



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by
NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.D.T., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

Course Code	Course Title	Semester/ Regulation	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20AM7E03	NOSQL DATABASES	VII	AIML	5	2025-26	09-06-2025

COURSE OUTCOMES KNOWLEDGE LEVELS

1	Discuss about Aggregate Data Models	K3
2	Explain about Master-Slave Replication, Peer-to-Peer Replication	K2
3	Describe the Structure of Data, Scaling, Suitable Use Cases	K2
4	Make use of Complex Transactions Spanning Different Operations	K3
5	Identify Routing, Dispatch and Location-Based Services	K3

UNIT-I: NOSQL, AGGREGATE DATA MODELS AND DATA MODELS

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	CO1: Discuss about Aggregate Data Models	1.1.1	Why NOSQL	T1	1	Chalk & Board PPT
		1.1.2	The Value of Relational Databases, Getting at Persistent Data, Concurrency, Integration, A (Mostly) Standard Model,	T1	2	
		1.1.3	Impedance Mismatch,	T1	1	
		1.1.4	Application and Integration Databases,	T1	1	
		1.1.5	Attack of the Clusters,	T1	1	
		1.1.6	The Emergence of NOSQL,	T1	1	
		1.2.1	Aggregate Data Models	T1	1	
		1.2.2	Aggregates, Example of Relations and Aggregates,	T1	1	
		1.2.3	Consequences of Aggregate Orientation,	T1	1	

	1.2.4	Key-Value and Document Data Models,	T1	1
	1.2.5	Column-Family Stores,	T1	1
	1.2.6	Summarizing Aggregate-Oriented Databases.	T1	1
	1.3.1	Data Models	T1	1
	1.3.2	Relationships,	T1	1
	1.3.3	Graph Databases,	T1	1
	1.3.4	Schema less Databases,	T1	1
	1.3.5	Materialized Views,	T1	1
	1.3.6	Modeling for Data Access.	T1	1
	CBS	Polyglot Persistence: Using Multiple Database Types in Modern Applications.	R2	1
Total				20

UNIT-II: DISTRIBUTION MODELS, CONSISTENCY AND VERSION STAMPS

II	CO2: Explain about Master-Slave Replication, Peer-to-Peer Replication	2.1.1	Distribution Models;	T1	1	Chalk & Board PPT
		2.1.2	Single Server,	T1	1	
		2.1.3	Sharding,	T1	1	
		2.1.4	Master-Slave Replication,	T1	1	
		2.1.5	Peer-to-Peer Replication,	T1	1	
		2.1.6	Combining Sharding and Replication.	T1	1	
		2.2.1	Consistency,	T1	1	
		2.2.2	Update Consistency,	T1	1	
		2.2.3	Read Consistency,	T1	1	
		2.2.4	Relaxing Consistency,	T1	1	
		2.2.5	The CAP Theorem,	T1	2	
		2.2.6	Relaxing Durability,	T1	1	

		2.2.7	Quorums.	T1	1	
		2.3.1	Version Stamps,	T1	1	
		2.3.2	Business and System Transactions,	T1	1	
		2.3.3	Version Stamps on Multiple Nodes.	T1	1	
		CBS	High Availability Strategies in Distributed Systems.	T1	1	
					Total	18

UNIT-III: KEY-VALUE DATABASES

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III	CO3: Describe the Structure of Data, Scaling, Suitable Use Cases	3.1	What Is a Key-Value Store,	T1	1	Chalk & Board PPT
		3.2	Key-Value Store Features,	T1	2	
		3.3	Consistency,	T1	1	
		3.4	Transactions,	T1	1	
		3.5	Query Features,	T1	1	
		3.6	Structure of Data, Scaling,	T1	1	
		3.7	Suitable Use Cases,	T1	1	
		3.8	When Not to Use,	T1	1	
		CBS	Distributed Key-Value Stores	R1	1	
				Total	10	

UNIT-IV: DOCUMENT DATABASES

IV	CO4: Make use of Complex Transactions Spanning Different Operations	4.1	What Is a Document Database and its Features,	T1	2	Chalk & Board PPT
		4.2	Consistency,	T1	1	
		4.3	Transactions,	T1	1	
		4.4	Availability,	T1	1	
		4.5	Query Features,	T1	1	
		4.6	Scaling,	T1	1	
		4.7	Suitable Use Cases,	T1	1	

		4.8	When Not to Use	T1	1
		CBS	Schema Design in Document Databases	R3	1
Total					10

UNIT-V: GRAPH DATABASES

V	CO5: Identify Routing, Dispatch and Location-Based Services	5.1	What Is a Graph Database and its Features,	T2	2	Chalk & Board PPT
		5.2	Consistency,	T2	1	
		5.3	Transactions,	T2	1	
		5.4	Availability,	T2	1	
		5.5	Query Features,	T2	1	
		5.6	Scaling,	T2	1	
		5.7	Suitable Use Cases,	T2	1	
		5.8	When Not to Use.	T2	1	
		CBS	Graph Database Algorithms and Applications.	R3	1	
Total					10	
CUMULATIVE PROPOSED PERIODS					68	

Text Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
T1	Sadalage, P. & Fowler, NoSQL Distilled: A Brief Guide to the Emerging World of polyglot persistence, Pearson Addison Wesley, 2012.

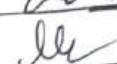
Reference Books:

S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
R1	Dan Sullivan, "NoSQL for Mere Mortals", 1st Edition Pearson Education India, 2015.
R2	Dan McCreary and Ann Kelly, "Making Sense of NoSQL; A guide for managers and the rest of us", 1st Edition, Manning Publication, 2013.
R3	Kristina Chodorow, "MongoDB: The Definitive Guide-Powerful and scalable data storage", 2nd Edition, O'Reilly publications, 2013.

Web Details:

1	https://www.geeksforgeeks.org/introduction-to-nosql/
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2	https://www.javatpoint.com/nosql-databases
3	https://www.tutorialspoint.com/NoSQL-Databases

		Name	Signature with Date
i	Faculty	CH.Chandrika Surya	
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iv	Program Coordinator	Dr. B. Rama Krishna	


Principal