COURSE MODULE OF THE SUBJECT TAUGHT FOR THE SESSION 2024-25 (EVEN SEM)

Course Syllabi with CO's

Faculty Name: Dr. Vinod Kumar P			**Academic Year: 2024 - 2025**				
Department: Computer Science & Engineering- Data Science							
Course Code	**Course Title**	**Core / Elective**	**Prerequisite**	**Contact Hours**			**Total Hrs/ Sessions**
				L	**T**	**P**	
BDSL456D	MongoDB	Ability Enhancement Course	DBMS, JSON coding	0	0	2	24
Course Objectives	1. Understand basic MongoDB functions, operators and types of operations in MongoDB. 2. Demonstrate the use of Indexing, Advanced Indexing in MongoDB. 3. Apply the aggregation and Map Reduction in MongoDB. 4. Demonstrate text searching on collections in MongoDB.						

Topics Covered as per Syllabus

List of Experiments

1 a. Illustration of Where Clause, AND, OR operations in MongoDB.
b. Execute the Commands of MongoDB and operations in MongoDB: Insert, Query, Update, Delete and Projection. (Note: use any collection).

2. a. Develop a MongoDB query to select certain fields and ignore some fields of the documents from any collection.
b. Develop a MongoDB query to display the first 5 documents from the results obtained in a. [use of limit and find]

3. a. Execute query selectors (comparison selectors, logical selectors) and list out the results on any collection
b. Execute query selectors (Geospatial selectors, Bitwise selectors) and list out the results on any collection

4. Create and demonstrate how projection operators ($, $elematch and $slice) would be used in the MongoDB.

5. Execute Aggregation operations ($avg, $min, $max, $push, $addToSet etc.). Encourage students to execute several queries to demonstrate various aggregation operators.

6. Execute Aggregation Pipeline and its operations (pipeline must contain $match, $group, $sort, $project, $skip etc. students encourage to execute several queries to demonstrate various aggregation operators).

7. a. Find all listings with listing_url, name, address, host_picture_url in the listings And Reviews collection that have a host with a picture url.
b. Using E-commerce collection write a query to display reviews summary.

8. a. Demonstrate creation of different types of indexes on collection (unique, sparse, compound and multikey indexes)
b. Demonstrate optimization of queries using indexes.

9. a. Develop a query to demonstrate Text search using catalog data collection for a given word
   b. Develop queries to illustrate excluding documents with certain words and phrases.
10. Develop an aggregation pipeline to illustrate Text search on Catalog data collection.

List of Textbook and URLS

1 "MongoDB: The Definitive Guide", Kristina chodorow, 2nd ed O'REILLY, 2013.
2 "MongoDB in Action" by KYLE BANKER et. al. 2nd ed, Manning publication, 2016
3 "MongoDB Complete Guide" by Manu Sharma 1st ed, bpb publication, 2023.

A. https://www.youtube.com/watch?v=dEm2AS5amyA
B. https://www.youtube.com/watch?v=vx1C8EyTa7Y
C. https://www.manning.com/downloads/529
D. https://www.w3resource.com/mongodb-exercises/

Course Outcomes	At the end of the course, the student will be able to: CO1- **Make** use of MongoDB commands and queries. CO2- **Illustrate** the role of aggregate pipelines to extract data. CO3- **Demonstrate** optimization of queries by creating indexes. CO4- **Develop** aggregate pipelines for text search in collections.

Assessment Detail: The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Course Code:	BDSL456D	**TITLE: MongpDB**						**Faculty Name:**	Dr. Vinod Kumar P		
List of Course Outcomes	**Program Outcomes**										
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**
CO-1	3	2	1		3	-	-		3	3	-	3
CO-2	3	2	1		3	-	-	-	3	3	-	3
CO-3	3	2	1		3	-	-	-	3	3	-	3
CO-4	2	2	1		3	-	-	-	3	3	-	3

Note: 3 = Strong Contribution, 2 = Average Contribution, 1 = Weak Contribution, - = No Contribution

Department of Computer Science Engineering – (Data Science)

The Correlation of Course Outcomes (CO's) and Program Specific Outcomes (PSO's)

Course Code	BDSL456D	Title: MongoDB	Faculty name: Dr. Vinod Kumar P
List of Course Outcomes	Program Specific Outcomes		
	PSO1	PSO2	PSO3
CO1	2	-	-
CO2	2	-	-
CO3	2	-	-
CO4	2	-	-

Note: 3 = Strong Contribution, 2 = Average Contribution, 1 = Weak Contribution, - = No Contribution