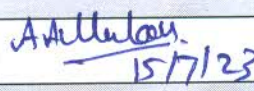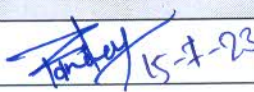- Pramod Sadalage, Martin Fowler, *NoSQL Distilled*, Pearson Education, ISBN-13: 978-0-321-82662-6

Websites:

http://nosql-database.org

Board of Studies	Name	Signature
Chairperson (HoD)	Mrs. Ashwini Kulkarni	*signature* 15/7/23
Faculty	Mrs. Swati Pulate	*signature* 15/7/23
Faculty	Mrs. Smita Borkar	*signature* 15/7/23
Faculty	Mrs. Shubhangi Jagtap	*signature* 15/7/23
Faculty	Mrs. Alka Kalhapure	*signature* 15/7/23
Faculty	Mrs. Anjali Kale	*signature* 15/7/23
Subject Expert (Outside SPPU)	Dr. Aniket Nagane	*signature* 15/7/23
Subject Expert (Outside SPPU)	Dr. Manisha Divate	*signature* Divate 15/07
VC Nominee (SPPU)	Dr. Reena Bharathi	*signature* 15/7/23
Industry Expert	Ms. Anjali Ingole	*signature* 15/7/23
Alumni	Ms. Pooja Pandey	*signature* 15-7-23

Board of Studies	Department	Name	Signature
Chairperson (HoD)	Computer Science	Ashwini Kulkarni	*signature* 15/7/23