**Course Curriculum**

**SQL**

* Introduction to File Management System
  + Advantages of FMS
  + Disadvantage of FMS
* Introduction to DBMS
* DBMS Architecture
  + Logical Data Independence
  + Physical Data Independence
* Database Models
  + Hierarchical Model (HMS / HDBMS)
  + Network Model (NDBMS)
  + Relational Model (RDBMS)
* Oracle Architecture
* Client/Server Architecture
* Normalization
  + Why Normalization Process
  + Functional Dependency(FD)
  + Super Key, Candidate Key,
  + First Normal Form
  + Second Normal Form
  + Third Normal Form
  + BCNF
  + Fourth Normal Form
  + Fifth Normal Form
* CODD Rules
* Oracle Versions
* Oracle Installation
* Data types In Oracle
* SQL Sub-Languages
  + DDL(Data Definition Language)
  + DML (Data Manipulation Language)
  + DRL (Data Retrieval Language)
  + TCL (Transaction Control Language)
  + DCL(Data Control Language)
* Operators In Oracle
  + Arithmetic operator
  + Comparison Operators
  + Assignment operators
  + Logical Operators (AND,OR ,NOT)
  + Special Operators (IN, NOT IN, BETWEEN, NOT BETWEEN, LIKE, NOT LIKE, IS NULL, IS NOT NULL)
  + Set operators (UNION, UNION ALL, INTERSECT, MINUS)
  + Practical Examples using OPERATORS
* Pre-Defined Functions In Oracle
  + Column Level Functions
  + Group / Aggregate Functions
  + Conversion Functions
  + General Functions
  + Analytical Functions
* Data Aggregation using GROUP BY Clause
  + Importance of GROUP BY and HAVING Clause
  + Differences Between WHERE vs HAVING clause
  + ROLLUP, CUBE, GROUPING, GROUPING\_ID
* Integrity Constraints
  + What is a Constraint and Importance of Constraints
  + Types of Integrity Constraints
  + Declaring Constraints
  + Adding & Dropping Constraints
  + Enable & Disabling Constraints
  + Initially Deferred Deferrable Options
  + Getting Constraint Names from Data Dictionary
* JOINS
  + Introduction Joins
  + Importance of Joins in Real Time
  + Types of Joins
  + Outer Join
  + Non-Equi Join
  + Cartesian Product / Cross Join
  + Self Join
  + ANSI Joins
  + Real-time Queries using Joins
* SUB-QUERIES
  + Introduction to Sub-Queries
  + Usage of Sub-Queries
  + Types of Sub-Queries
* DATABASE TRANSACTIONS
  + Introduction
  + Types of Transaction Commands
  + ACID Properties
* DATABASE SECURITY
  + Introduction
  + Creating Users
  + Types of Privileges
  + Granting and Revoking Privileges
* LOCKING MECHANISM
  + Concurrent Transactions
  + Types of Locks
  + Isolation Levels
* SCHEMA OBJECTS
  + VIEWS
  + INDEXES
  + SYNONYMS
  + SEQUENCES
  + ROLES
* PSEUDO Columns
  + Importance of Pseudo columns
  + Types of Pseudo columns
* SET Operators
  + Importance of Set Operators
  + Rules to use Set Operators
  + Types of Set Operators
* OBJECT TECHNOLOGY
  + Introduction to Object types
  + Working with VARRAYS , NESTED TABLES
  + ROW objects vs Column Objects
  + REF & DEREF Functions
* PARTITIONS
  + Importance of Partitions
  + Types of Partitions
  + Sub-Partitions
  + Altering Partitions
* HIERARCHICAL QUERIES
  + START WITH clause
  + CONNECT BY PRIOR
* MATERIALIZED VIEWS
  + Importance of Materialized Views
  + Creating Materialized Views
  + REFRESH, FAST REFRESH, COMPLETE REFRESH
  + ENABLE QUERY REWRITE Options
  + Difference between Views vs Materialized Views
* CLUSTERS
  + Importance of Cluster
  + Creating Clusters
* Oracle 10g, 11g, 12c & 18c Features
  + Temporary Tables/Global Tables
  + Flashback Queries
  + Purge Command, Recycle bin
  + Pivot Operator
  + Virtual Columns
  + Read-only Tables
  + TOP-N rows
  + Regular Expressions
  + JSON/SQL(12c)

**PL/SQL**

* Introduction to PL/SQL
* Advantages of PL/SQL
* PL/SQL Architecture
* PL/SQL Data types
* Variables and Constants
* PL/SQL Blocks
  + Anonymous Blocks
  + Named Blocks
* Embedding SQL statements in PL/SQL
* Conditional and Unconditional Statements
  + Simple if,
  + If…else,
  + Nested if,
  + if…else ladder
  + Selection Case, Simple Case
  + Goto, Exit
* Iteration Control Statements
  + Simple LOOP
  + While LOOP
  + For LOOP
* Cursor Management in PL/SQL
  + Introduction to Cursors
  + Types of Cursors
  + Static Cursors
  + Dynamic Cursors
  + Cursor Attributes
  + Cursor with Parameters
  + Cursors with LOOPS
  + FOR UPDATE of clause
  + Current of clause
  + Nested Cursors
* Implementing Object Types in PL/SQL
  + Collections
  + Records
* Exception in PL/SQL
  + Importance of Exceptions
  + Types of Exceptions
  + RAISE statement
  + RAISE\_APPLICATION\_ERROR
  + Pragma Exception\_Init
  + SQLCODE, SQLERRM Functions
* SUB PROGRAMS
  + Introduction to Sub-Programs
  + Differences between Anonymous Block vs Named Blocks
  + PROCEDURES
  + USER DEFINED FUNCTIONS
* PACKAGES
  + Introduction to Packages
  + Creating PACKAGE Specification and PACKAGE Body
  + Private and Public Variables in PACKAGE
  + Procedure Overloading
  + Function Overloading
  + Calling Procedures & Functions in Packages
  + Dropping Package
* DATABASE TRIGGERS
  + Introduction to Triggers
  + Types of Triggers
  + Mutating Errors
  + Trigger Auditing
  + Triggers using FOLLOWS clause(11g)
  + Compound Triggers(11g)
  + Instead of Triggers
  + Calling Packages from Triggers
  + Enable / Disable Triggers
  + Differences Between Triggers & Constraints
  + Dropping Triggers
* DYNAMIC SQL
  + Usage of Dynamic SQL
  + ORALCE SUPPLIED PACKAGES
  + Access Files with UTL\_FILE package
  + working with LOBS Using DBMS\_LOB Package
* Advance Concepts
  + Data Pumping (Export & Import0
  + SQL \* LOADER