



**PARVATHANENI BRAHMAYYA**  
**SIDDHARTHA COLLEGE OF ARTS & SCIENCE**  
*Autonomous*  
 Siddhartha Nagar, Vijayawada-520010  
*Re-accredited at 'A+' by the NAAC*

Course Code				22ANVAP301			
Title of the Course				DATA BASE MANAGEMENT USING MONGO DB			
Offered to:				MBA Business Analytics			
L	0	T	0	P	4	C	2
Year of Introduction:		2024-25		Semester:			3
Course Category:		Value Added		Course Relates to:		Global	
Year of Revision:		NA		Percentage:		NA	
Type of the Course: Value Added				Skill Development			
Crosscutting Issues of the Course:				NA			
Pre-requisites, if any				Database Management			

**Course Description:** The main objective of this course is to provide the student with a conceptual understanding of Business analytics, Business Intelligence & Data Visualization, Data Visualization, Data mining in the functional areas of Management

**Course Aims and Objectives:**

S. N O	<b>COURSE OBJECTIVES</b>
1	Understand the Fundamentals of NoSQL: Analyze the differences between NoSQL and traditional relational databases.
2	Design and Implement MongoDB Databases: Develop proficiency in creating and managing MongoDB databases,
3	Master CRUD Operations: Demonstrate mastery of Create, Read, Update, and Delete (CRUD) operations within MongoDB,
4	Using MongoDB query language (MQL) data modification , munging , data crawling
5	Apply MongoDB in Real-World Scenarios: Solve practical problems by designing MongoDB database solutions in various business and technology domains, including e-commerce and big data..

**Course Outcomes**

<b>CO NO</b>	<b>COURSE OUTCOME</b>	<b>BTL</b>	<b>PO</b>	<b>P S O</b>
<b>CO1</b>	Understand the Fundamentals of NoSQL: Analyze the differences between NoSQL and traditional relational databases.	<b>K1</b>	<b>PO1</b>	<b>1</b>
<b>CO2</b>	Design and Implement MongoDB Databases: Develop proficiency in creating and managing MongoDB databases,	<b>K2</b>	<b>PO2</b>	<b>2</b>
<b>CO3</b>	Master CRUD Operations: Demonstrate mastery of Create, Read, Update, and Delete (CRUD) operations within MongoDB,	<b>K3</b>	<b>PO3</b>	<b>1</b>

<b>CO4</b>	Using MongoDB query language (MQL) data modification, munging , data crawling	<b>K3</b>	<b>PO3, PO1</b>	<b>2</b>
<b>CO5</b>	Apply MongoDB in Real-World Scenarios: Solve practical problems by designing MongoDB database solutions in various business and technology domains, including e-commerce and big data..	<b>K5</b>	<b>PO7</b>	<b>2</b>

**For BTL: K1: Remember; K2: Understand; K3: Apply; K4: Analyze; K5: Evaluate; K6: Create**

<b>CO-PO MATRIX</b>									
<b>CO NO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PSO1</b>	<b>PSO2</b>
<b>CO1</b>	<b>3</b>	<b>2</b>						<b>3</b>	<b>2</b>
<b>CO2</b>							<b>3</b>	<b>2</b>	<b>3</b>
<b>CO3</b>	<b>3</b>	<b>2</b>						<b>3</b>	<b>2</b>
<b>CO4</b>			<b>3</b>				<b>2</b>	<b>2</b>	<b>3</b>
<b>CO5</b>	<b>3</b>	<b>2</b>						<b>3</b>	<b>2</b>

**Use the codes 3, 2, 1 for High, Moderate and Low correlation Between CO-PO-PSO respectively**

### Course Structure

**UNIT-I:** Introduction to Mongo DB: Introduction to NoSQL Database, Introduction to NoSQL Databases What is Mongo DB, Why Mongo DB, Difference between MongoDB & RDBMS, Installation & Configuration, Downloading Installing and Running, Installing MongoDB Version 3.0.6 on Windows, Features and Tools.

**Unit II: Basics of Mongo DB** Creating First Database and First Collection in MongoDB 4.0, Inserting One Document with insert One () method, Multiple Documents Insertion in MongoDB 4.0- insert Many () method, Bulk Insert with insert () method and duplicate id, Creating Document and Saving it to Collection

**Unit III: Creating Collections :** Dropping a Database, creating a Collection - Using db. create Collection (name, options), Dropping a Collection, MongoDB CRUD Operations - Create, Read, Update and Delete Creating/Inserting a document in collection, Inserting Array of Documents.

**UNIT IV: Indexing and Objects :** Introduction to Indexes Creating Index, Finding Indexes, Dropping Index, Object Ids in MongoDB Section Overview, Understanding Object Ids, Creating Object Ids, Advantages of Object Ids created by MongoDB, Disadvantages of Object Ids created by MongoDB

**UNIT V: Mongo DB Functions:** Aggregation Framework in MongoDB, ggregation Framework in MongoDB, Using distinct () and count (), Sorting documents, Skip, Arrays, Indexes. Relationships in MongoDB (Basics)

**References:**

1. Chodorow, K. (2013). MongoDB: The definitive guide (2nd ed.). O'Reilly Media.
2. Banker, K. (2011). MongoDB in action. Manning Publications.
3. Sharma, V. (2020). Mastering MongoDB: Expert techniques to run high-volume and fault-tolerant database solutions using MongoDB 4.x. Packt Publishing.
4. Raj, A. (2019). Learning MongoDB: A simple guide to the NoSQL database for beginners. BPB Publications.
5. Membrey, P., Plugge, E., & Hawkins, T. (2015). Practical MongoDB: Architecting, developing, and administering MongoDB. Apress.

**Lab Programs**

1. Installation and Setup:
  - a. Install MongoDB version 3.0.6 on a Windows machine.
  - b. Configure MongoDB to run as a service.
2. Creating a Database and Collection:
  - a. Create a new database.
  - b. Create a collection named.
3. Inserting Documents:
  - a. Insert a single document into the books collection using the insertOne() method.
  - b. Insert multiple documents into the books collection using the insertMany() method.
  - c. Perform a bulk insert using the insert() method.
4. Retrieving Data:
  - a. Use the find() command to retrieve all documents from the books collection.
5. Creating and Dropping Collections:
  - a. Create a collection in the s database using db.createCollection().
  - b. Drop the collection and confirm it is deleted.
6. CRUD Operations:

- a. Create
  - b. Insert
  - c. Update the document
  - d. Delete
7. Aggregation Framework:
    - a. Perform an aggregation operation to group and calculate the math functions , avg, max , min, and other functions
  8. Using Functions:
    - a. Use the `distinct()` function to find all unique grades
    - b. Use the `count()` functions
    - c. Use the `sort()` function to sort the documents
  9. Indexing and Objects Working with Indexes:
    - a. Create an index
    - b. List all the indexes
    - c. Drop the index
  10. Uploading database using Compass
  11. Working on Compass in creating DB, Collection , Document
  12. Crud Operations and export and import to different formats.

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## Evaluation Procedure for Lab Component

### Internal Continuous Assessment (30 Marks)

- **Total:** 30 Marks
  - 30 marks will be awarded based on continuous assessment.
  - Day-to-day work in the laboratory will be evaluated by the concerned laboratory teacher based on rubrics, including results, regularity, record maintenance, and viva.
  - Laboratory teachers must ensure that every student completes at least 90% of the lab assessments.

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### Semester End Practical Examination (Max. Marks: 70)

- **Evaluation Procedure:** 70 Marks
    - **I. Experiments (Exam & Execution):** 55 Marks
    - **II. Viva:** 10 Marks
    - **III. Record:** 5 Marks
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