**ORACLE** **11g/12c Course Details**

**Syllabus:**

**Course pattern:**

• Hand Notes will be provided  
• Daily assignments   
• Advanced features in Oracle  
• Programs as per coding standards followed in CMM LEVEL 5 companies  
• Using TOAD (Tool For Oracle Application Development) in training  
• Discussions on FAQ’s

**Introduction to DBMS:**

• Approach to data management  
• Introduction to prerequisites  
• File and file system  
• Disadvantages of file  
• Review of database management terminology  
• Database models

* Hierarchal model
* Network model
* Relational model

**Introduction to RDBMS:**

• Feature of RDBMS  
• Advantages of RDBMS over FMS ad DBMS  
• The 12 rules (E.F codd’s Rules – RDBMS)  
• Need for database design   
• Support of normalization process for data management

* Client server technology
* Oracle corporation products
* Oracle versions

• About SQL&SQL\*PLUS

**Sub language commands:**

• Data definition language (DDL)  
• Data retrieval language (DRL)  
• Data manipulation language (DML)  
• Transaction control language (TCL)  
• Database security and privileges (DCL)

**Introduction to SQL Database Object:**

• Oracle predefined data types  
• DDL Commands

* Create, alter (add,modify,rename,drop)
* columns, drop

• Working with DML,DRL Commands  
• Operators support

* DML-Insert,update,delete
* DQL-SELECT statements sing WHERE Clause
* Comparison and conditional operations
* Arithmetic and logical operations
* Set operators (UNION, UNION ALL, INTERSECT, MINUS)
* Special operators – IN (NOT IN),
* BETWEEN (NOT BETWEEN), LIKE (NOT LIKE), IS NULL (IS NOT NULL)

**Built in functions:**

• Arithmetic functions, character functions, date functions  
• Aggregate functions, OLAP functions & general functions

**Grouping the result of a query:**

• Using group by and having clause of DRL statement  
• Using order by clause

**Working with integrity constraints:**

• Importance of data integrity  
• Support of integrity constraints for relating table in RDBMS  
• Working with different types of integrity constraints

* NOT NULL constraint
* UNIQUE constraint
* PRIMARY KEY constraint
* FOREIGN KEY constraint
* CHECK constraint
* REF constraint
* Understanding ON DELETE clause in referential integrity constraint
* Working with composite constraint
* Applying DEFAULT option to columns
* Working with mujltiple constraints upon a colume
* Adding constraints to a table
* Dropping of constraints
* Enabling for constraints
* Querying for constraint information

**Querying multiple table (Joins):**

• Equi join/inner join/simple join  
• Cartesian join  
• Non-equi join  
• Outer joins  
• Self join

**Working with sub queries:**

• Understanding the practical approach to sub queries/nested select/sub select/inner   
select/outer select  
• What is the purpose of a sub query?  
• Sub query principle and usage  
• Type of sub queries

* Single row
* Multiple row
* Multiple column

• Applying group functions in sub queries  
• The impact of having clause in sub queries  
• IN,ANY/SOME,ALL operators in sub queries  
• PAIR WISE and NON PAIR WISE comparison in sub queries  
• Be … aware of NULL’s  
• Correlated sub queries  
• Handling data retrieval with EXISTS and NOT EXISTS operators  
  
**Working with DCL,TCL commands:**

• Grant, revoke  
• Commit, rollback, savepoint  
• SQL Editor commands  
• SQL Environment settings  
  
**Maintaining database objects:**

**VIEWS in oracle:**

• Understanding the standards of VIEWS in oracle  
• Types of VIEWS

* Relational views
* Object views

• Prerequisites to work with views  
• Practical approach of SIMPLE VIEWS and COMPLES VIEWS  
• Column definitions in VIEWS  
• Using VIEWS for DML operations  
• In-line view  
• Forced views  
• Putting CHECK constraint upon VIEWS  
• Creation of READ ONLY VIEWS   
• Understanding the IN LINE VIEWS  
• About materialized views  
• View triggers  
• Working with sequences  
• Working with synonyms  
• Working with index and clusters  
• Creating cluster tables, implementing locks  
  
**Pseudo columns in oracle:**

• Understanding pseudo columns in oracle  
• Types of pseudo columns in oracle

* CURRVAL and NEXTVAL
* LEVEL
* ROWID
* ROWNUM

**Data partitions & parallels process:**

• Types of partitions

* Range partitions
* Hash partitions
* List partition
* Composite partition
* Parallel query process

• Locks

* Row level locks
* Table level locks
* Shared lock
* Exclusive lock
* Dead lock

• SQL\*Loader:

* SQL\*Loader architecture
* Data file (Input datafiles)
* Control file
* Bad file
* Discard file
* Log file
* .txt to bse table
* .csv to base table
* From more than one file to single table

**PL-SQL**

• Introduction to programming languages  
• Introduction to PL/SQL  
• PL/SQL Architecture  
• PL/SQL Data types  
• Variable and constants  
• Using built\_in functions  
• Conditional and unconditional statements

* Simple IF,ELSIF, ELSE…IF
* Selection case, simple case, GOTO label and EXIT

• Iterations in PL/SQL

* Simple LOOP,WHILE LOOP,FOR LOOP and NESTED LOOPS

• SQL within PL/SQL  
• Composite data types (complete)  
• Cursor management in PL/SQL

* Implicit cursors
* Explicit cursors
* Cursor attributes
* Cursor with parameters
* Cursors with LOOPs
* Cursors with sub queries
* Ref.cursors

• Record and PL/SQL Table types  
  
**Advanced PL/SQL**

**Procedures in PL/SQL:**

• STORED PROCEDURES  
• PROCEDURE with prameters (IN,OUT and IN OUT)  
• POSITIONAL Notation and NAMED Notation  
• Procedure with cursors  
• Dropping a procedure

**Functions in PL/SQL**

• Difference between procedures and functions  
• User defined functions  
• Nested functions  
• Using stored function in SQL statements

**Packages in PL/SQL:**

• Creating PACKAGE specification and PACKAGE body  
• Private and public objects in PACKAGE

**EXCEPTIONS in PL/SQL:**

**Types of exceptions:**

• User defined exceptions  
• Pre defined exceptions  
• RAISE\_APPLICATION\_ERROR  
• PRAGMA\_AUTONOMOUS\_TRANSACTION  
• SQL Error code values

**Data base triggers in PL/SQL:**

**Types of triggers**

• Row level triggers  
• Statement level triggers   
• DDL Triggers  
• Trigger auditing

**File input/output:**

• PL/SQL file I/O (input/output) using UTL\_FILE package

**Implementing object technology**

• What is object technology?  
• OOPS-object instances  
• Creation of objects  
• Creating user defined data types  
• Creating object tables  
• Inserting rown in a table using objects  
• Retrieving data from object based tables  
• Calling a method  
• Indexing abstract data type attributes

**Using LOBS**

• Large objects (LOBS)  
• Creting tables-LOB  
• Working with LOB values  
• Inserting, updating & Deleting values in LOBs  
• Populating lobis DBMS\_LOB routines  
• Using B-FILE

**Using collections**

• Advantages of collection  
• Ref cursor (dynamic cursor)  
• Weak ref cursor  
• Strong ref cursor  
• Nested tables VARRAYS or VARYING arrays  
• Creating tables using nested tables  
• Inserting, updating & deleting nested table records  
• Nested table in PL/SQL

**Oracle data base architecture**

• Introduction to oracle database architecture  
• Physical structures logical structures  
• DB Memory structures background process  
• 2tire, 3tire, N-tier architecture  
  
**Advanced features**

• 9i joines  
• New date function  
• Rename column  
• Inner join/natural join  
• Left outer join/right outer join  
• Full outer join  
• Multiple inserts  
• Insert all command  
• Merge statement  
• NVL2(), NULLIF(), COALESCE()  
• CASE expression of select command  
• Temporary tables/global tables  
• New function EXTRACT()  
• Autonomous traction  
• Pragma\_autonomous\_transaction()  
• Returning into clause  
• Bulk collect  
• About flash back queries  
• Dynamic SQL  
• New 11g features

**DBA CONCEPTS**

• Data base  
• Table space  
• Types of tablespaces  
• Datafiles/se