ITE~~315~~	**Database Systems**	L	T	P	C
		3	0	0	3
Prerequisite					
Objectives	• To teach role of data, files and databases in information systems. • To impart knowledge of data modeling techniques. • To provide the fundamentals of front-end and back-end of databases				
Outcomes	The students will be able to • Understand fundamental concepts of database management system, database modeling, design, SQL, PL/SQL, and system implementation techniques. • Model and implement database applications • Understand transaction processing of Databases				
Unit I	**DATABASE SYSTEMS** History and motivation for database systems; components of database systems; DBMS functions; database architecture and data independence.				
Unit II	**DATA MODELING** Data modeling; conceptual models; object-oriented model; relational data model.; ***Database query languages:*** Overview of database languages; SQL; query optimization; 4th-generation environments; embedding non-procedural queries in a procedural language; introduction to Object Query Language.				
Unit III	**RELATIONAL DATABASES** Mapping conceptual schema to a relational schema; entity and referential integrity; relational algebra and relational calculus; ***Relational database design:*** Database design; functional dependency; normal forms; multivalued dependency; join dependency; representation theory.				
Unit IV	**TRANSACTION PROCESSING** Transactions; failure and recovery; concurrency control				
Unit V	**PHYSICAL DATABASE DESIGN** Storage and file structure; indexed files; hashed files; signature files; b-trees; files with dense index; files with variable length records; database efficiency and tuning.				
Text Books	1. A. Silberschatz, H. F. Korth & S. Sudershan, Database system concepts, McGraw Hill, 4th Edition 2002. 2. R. Elmasri & S. B. Navathe, Fundamentals of database systems, Addison Wesley, 2005. 3. C. J. Date, An introduction to database systems, Addison Wesley,2003. 4. H. Garcia et al., Database system implementation, Prentice Hall				
Reference Books					
MoE	Written examinations, seminar, assignments, surprise tests and quizzes				
Recommended by the Board of Studies on					
Date of Approval by the Academic Council					

ITE~~316~~	**Database Systems Lab**	L	T	P	C
		0	0	3	2
Prerequisite					
Objectives	• To model data for different applications. • To teach implementation concepts of databases in information systems. • To teach implementation of front-end and back-end of databases				
Outcomes	The students will be able to • To perform database modeling, design, • To create databases and pose complex SQL queries of relational • Model and implement database applications.				
Exercises					

1. a) Create a table EMP with the following fields.
   EName
   Eno.
   Salary
   DeptNo
   Address
   Dname

b) Insert 5 records into EMP
c) ALTER EMP table i) varying size of Eno field
ii) adding a new field job
d) Delete the table EMP

2. Create a table EMP with the above mentioned fields.
   i) Insert 5 records into EMP
   ii) Update the salary of the Employees by 10% hike
   iii) Delete the employees whose name is 'AAA'

3. Create a table ORDER with the following fields and constraints.

ORDER

Column Name	Constraint Name	Constraint Type
Order-no	pk-order-no	PRIMARY KEY
Item-name	itn	UNIQUE
Qty	ck-aty (25<QTY<50)	CHECK
rate-unit	Nn-rate	NOT NULL

4. Using Ex 3.
   1. Drop unique constraint for item-name
   2. Disable the constraint Nn-rate
   3. Insert a record with NULL values for rate unit
   4. Enable the constraint with NULL value existing on rate-unit

5. Create a table EMP mentioned above and test all the arithmetic functions and character functions
6.Add a field date-of-birth to EMP table and test all the date functions.
7. i) Modify EMP table adding a new field BONUS, update it using NVL
ii) Retrieve the employees whose name starts with S.
iii)Select all the employees who are working in IT department.

8. I) Using EMP table find the employee getting maximum salary
ii) Find the employee whose salary is minimum
iii) Find the sum of salaries of all the employees working in 'ACCOUNTS' department.
9. Create a table DEPT with the following fields

DNo.	Primary Key
DName	

Modify EMP table adding a foreign key constraint on DeptNo.

i) Insert 6 records into Dept.

ii) Implement the following Join operations

   a) Self Join
   b) Equi Join
   c) Non Equi Join
   d) Outer Join
   e) Natural Join

10. Using EMP and DEPT, implement all type of view techniques.

   a) Row subset view
   b) Column subset view
   c) Row column subset view
   d) Grouped view
   e) Joined view
   f) With check option

11. Using EMP and DEPT

a) Create a sequence to insert the empno in EMP table
b) Create a synonym for the above two tables

PART – B

1. Create a cursor to update the salary of employees in EMP table
2. a) Write a PL/SQL program to raise an Exception
   i) When the bonus exceeds salary
   b)Write a PL/SQL program to test the built-in Exceptions
3. Write a procedure to insert a record into ORDER table by validating qty limit of the item and also check whether that item exists.
4. Write a function to find substring.

Create a trigger which checks whether employee with Emp_no is present in the Employee table before inserting into EMP.

PART – C

Development of mini-projects with VB as front-end.

MoE	CAT, Coding Practice, Observation Book, On-the-spot Exercises, and TEE
Recommended by the Board of Studies on	
Date of Approval by the Academic Council	