

Course Title	Database Systems Lab
Course Code	CC-215L
Credit Hours	1
Category	Computing Core
Prerequisite	None
Co-Requisite	None
Follow-up	None
Course Description	Introduction to SQL environment: Writing Basic SQL Statements; SELECT Statement, Arithmetic Expressions, Operator Precedence, Null Value, Column Alias, Concatenation Operator, Display table Structure. From Clause: Table list, Table Alias. Restricting and Sorting Data; WHERE Clause, Comparison operators, Logical operators, ORDERBY clause; Where Clause: Conditions, logical operators and their precedence, order by clause. Single row functions: character functions, number functions, date functions, type conversion functions. Multi row Functions: Sum, Average, Standard deviation, Variance, Subgrouping of data, Group by Clause, use of Having clause. Join: Cross product, natural join, Equi-join, Non-equijoin, left outer join, right outer-join, self-join. Subquery: use of subquery, subquery syntax, Multiple Column Subqueries, pairwise comparison, Non-pair wise comparison, Null Value in a subquery, Subquery in From Clause. Creating and Altering SQL tables: Create table statement, Defining Constraints, Column Level and Table Level, NOT NULL Constraint, UNIQUE Key Constraint, PRIMARY Key Constraint, FOREIGN Key Constraint, CHECK Constraint, Alter table statement, drop statement, Data Manipulation: Insert, Update, Delete statements. SQL Objects: Views, Sequences, Indexes. User Management: Create user, user privileges, user groups, Grant, Revoke statements.
Text Book(s)	Michael McLaughlin, Oracle Database 11g PL/SQL Programming, 1 st Edition, McGraw-Hill Education, 2008, ISBN: 0071494456.
Reference Material	Jeffrey A. Hoffer, Ramesh Venkataraman, Heikki Topi, Modern Database Management, 12 th Edition, Pearson, 2015. ISBN-10: 0133544613. Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation, and Management, 6 th Edition, Pearson, 2015. ISBN-10: 1292061189.