



## **SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)**

(Established under section 3 of the UGC Act 1956)

**Re - accredited by NAAC with 'A' Grade**

**Founder: Prof. Dr. S. B. Mujumdar, M.Sc.,Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)**

(Established under section 3 of the UGC Act 1956, by notification No.F.9-12/2001-U3 Government of India)

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### **Sub Committee - Specialization for Curriculum Development**

#### **Post Graduate/ Under Graduate**

**Course Name:** Relational Database Management System

**Course Code:** T3115

**(UG/PG):** PG

**Number of Credits:** 4

**Level:** 4

**Learning Objective(s):**

The primary objective of this course is to discuss and interpret database and database management concepts and simulate these concept with real life application.

**Pedagogy:**

Lectures  
Hands On Lab Sessions  
Self Study

**Pre-learning:** Nil

**Course Outline:**

<b>S.No.</b>	<b>Topic</b>	<b>Hours</b>
1	Introduction to Database Systems Data: Types, Organization, and Applications Database: Definition, Evolution Database Management: Structure, Limitations of traditional file processing systems Advantages and disadvantages of DBMS Users of DBMS	3
2	Database Architecture and Environment Components of DBMS: functions Architecture: Physical, Logical, and View Data Languages: DDL, DML Schemas Life cycle of Database System Development Functions of DBMS Introduction to IRDS	4.5
3	Conceptual Database Modeling Data Model: Concept, Applications Types of Data models: Hierarchical, Network, Relational, Object-oriented Entity Relationship model: concepts of entity, entity set, attributes, domains Existence dependency Keys: candidate, primary, composite Strong and weak entities Cardinality E-R Model: symbols, Specialization, Generalization, Aggregation	8
4	Relational Database Systems Characteristics Concepts: Relation, Attribute, Tuple, and Domain Relational Schemas Relational Constraints: Entity, Domain, Null, Key, and Referential Normalization: 1NF, 2NF, 3NF, BCNF, rules, Case study Relational Database Language: SQL, PL/SQL	7.5

5	<p>SQL : DDL, DML, DCL</p> <p>Select: from, where, order by, group by, having, Intersect, union, distinct, between</p> <p>Aggregate functions: Max, Min, Avg, and Count Delete, Update, Insert</p> <p>Nested queries</p> <p>Joins: Equi, Inner, outer Create, Alter and Drop Constraints</p> <p>Index</p> <p>View</p> <p>Grant, Revoke</p>	6
6	<p>File Organization</p> <p>Record: Types, blocking, buffering</p> <p>Operations on files: Open, close, find, read, modify, delete, insert</p> <p>Heap Files: organization, search techniques</p>	11
7	<p>Transaction Management and Concurrency Control</p> <p>Transaction: Properties (ACID), states, Commit, Rollback</p> <p>Concurrency: serialization ,Control, Lost update problems, Locks, two phase locking</p>	6
8	<p>Database Recovery</p> <p>Need for recovery</p> <p>Techniques: log based recovery , check point, differed and immediate updates, Shadowing</p> <p>Catastrophic and non-catastrophic failures Recovery in multi-database environments Two phase commit protocol</p>	4.5
9	<p>Database Security</p> <p>Types of security: legal and ethical issues, System policies Levels of security: Physical, OS, Network, DBMS Privileges: Grant and Revoke</p> <p>Statistical Databases</p>	3
10	<p>Query Processing</p> <p>Steps in Query processing: Parsing, translation, optimization, Evaluation</p> <p>Advantages of optimization</p> <p>Techniques of optimization: heuristic, semantic</p>	3
11	<p>Introduction to current trends in Databases. Parallel databases, spatial databases, Distributed Databases, Introduction to DWDM</p>	3.5
	Total Hours	60

### Books Recommended


- 1) Database Systems – A practical approach to Design, Implementation and Management – Thomas Connolly and Carolyn Begg – Third Edition – Pearson Education Publications.
- 2) Database Systems Concepts – Silberschatz, Korth and Sudarshan – Fourth Edition – McGraw Hill Publications.
- 3) Fundamentals of Database Systems – Elmasri, Navathe – Third Edition – Pearson Education Asia.
- 4) An Introduction to Database Systems – Bipin C.Desai – 2001 – Galgotia Publications.

### Suggested Evaluation Methods:

- 1) Quizzes
- 2) Case analysis
- 3) Project report
- 4) Presentation
- 5) Midterm test
- 6) End term test

### Parallel/Similar courses the existing curriculum:

S.No.	Name of the course	Institute where it was offered
1	RDBMS	SICSR(MScCA)

<b>Name of Member</b>	<b>Samaya Pillai</b>	<b>Vidya Kumbhar</b>	<b>Anagha Vaidya</b>	
<b>Designation</b>	<b>Assistant Professor</b>	<b>Assistant Professor</b>	<b>Assistant Professor</b>	
<b>Org. / Inst.</b>	<b>SICSR</b>	<b>SICSR</b>	<b>SICSR</b>	
<b>Signature</b>				

Name of the Expert:

Signature:

Date:

