

**Kadi Sarva Vishwavidyalaya, Gandhinagar****MASTERS OF COMPUTER APPLICATION (MCA)****Semester – III (Second Year)****Subject: MCA-303 - Advanced Database Management System (ADBMS)**

SUB Total CREDIT	<u>Teaching scheme</u>		<u>Examination scheme</u>				
	(per week)		MID	CEC	External		Total Marks
	Th.	Pr.	Th.	Th.	Th.	Pr.	
5	3	4	25	25	50	50	150

**Course Description:**

The primary objective of this course is to provide in-depth knowledge of the SQL concepts and through exposure to PL/SQL database programming language.

**Learning Objectives:**

Students will learn Five components like Advanced SQL and Introduction to PL/SQL, Basic features of PL/SQL, Data retrieval and Exception handling in PL/SQL, Creating and managing named PL/SQL blocks (Procedure, function, package and triggers) and Advanced features of PL/SQL at the end of this course, which is as under:

- In “Advanced SQL and Introduction to PL/SQL” they will learn enhancement of group by clause, advance sub-queries, indexes, two tier and three tire client/server application models and need of PL/SQL.
- In “Basic features of PL/SQL” they will learn block structure of PL/SQL, variable declaration, datatypes and operators in PL/SQL, etc... .
- In “Data retrieval and Exception handling in PL/SQL” they will learn how to retrieve data using cursor and how errors are handled in PL/SQL.
- In “Creating and managing named PL/SQL blocks” they will learn how to create and use Procedures, Functions, Packages and Triggers.
- In “Advanced features in PL/SQL” they will learn how to create and manage collections, large objects, bulk binds and the functionalities of dbms\_SQL package.

**Prerequisites :**

- Basic knowledge of database management system
- Basic knowledge of SQL

**UNIT-I : Advanced SQL and Introduction to PL/SQL****[20%]**

- Enhancement to Group by clause: Group by using Cube and Rollup

- Advanced Sub-queries: Multiple column sub-queries , Sub-queries in FROM clause, Scalar and correlated sub-queries, Sub-query in CASE Expressions and in an ORDER BY clause, Using EXISTS/NOT EXISTS Operator
- SQL performance Tuning: Indexes ,Multiple Indexes on a table, Using ROWID to delete duplicate rows from a table, Using ROWNUM in SQL statements, Views, Creating Sequences
- Introduction to PL/SQL : Why PL/SQL, Features of PL/SQL, Application models and PL/SQL

**UNIT-II : Basic PL/SQL Features** **[20%]**

- PL/SQL basic block structure
- Language fundamentals : Lexical Units, Variable declaration, PL/SQL datatypes, Expressions and Operators
- PL/SQL Programming construct: PL/SQL control structures, PL/SQL records
- SQL within PL/SQL : DML in PL/SQL, Pseudo columns, GRANT and REVOKE, Transaction control

**UNIT-III : Data retrieval and Error handling in PL/SQL** **[20%]**

- Data retrieval using Cursor: Explicit and Implicit cursor, cursor fetch loops and cursor variables.
- Error handling: Declaring and Handling exceptions, Raising Exceptions, The EXCEPTION\_INIT pragma, Using RAISE\_APPLICATION\_ERROR statement, Exception propagation

**UNIT-IV : Creating and Managing Named PL/SQL Blocks** **[20%]**

- Creating subprograms (Procedures and Functions) : Subprogram creation, Subprogram parameters, The CALL statement, Procedures versus Functions, Local subprograms and stored subprograms
- Creating Packages: Package specification and package body, Packages and Scope, Overloading packaged subprograms, Package Initialization.
- Database Triggers : Types of triggers, Creating Triggers, Mutating Tables

**UNIT-V : Advanced Features in PL/SQL** **[20%]**

- Collections: Declaring and using collection types, Collection in the database, Collection methods
- Language Features: Native dynamic SQL, Bulk binds, Bulk COLLECT and RETURNING INTO clause, Object types and Large objects, DBMS\_SQL package.

**Text Book(s):**

1. "SQL,PL/SQL The programming language of oracle", 3rd revised edition, Ivan Bayross, BPB Publication
2. "Oracle 9i PL/SQL Programming", Scott Urman, Oracle Press.

**Reference Books:**

1. Professional Oracle Programming, by [Rick Greenwald](#), [Robert Stackowiak](#), [Gary Dodge](#), [David Klein](#), [Ben Shapiro](#), [Christopher G. Chelliah](#), Wiley Publication
2. Sams Teach Yourself PL/SQL in 21 Days
3. Oracle9i: The Complete Reference , by [Kevin Loney](#) , [George Koch](#) , Oracle Press
4. Programming with PL/SQL for beginners, Hiren Dand, Rajendra Patil, Tushar Sambare, SDP

**List of practicals based on** Designing and implementing

- Analytical SQL query
- Simple PL/SQL Blocks
- PL/SQL Blocks using built-in functions
- PL/SQL Blocks using cursors
- PL/SQL Blocks for Error Handling
- Stored Procedures
- Functions
- PL/SQLBlock using Varrays & Nested tables
- Triggers
- Packages and usage of in-built packages