

Name of faculty: Gaurav Gambhir

Discipline: Computer Science

Semester: 3rd

Subject: CSE 205 N – Database Management System

Lesson Plan Duration: 15 Weeks (from July, 2018 to December, 2018)

\*\* Work Load (Lecture / Practical) per week (in hours): Lectures -04 Practical -03

| Week            | Theory           |   | Practical     |  |
|-----------------|------------------|---|---------------|--|
|                 | Lecture day      | Topic (including assignment/test)                                     | Practical Day | Topic  |
| 1 <sup>st</sup> | 1 <sup>st</sup>  | Introduction to Module  | 1st           | Installing Oracle on computer. Write SQL command to connect to oracle database                         |
|                 | 2 <sup>nd</sup>  | Concept & Overview of DBMS  |               |  |
|                 | 3 <sup>rd</sup>  | Data Models, Database Languages                                       |               |  |
| 2 <sup>nd</sup> | 4 <sup>th</sup>  | Database Administrator, Database Users,                               | 2nd           | Write the queries for Data Definition Language (DDL) in RDBMS. create, alter, drop,                    |
|                 | 5 <sup>th</sup>  | Three Schema architecture of DBMS.                                    |               |  |
|                 | 6 <sup>th</sup>  | Entity-Relationship Model: Basic concepts, Design Issues              |               |  |
| 3 <sup>rd</sup> | 7 <sup>th</sup>  | Entity-Relationship Model: Mapping Constraints, Keys                  | 3rd           | Write the queries for Data Definition Language (DDL) in RDBMS. truncate, comment, rename               |
|                 | 8 <sup>th</sup>  | Entity-Relationship Diagram, Weak Entity Sets, Extended E-R features. |               |  |
|                 | 9 <sup>th</sup>  | Relational Model: Structure of relational Databases                   |               |  |
| 4 <sup>th</sup> | 10 <sup>th</sup> | Relational Algebra  | 4th           | Write the queries for Data Manipulation Language (DML) in RDBMS. select, insert, update, delete,       |
|                 | 11 <sup>th</sup> | Relational Calculus   |               |  |
|                 | 12 <sup>th</sup> | Introduction to Views   |               |  |
| 5 <sup>th</sup> | 13 <sup>th</sup> | Updates on views  | 5th           | Write the queries for Data Manipulation Language (DML) in RDBMS. merge, call, explain plan, lock table |
|                 | 14 <sup>th</sup> | SQL and Integrity Constraints: Concept of DDL, DML, DCL               |               |  |
|                 | 15 <sup>th</sup> | Basic Structure, Set operations                                       |               |  |

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|                  |                  |   |      |   |
| 6 <sup>th</sup>  | 16 <sup>th</sup> | Aggregate Functions, Null Values, Domain Constraints, | 6th  | Write the queries for Data Control Language (DCL) in RDBMS.<br>Grant, Revoke  |
|                  | 17 <sup>th</sup> | Referential Integrity Constraints,                    |      |   |
|                  | 18 <sup>th</sup> | Assertions, views, Nested Sub queries,                |      |   |
| 7 <sup>th</sup>  | 19 <sup>th</sup> | Database security application development using SQL   | 7th  | Write SQL statements to demonstrate use of comparison operators.<br>Write an sql query to demonstrate LIKE operator<br>Use of DISTINCT with example |
|                  | 20 <sup>th</sup> | Stored procedures and triggers                        |      |   |
|                  | 21 <sup>st</sup> | Relational Database Design: Functional Dependency     |      |   |
| 8 <sup>th</sup>  | 22 <sup>nd</sup> | Different anomalies in designing a Database.          | 8th  | Write SQL queries using logical operations<br>Write SQL statement to demonstrate AND / OR operator  |
|                  | 23 <sup>rd</sup> | Normalization using functional dependencies,          |      |   |
|                  | 24 <sup>th</sup> | Decomposition, Boyce-Codd Normal Form                 |      |   |
| 9 <sup>th</sup>  | 25 <sup>th</sup> | 3NF, Normalization using multi-valued dependencies    | 9th  | Write SQL query using character, number, date, group, orderby functions<br>Write sql query to demonstrate aliasing through AS clause,               |
|                  | 26 <sup>th</sup> | 4NF, 5NF  |      |   |
|                  | 27 <sup>th</sup> | Internals of RDBMS                                    |      |   |
| 10 <sup>th</sup> | 28 <sup>th</sup> | Physical data structures                              | 10th | Writing queries to demonstrate inner join, outer join, left outer join, right outer join.   |
|                  | 29 <sup>th</sup> | Query optimization: join algorithm                    |      |   |
|                  | 30 <sup>th</sup> | Statistics and cost base optimization.                |      |   |
| 11 <sup>th</sup> | 31 <sup>st</sup> | Transaction processing,                               | 11th | Write SQL queries for relational algebra  |
|                  | 32 <sup>nd</sup> | Concurrency control and Recovery Management           |      |   |
|                  | 33 <sup>rd</sup> | Transaction model properties                          |      |   |
| 12 <sup>th</sup> | 34 <sup>th</sup> | State serializability, lock base                      |      | Write SQL queries   |

|                  |                  |  |      |   |
|------------------|------------------|--|------|---|
|                  |                  | protocols, two phase locking.  | 12th | for sub queries,<br>nested queries<br>Concepts for ROLL<br>BACK, COMMIT &<br>CHECK POINTS   |
|                  | 35 <sup>th</sup> | Failure Recovery and<br>Concurrency Control  |      |   |
|                  | 36 <sup>th</sup> | Issues and Models for Resilient<br>Operation -Undo/Redo<br>Logging-Protecting against<br>Media Failures. |      |   |
| 13 <sup>th</sup> | 37 <sup>th</sup> | Concurrency Control: Serial<br>and Serializable Schedules-<br>Conflict Serializability                   | 13th | Create VIEWS,<br>CURSORS and TR<br><br>High level<br>language<br>extension with<br>Cursors. |
|                  | 38 <sup>th</sup> | Enforcing Serializability by<br>Locks-Locking Systems with<br>Several Lock Modes-                        |      |   |
|                  | 39 <sup>th</sup> | Concurrency Control by<br>Timestamps, validation.  |      |   |
| 14 <sup>th</sup> | 40 <sup>th</sup> | Transaction Management:  | 14th | High level<br>language<br>extension with<br>Triggers.                                       |
|                  | 41 <sup>st</sup> | Serializability and<br>Recoverability-View,  |      |   |
|                  | 42 <sup>nd</sup> | Serializability-Resolving<br>Deadlocks   |      |   |
| 15 <sup>th</sup> | 43 <sup>rd</sup> | Distributed Databases:<br>Commit and Lock  | 15th | To study the<br>concept of<br>Procedures and<br>Functions                                   |
|                  | 44 <sup>th</sup> | Revision   |      |   |
|                  | 45 <sup>th</sup> | Class Test   |      |   |