CS-401: DATABASE MANAGAMENT SYSTEMS

Teaching Scheme			Credits	Marks			Duration End Semester Examination
L	T	P/D	C	Sessional	End Semester Exam	Total	
3	0	0	3	40	60	100	3 hrs

COURSE CONTENT:

UNIT	CONTENT	No. of Hrs.
I	**Introduction:** Concept & overview of dbms, data models, database languages, database administrator, Database Users, Three Schema architecture of DBMS. **Entity-Relationship Model:** Basic concepts, design issues, mapping constraints, keys, entity-relationship diagram, weak entity sets, extended E-R features.	10
II	**The Relational Data Model & Algebra :** Relational model, structure of relational databases, relational algebra, relational calculus, introduction to views, updates on views **SQL and Integrity Constraints:** Concept of DDL, DML, DCL, basic structure, set operations, aggregate functions, null values, domain constraints, referential integrity constraints, assertions, views, nested sub queries, database security application development using SQL, stored procedures and triggers.	10
III	**Relational Database Design:** Functional dependency, different anomalies in designing a database., normalization using functional dependencies, decomposition, Boyce-Codd normal form, 3NF, normalization using multi-valued dependencies, 4NF, 5NF. **Internals of RDBMS:** Physical data structures, query optimization, join algorithm, statistics and cost base optimization, transaction processing, concurrency control and recovery management, transaction model properties, state serializability, lock base protocols, two phase locking.	10
IV	**Failure Recovery and Concurrency Control:** Issues and models for resilient operation -undo/redo, logging-protecting against media failures. **Concurrency Control:** Serial and serializable schedules, conflict serializability, enforcing serializability by locks-locking systems with several lock modes, concurrency control by timestamps, validation. **Transaction Management:** Serializability and recoverability-view, serializability, resolving deadlocks-distributed databases: commit and lock.	9

Text Books

1. Ramez Elmasri, Shamkant B. Navathe, ***"Fundamentals of Database systems"***, Pearson.
2. Korth, Silberschatz, Sudarshan, ***"Database concepts"***, MGH.

Reference Books:

1. R. Ramakrishnan and J. Gehrks, ***"Database Management System"***, MGH, International edition.

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2. C. J. Date, ***"Data Base Systems"***, Addison Wesley, Pearson Education,
3. Chakrabarti, ***"Advance Database Management Systems"*** , Wiley Dreamtech.
4. Ivan Bayross, ***"SQL and PL/SQL"***, BPB Publication.