

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Master of Computer Application (2-Years Programme)
Course Code:	3MCAD357
Course Title:	Database Administration
Course Type:	Departmental Elective
Year of Introduction:	2021-22

Credit Scheme

L	T	Practical Component				C
		LPW	PW	W	S	
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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. perform the roles of database administrator and configure the database system
2. manage database instances and transactions
3. implement performance and tuning techniques for enhancing database performance
4. apply security, backup and recovery policies

Syllabus:

Total Teaching hours: 45

Unit	Syllabus	Teaching hours
Unit-I	Overview of SQL: Data definition, Data manipulation-retrieval operations, Data manipulation-update operation, Introduction to Views, updating union, intersection and difference views, updating other views.	02
Unit-II	Introduction of Database architecture: DBA roles and responsibilities, Database instances, logical storage structures, logical database structure, physical storage structures, RDBMS memory structures and background processes.	05
Unit-III	Server Processes: Dedicated server, Shared Server Files: Parameter files, Control files, Data files, Segments, Extents, Data blocks, redo log Files, Temporary files.	05
Unit-IV	Managing Tablespaces: Tablespace architecture, System Table space, logical Managed table space.	03
Unit-V	Background Processes: Process Monitor (PMON), System Monitor (SMON), Database Writer (DBWn), Log Writer (LGWR), Archiver (ARCn), Check Point (CKPT), Job process (Jnnn), Recoverer (RECO).	05
Unit-VI	Memory Areas: Shared Global Area, Program Global Area.	05
Unit-VII	Database Security and Auditing: Database authentication methods, database authorization methods, auditing	06
Unit-VIII	Managing Transactions: Rollback Segments, space usage within rollback Segments, Monitoring Rollback Segment Usage.	04
Unit-IX	Database Tuning and Performance: Tuning: Application, SQL, Memory Usage, Data Storage, Data Manipulation, Physical Storage, Logical Storage.	06

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Unit-X **Backup and Recovery:** Logical backup, physical backup, recovery manager (RMAN) 04

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

- Suggested Readings/References:
1. Kevin Loney and Bob Bryla , Oracle Database 11g DBA Handbook, Tata Mcgraw Hill.
 2. Iggy Fernandez, Beginning Oracle Database 11g administration, Apress
 3. Sam R. Alapati Expert Oracle Database 10g Administration, Apress.
 4. Kevin Loney , Oracle 9i DBA Handbook, Tata Mcgraw Hill
 5. C J Date, An introduction to Database Systems, Addition-Wesley.
 6. Thomas Kyte, Beginning Oracle programming by Sean Dillon, Christopher Beck, Shroff Publisher

Suggested List of Experiments:	Sr. No.	Title	Hours
	1	To apply the knowledge of view, create one employee table. Insert five records in the created table then perform the following task on the same: a) Create or replace a view, alter view and update view b) Manage materialized view and log	02
	2	To study and implement the explicit cursors which display the list of tables created by owner name entered by end user and display the number of rows exists in respective table.	04
	3	To study and create procedure in PL/SQL which will display the source code of the given procedure name entered by end-user line by line.	02
	4	To study and write the SQL statement to display the various components of Oracle, oracle instance and database	04
	5	To understand the DBWn and LGWR process of Oracle Architecture and write the SQL statements for it.	02
	6	To study and create/update/alter/drop tablespace, name of the tablespace, name of the datafile, size of datafile.	04
	7	To study and understand collections, define the type as varray (collection in PI/SQL) with size of 10 with named author Array. Declare variable author in pl/sql block which allow to add more than one author name and display the same. Also create a table book (isbn number (10), title varchar2 (100), authors author Array) and insert the value into that.	02

- 8 To study and perform SQL Performance tuning using bitmap index and also study other indexing method which helps in improve the performance of sql and mentioned the same. 02
- 9 To study and understand SQL security and auditing, write SQL queries to perform the following task: create & alter user grant permission, lock unlock account, drop user, revoke permission, user password 04
- 10 To study and perform Backup up the database in oracle. Mention the steps for the same. To study and perform the Recovery of Your Database in oracle. Mention the steps for the same. 04

Suggested Case List: -NA-