

GUJARAT TECHNOLOGICAL UNIVERSITY

SUBJECT NAME: Database Technologies

SUBJECT CODE: 3715306

Semester I

Type of course:

Prerequisite:

1. Current and emerging concepts, principles and theories relevant to DBMS and the supporting areas of computer science Theory.
2. Methods, tools and enabling technologies used in, or arising from, DBMS, RDBMS and the supporting areas of computer science.

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE(E)	PA (M)	ESE	PA(I)	
3	2	0	4	70	30	30	20	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment;

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	ER Model - Normalization - Query Processing - Query Optimization - Transaction Processing - Concurrency Control - Recovery - Database Tuning	6	10
2	Parallel Databases - Inter and Intra Query Parallelism - Distributed Database Features Distributed Database Architecture - Fragmentation - Distributed Query Processing - Distributed Transactions Processing - Concurrency Control - Recovery - Commit Protocols	6	10
3	Introduction to Object Oriented Data Bases - Approaches - Modeling and Design - Persistence - Query Languages - Transaction - Concurrency - Multi Version Locks -Recovery	6	10
4	POSTGRES - JASMINE -GEMSTONE - ODMG Model Enhanced Data Models - Client/Server Model - Data Warehousing and Data Mining - Web	7	20
5	Databases - Mobile Databases- XML and Web Databases	7	20

Text book:

1. Henry F. Korth and Silberschatz Abraham, "Database System Concepts", Mc.Graw

References Books:

1. Elmasri Ramez and Novathe Shamkant, "Fundamentals of Database Systems", Benjamin Cummings Publishing. Company.
2. Ramakrishnan: Database Management System , McGraw-Hill
3. Gray Jim and Reuter Address, "Transaction Processing: Concepts and Techniques", Moragan Kauffman Publishers.
4. Jain: Advanced Database Management System CyberTech
5. Date C. J., "Introduction to Database Management", Vol. I, II, III, Addison Wesley.
6. Ullman JD., "Principles of Database Systems", Galgottia Publication

Course Outcome:

Be able to design high-quality relational databases and database applications.

- Have developed skills in advanced visual & conceptual modelling and database design.
- Be able to translate complex conceptual data models into logical and physical database designs.
- Gain an understanding of Oracle 9i.
- Gain experience in technical writing and systems documentation.
- Gain experience in working with a team, scheduling, managing a project and team management.
- Have developed an appreciation of emerging database trends as they apply to semi-structured data, the internet, and object-oriented databases.

List of Experiments: (with Open Ended Problems)

1. On-Line Engineering Entrance Examination System.
 - a. Work on the Scope of this Web Application.
 - b. Prepare Software Requirements Specifications
 - c. Draw Entity Relationship Diagram
 - d. Design Normalized Schema.
 - e. Create the Database.
2. Write a paper on Query Optimization. Explore various features of the same for the Oracle database.

3. Create an Normalized Employee Database in XML. Use DTD and XSD for defining the structure of the same.
4. Write a various Triggers for the Student Database.

5. Note: Oracle preferred.
6. Explore and List features of any one of the below mentioned ETL Tools.
 - a. Cognos
 - b. BO
 - c. Informatica

List of Open Source Software/learning website:

Oracle 9i