COURSE DETAILS

Name of the Programme	:	**Master of Science (Data Science)**
Semester	:	**I**
Course Name	:	**NOSQL Databases**
Course Code	:	**T3356**
No. of Credit	:	**3**

Learning Objectives:

NoSQL better known as "Not only" SQL is a model of data store which relaxes integrity requirements on Relational schema. This model of key store leverage Brewer's CAP theorem to provide different guarantees on Consistency, Availability and Partition tolerance. The attendees are introduced to the notion of data at rest vs data at motion. The new characteristics of internet data streaming and its impact on processing and data store architectures. The attendees learn about 'self-referential structures' and their equivalence to interface in programming languages. The attendees learn, setup, configure and work with two important key-value stores namely, Radis and Cassandra. On completion of the course the attendees will be in a position to appreciate the design space in which NoSQL data stores operate and will be able to programmatically interact with the data store using programming interface in C, Java and Go.

Pre-requisites:

Attendees should have demonstrated competence in RDBMS and Data Structures and Algorithms (DSA).

Course Outline:

Module No.	Topic
1	Data at rest vs data in motion
2	Design of a distributed database
3	Structured storage
4	Consistent hashing
5	Key-value programming model
6	REmote DIctionary Server (redis)
7	Case studies pinterest, instagram
8	Sharding
9	Persistence model
10	Multi master, slave election
11	Clustering, automatic partitioning of keyspace
12	Brewer's CAP theorem
13	Publish subscribe feature
14	Apache Cassandra
15	CQL
16	Database driver design interface in C, Java, Go

Books Recommended:

1. Database driver design interface in C, Java, Go
2. Making Sense of NoSQL by Dan McCreary
3. NoSQL Distilled by Pramod J. Sadalage and Martin Fowler
4. Practical Cassandra: A Developer's Approach by Russell Bradberry
5. Redis Cookbook by Tiago Macedo
6. Redis in Action by Josiah L. Carlso