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.DT., 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	2024-25	03-06-2024

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	1	
		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	Modelling for Data Access.	T1	1	
	Content beyond syllabus	1.4	Polyglot Persistence: Using Multiple Database Types in Modern Applications.	R2	1	
		Revision of NOSQL, Aggregate Data Models and Data Models			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	Shading,	T1	**1**	
		2.1.4	Master-Slave Replication,	T1	**1**	
		2.1.5	Peer-to-Peer Replication,	T1	**1**	
		2.1.6	Combining Shading 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	**1**	
		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**	
	Content beyond syllabus	2.4	High Availability Strategies in Distributed Systems.	T1	**1**	
		Revision of Distribution Models, Consistency and Version Stamps			**1**	
				Total	**18**	

UNIT-III: KEY-VALUE DATABASES						
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	1	
		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	
	Content beyond syllabus	3.9	Distributed Key-Value Stores	R1	1	
		Revision of Key-Value Databases			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	1	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	
	Content beyond syllabus	4.9	Schema Design in Document Databases	R3	1	
		Revision of Document Databases			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	1	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	

	Content beyond syllabus	5.9	Graph Database Algorithms and Applications.	R3	**1**	
			Revision of Graph Databases		**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", 1 Edition, O'Reilly publications,2013.

Web Details:

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

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