Course Curriculam

Course Code: CSE201

Course Level UG

Course Title Database Management Systems

Course Description : The objective of this course is to get students familiar with Databases and their use. They can identify different types of available database model, concurrency techniques and new applications of the DBMS.

Credit Units

L	T	P/S	SW	AS/DS	FW	No. of PSDA	Total Credit Unit
2	0	2	4	0	0	0	5

Course Objectives :

SN.	Objectives
1	The objective of this course is to get students familiar with Databases and their use. They can identify different types of available database model, concurrency techniques and new applications of the DBMS.

Pre-Requisites : General

SN.	Course Code	Course Name

Course Contents / Syllabus :

SN.	Module	Descriptors / Topics	Weightage
1	Module I : : Introduction	Concept and goals of DBMS, Database Languages, Database Users, Database Abstraction. Database architecture, The Relational Data Model and Relational Database Constraints, Basic Concepts of ER Model, Relationship sets, Keys, Mapping, Design of ER Model	15.00
2	Module II: Relational Model	The relational model , The catalog, Types, Keys, Relational algebra, Domain relational calculus, Tuple relational calculus , Fundamental operations, Additional operations, SQL fundamentals, Integrity , Triggers , Views ,Relational database, Relational Algebra, Relational & Tuple Calculus	20.00
3	Module III : Relational Database Design	Normalization using Functional Dependency, Multivalued dependency and Join dependency.	15.00
4	Module IV : Query Processing andOptimization, andDatabase Tuning	Translating SQL Queries into RelationalAlgebra, Algorithms for External Sorting, Algorithms for SELECT and JOINOperations, Algorithms for PROJECT and SetOperations, Combining Operations Using Pipelining, Using Heuristics in Query Optimization	25.00
5	Module V: Transaction Processing,Concurrency Control, Recovery and new application	Introduction to TransactionProcessing Conceptsand Theory, Lock Based Protocols, Time Stamped Based Protocols, Deadlock Handling, Crash Recovery. Distributed Database, Objective Oriented Database, Multimedia Database, Data Mining, Digital Libraries.	25.00

Course Learning Outcomes :

SN.	Course Learning Outcomes
1	Understand the database fundamentals along with conceptual modeling to deal real life applications.
2	Develop the ability to retrieve and miniplate information for business decision making from databases
3	Apply normalization techniques for consistent database development
4	Understand the query processing techniques to automate the real time problems of databases
5	Analyse the problems of data management in a concurrent environment.

Pedagogy for Course Delivery :

SN.	Pedagogy Methods
1	Video lectures
2	PPTs
3	Quiz
4	Assignments
5	Lab Work

Theory /VAC / Architecture Assessment (L,T & Self Work): 80.00 Max : 100

Attendance+CE+EE : 5+35+60

SN.	Type	Component Name	Marks
1	Attendance		5.00
2	End Term Examination (OMR)		60.00
3	Internal	CLASS TEST	15.00
4	Internal	Assignment	5.00
5	Internal	Viva	5.00
6	Internal	CASE STUDY	3.00
7	Internal	CLASS QUIZ	3.00
8	Internal	Minor Project	4.00

Lab/ Practical/ Studio/Arch. Studio/ Field Work Assessment : 20.00 Max : 100

Attendance+CE+EE : 5+35+60

SN.	Type	Component Name	Marks
1	Attendance		5.00
2	External	EXPERIMENT	30.00
3	External	VIVA VOCE	30.00
4	Internal	PRACTICAL / LAB RECORDS	10.00
5	Internal	VIVA VOCE	10.00
6	Internal	PERFORMANCE	15.00

Lab/ Practical details, if applicable :

SN.	Lab / Practical Details
1	Based on the Employee & Department tables perform the following SQL queries 1. Write a query in SQL to display the last name and job title of all employees who do not have a manager
2	Write a query in SQL to display the last name, salary, and commission of all employees who earn commissions. Sort data in descending order of

	salary and commissions.
3	. Write a query in SQL that prompts the user for a manager ID and generates the employee ID, last name, salary, and department for that manager's employees. The HR department wants the ability to sort the report on a selected column.
4	Write a query in SQL to Display all employee last names in which the third letter of the name is a.
5	Write a query in SQL to Display the last name of all employees who have both an a and an e in their last name
6	Write a query in SQL to Display the last name, job, and salary for all employees whose job is sales representative or stock clerk and whose salary is not equal to $2,500, $3,500, or $7,000.
7	Write a query in SQL to display the employee number, last name, salary, and salary increased by 15.5% (expressed as a whole number) for each employee. Label the column New Salary.
8	Create a report that produces the following for each employee: employee last name earns salary monthly but wants 3 times salary. Label the column Dream Salaries.
9	Create a query to display the last name and salary for all employees. Format the salary to be 15 characters long, left-padded with the $ symbol. Label the column SALARY.
10	Display each employee's last name, hire date, and salary review date, which is the first Monday after six months of service. Label the column REVIEW. Format the dates to appear in the format similar to "Monday, the Thirty-First of July, 2000."
11	Display the last name, hire date, and day of the week on which the employee started. Label the column DAY. Order the results by the day of the week, starting with Monday.
12	Open ended problem Take an example of real world situation to and do the following 1. Conceptual Design of Database (ER diagram) 2. Convert conceptual design to Relational database
13	Project Based Learning Create a complete RDBMS (using DDL & DML) & Develop a software (Front end) for showing the connectivity with above develop RDBMS using Python. For following: o Library Management System: o Online Retail Store Database: o Student Information System: o Healthcare Management System: o Hotel Reservation System: o Inventory Management System: o Social Media Platform Database: o Employee Management System: o Banking System Database: o Online Auction System: o Flight Booking Sy

List of Professional skill development activities :

No.of PSDA : 3

SN.	PSDA Point
1	Quiz
2	Group Presentation
3	Minor Project

Text & References :

SN.	Type	Title/Name	Description	ISBN/ URL
1	Book	1. Korth, Silberschatz, "Database System Concepts", 6th Ed., TMH, 2011.		13: 978-0073523323
2	Book	2. Steve Bobrowski, "Oracle & Architecture", TMH, 2000		978-81-265-2147
3	Book	2. Elmsari and Navathe, "Fundamentals of Database Systems", 6th Ed., A. Wesley, 2010		9780136086208
4	Book	1. Date C. J., "An Introduction to Database Systems", 7th Ed., Narosa Publishing, 2004		13: 978-81-906988-7-0