DSCE
Dept. of Information Science & Engg

DAYANANDA SAGAR COLLEGE OF ENGINEERING

(An Autonomous Institute Affiliated to VTU, Belagavi) Approved by AICTE & ISO 9001:2008 Certified)
Accredited by National Assessment & Accreditation Council (NAAC) with 'A' grade
Shavige Malleshwara Hills, Kumaraswamy Layout, Bengaluru-560078

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

SCHEME 2018

Database Management System

Course code:18IS5DCDBM **Credits: 04**
L: P: T: S: 4:0:0:0 **CIE Marks: 50**
Exam Hours: 03 **SEE Marks: 50**
Total Hours: 50

Course objectives:

1. Know the fundamentals of database management systems, transactions and related concepts
2. Study E-R model and relational model for designing database.
3. Understand normalization techniques for designing good database.
4. Learn writing SQL queries for the given requirements.

Course Outcomes: At the end of the course, student will be able to:

CO1	Interpret the essentials of database management systems, transactions and related concepts.
CO2	Apply E-R and relational modeling techniques for designing database.
CO3	Analyze and apply transaction processing on data
CO4	Construct queries using SQL for the given requirements.
CO5	Design good database using normalization techniques.
CO6	Evaluate, design and build a database application for the specified requirements

Mapping of Course outcomes to Program outcomes:

CO	PO1	PO2	PO3	PO 4	PO 5	PO 6	P O7	PO 8	P O9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	1	-	-	-	-	-	-	-	-	2	-	1	1
CO3	3	2	-	-	-	-	-	-	-	-	-	2	-	1	1
CO4	3	3	-	-	-	-	-	-	-	-	-	2	-	1	2
CO5	2	2	-	-	-	-	-	-	-	-	-	2	-	2	2
CO6	2	3	2	-	-	-	-	-	-	-	-	2	-	3	3

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Unit.	Content of the Unit	Hours	COs
1.	**Introduction:** Introduction ; An example; Characteristics of Database approach; Advantages of using DBMS approach; When not to use DBMS; Data models, schemas and instances; Three schema architecture and data independence; Database System environment. **Entity-Relationship model**: A sample Database Application; Entity types, Entity Sets, Attributes and Keys; Relationship types, Relationship Sets, Roles and structural Constraints; Weak Entity types; ER Diagrams, Naming Conventions and Design issues.	10	CO1, CO2, CO6
2.	**Relational Model:** Relational Model Concepts; Relational Model constraints and Relational Database Schemas; update operations, Transactions and dealing with constraint violations. **Relational Algebra**: Unary Relational Operations: SELECT and PROJECT; Relational Algebra Operations from Set Theory; Binary Relational Operations: JOIN and DIVISION; Additional Relational Operations. Relational Database Design Using ER-to-Relational mapping.	10	CO1, CO2
3.	**SQL:** Overview; The Form of a Basic SQL Query; Union, Intersect and Except; Nested Queries; Aggregate Operators; Null Values	10	CO4
4.	**SQL**: Complex Integrity Constraints in SQL; Triggers and active Databases; Accessing Databases from Applications; Stored Procedures. **Database Design:** Informal Design Guidelines for Relation Schemas; Functional Dependencies; Normal Forms Based on Primary Keys	10	CO4, CO5, CO6
5.	**Database Design:** General Definitions of Second and Third Normal Forms; Boyce-Codd Normal form. **Transaction Management**: The ACID properties; Transactions and Schedules; Concurrent Execution of Transactions; Lock Based Concurrency Control; Transaction Support in SQL	10	CO3, CO5, CO6

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Self-study component:

Note: 1.Questions for CIE and SEE not to be set from self-study component.
2. Assignment Questions should be from self-study component only.

UNIT 1: Classification of Database management systems, MongoDB Architecture, its Key features
UNIT 2: Examples of Queries in Relational Algebra.
UNIT 3: NoSQL, MongoDB Aggregation Framework
UNIT 4: PL/SQL, JDBC classes and Interfaces
UNIT 5: Current trends in database management such as Big Data, Business Intelligence etc.,

TEXT BOOKS:

1. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Edition,2017,Pearson.(1:1.1,1.2,1.3,1.6,1.8;2:2.1,2.2,2.4;3:3.2,3.3,3.4,3.5,3.7;5:5.1,5.2,5.3; 8:8.1,8.2, 8.3, 8.4; 9:9.1; 14:14.1, 14.2, 14.3, 14.4, 14.5)

2. Database management systems, Ramakrishnan, and Gehrke, 3rd Edition, 2014, McGraw Hill (5: 5.1-5.8; 6: 6.1,6.5; 16: 16.1,16.2,16.3,16.4,16.6)

REFERENCE BOOKS:

1. Silberschatz Korth and Sudharshan, Database System Concepts, 6th Edition, Mc-GrawHill, 2013.

2. Coronel, Morris, and Rob, Database Principles Fundamentals of Design, Implementation and Management, Cengage Learning 2012.