

Academic Year: 2023-2024

PGDCA



Syllabus & Scheme

Semester – I & II

School of Computer Science





GYANVEER UNIVERSITY, SAGAR (M.P.)
Scheme of Examination PGDCA II Semester (Major /Minor/Elective)
School of Computer Science (Academic Session 2023-24)
Subject wise distribution of marks and corresponding credits

S. No.	Course Type	Subject	Subject Code	Paper Name	Maximum Marks Allotted										Total Marks	Contact Periods Per week			Total Credits
					Theory Slot					Practical Slot						L	T	P	
					End Term Exam	Internal Assesment Class test (Descriptive & Objective)/Assignment/Seminar/			Internal Assesment			External Assesment							
					FINAL EXAM	Internal Assesment I	Internal Assesment II	Internal Assesment III	Class test/ Interaction	Attendance	Practical/ Presentation	Viva Voce	Lab Work						
1	Paper I	Computer Application	PGDCA321T	Internet Engineering	60	20	20	20	-	-	-	-	-	100	6	0	0	6	
2	Paper II	Computer Application	PGDCA322T	DBMS	60	20	20	20	-	-	-	-	-	100	6	0	0	6	
3	Paper III	Computer Application	PGDCA323T	Software Engineering	60	20	20	20	-	-	-	-	-	100	6	0	2	6	
4	Paper IV	Computer Application	PGDCA324T	Project Report & Viva - voce	60	20	20	20	-	-	-	-	-	100	6	0	0	6	
5	Paper V	Computer Application	PGDCA325P	Practical & VivaVoce	-	-	-	-	10	10	20	10	50	100	4	0	0	4	

Total of Creditd is 6+6+6+6+4 = 28

Note*: Allotment of Marks for Internal Assesment for theory portion is Best of Two: either of two and addition of them.



PGDCA Semester -II
PGDCA322T - Database Management Systems

Objectives:

- Demonstrate the basic elements of a relational database management system.
- Identify the data models for relevant problems.
- Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data into RDBMS and formulate SQL queries on the data.
- Demonstrate their understanding of key notions of query evaluation and optimization techniques.
- Extend normalization for the development of application software's.

Course Content:

(Lecture-12)

Unit I

Introduction: Purpose of DBMS, view of data, data independence, data model, data base languages. traditional/flat files versus database approach, merits and demerits of both approaches. Profile of people working in DB environment, database administration, and overall system structure.

Entity-relationship model: Basic concepts of entities and relationships, design issues, mapping constraints, keys, super key, entity-relationship (E-R) diagram, weak entity sets, extended E-R features. design of E-R database schema and reduction of E-R schema to tables.

(Lecture-12)

Unit II

Relational –model: Structure of relational database, relational algebra, tuple relational calculus, and extended relational algebra operators. **Design theory of relational databases:** Functional Dependencies. Design issues problem faced in designing an application, decomposition, Normalization using multivalve dependencies, Normalization using join dependencies, Domain key normal form and alternative approaches to database design. **Integrity Constraints:** Domain constraints, referential integrity, foreign key.

(Lecture-12)

Unit III

Structure Query Language(SQL): Basic structure ,set operations, aggregate functions, Null values nested and correlated sub queries, derived relations, views, Data Definition Language(DDL) Embedded SQL, and other SQL features, introduction to(other relational query languages),Query – By-Example(QBE) and QUERY Language(QUEL), assertions, triggers and stored procedures.

(Lecture-12)

Unit IV

Concurrent operation on database: Locked based protocols, Time-stamp based protocols, multiple granularity, multiversion schemes, deadlock handling, Insert and delete operation, Thomas Writing Rule and concurrency in index structures.

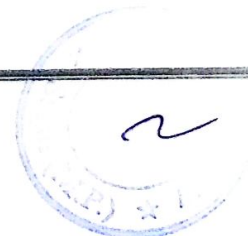
(Lecture-12)

Unit V

Crash recovery systems: Failure classification, storage structure, recovery and Atomicity, Log Based Recovery mechanisms, Shadow paging, Recovery with concurrent transactions, and advanced recovery techniques.

Introduction to distributed and Object Oriented Databases.

Case study: Oracle



Learning Outcomes:

After completion of the course, the student will be able to

- Demonstrate the basic elements of a relational database management system.
- Identify the data models for relevant problems.
- Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data into RDBMS and formulate SQL queries on the data.
- Demonstrate their understanding of key notions of query evaluation and optimization techniques.
- Extend normalization for the development of application software's.

Required Text(s):

- Henry F. Kourth, Abraham Silverschatz, S. Sudarshan "Database System Concepts", 5th Edition TataMcGraw Hills Publishing Co., 2005
- Ramez Elmasri, shamkant B. Navathe, Fundamentals of Database System, 5th edition, addition Wesley, 2006.



PGDCA Semester -II
PGDCA323T- SOFTWARE ENGINEERING

Objectives:

- To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.
- To provide an idea of using various process models in the software industry according to given circumstances.

Course Content:

(Lecture-12)

UNIT-I

Introduction to Software Engineering: Software Characteristics & Components. Software Paradigms, Software Consideration, Software Project Planning, Matrices For Software Productivity & Equality, Various Project Estimation Techniques & Software Project Scheduling.

(Lecture-12)

UNIT-II

Requirement Analysis: Analysis Principles, Complexity Object Oriented Analysis Measures, Storage & Processing Time Analysis, Database Methods, Requirements.

(Lecture-12)

UNIT-III

Software Design Process: Design Fundamentals, Top Down Bottom Up Design. Design Representations, Modular Design, Architectural Design, Procedural Design. Data Directed Design, Data Structure Oriented Design, Object Oriented Design, Real-Time Design. Software Tools.

(Lecture-12)

UNIT-IV

Software Implementation Language & Coding, Language Classes, Coding Style, Coding Efficiency, Software Quality Assurance. Software Testing Techniques, Software Testing Strategies, Comparison of Test Methods, Choice of Test Data, Classification of Tests.

(Lecture-12)

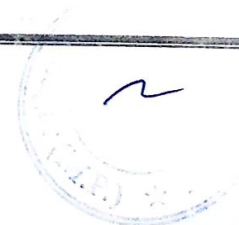
UNIT-V

Software Maintenance & Management: Maintenance Characteristics, Software Maintain Ability, Maintenance & Task, Maintenance Organization, Maintenance Side-Effect & Issue, Software Configuration Management (SCM), SCM Process & Standards.

Learning Outcomes:

After completion of the course, the student will be able to understand

- And have knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.
- Have an idea of using various process models in the software industry according to given circumstances.



PGDCA Semester -II
PGDCA324T PROJECT REPORT & VIVA - VOCE

PRACTICAL VIVA VOCE - M. M.:100

Practical based on theory papers. M.M.: 70



PGDCA Semester -II
PGDCA325P - PRACTICAL & VIVA - VOCE
DBMS

PRACTICAL VIVA VOCE –
Practical based on theory papers.

M. M.:100

LIST OF EXPERIMENTS:-

1. Study of DBMS, RDBMS and ORDBMS.
2. To study Data Definition language Statements.
3. To study Data Manipulation Statements.
4. Study of SELECT command with different clauses.
5. Study of SINGLE ROW functions (character, numeric, Data functions).
6. Study of GROUP functions (avg, count, max, min, Sum).
7. Study of various type of SET OPERATORS (Union, Intersect, Minus).
8. Study of various type of Integrity Constraints.
9. Study of Various type of JOINS.
10. To study Views and Indices.
11. Implementation of DDL commands of SQL with suitable examples
 - Create table
 - Alter table
 - Drop Table
12. Implementation of DML commands of SQL with suitable examples
 - Insert
 - Update
 - Delete
13. Implementation of different types of function with suitable examples
 - Number function
 - Aggregate Function
 - Character Function
 - Conversion Function
 - Date Function
14. Implementation of different types of operators in SQL
 - Arithmetic Operators
 - Logical Operators
 - Comparison Operator
 - Special Operator
 - Set Operation
15. Implementation of different types of Joins
 - Inner Join
 - Outer Join
 - Natural Join etc.
16. Study and Implementation of
 - Group By & having clause



- Order by clause
 - Indexing
17. Study & Implementation of
- Sub queries
 - Views Study & Implementation of different types of constraints.
18. Study & Implementation of Database Backup & Recovery commands. Study & Implementation of Rollback, Commit, Savepoint.
19. Creating Database /Table Space • Managing Users: Create User, Delete User • Managing roles:- Grant, Revoke.
20. Study & Implementation of PL/SQL.
21. Study & Implementation of SQL Triggers.

COURSE OUTCOMES:

After the completion of the Course, the student will be able to

- Apply the basic concepts of Database Systems and Applications.
- Use the basics of SQL and construct queries using SQL in database interaction
Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.
- Analyze and Select storage and recovery techniques of database system.

Reference Books:

- Elmasri, Navathe, "Fundamentals Of Database Systems", Addison Wesley.
- Korth, Silbertz, Sudarshan, "Database Concepts", McGraw Hill.
- Toledo; Data base management systems; TMH.
- Ashutosh Kumar Dubey "Data Base Management Concepts" Katson Publication.

