






**Level 5 Diploma in Database Administration (990)**  
**171 Credits**



<b>Unit:</b> PL/SQL	<b>Guided Learning Hours:</b> 280
<b>Exam Paper No.:</b> 2	<b>Number of Credits:</b> 28
<b>Prerequisites:</b> Basic programming knowledge.	<b>Corequisites:</b> A pass or higher at Diploma level
<p><b>Aim:</b> Learners will learn to create and manage PL/SQL program units and data structures, stored procedures and functions, database triggers, and packages to process data using database objects. PL/SQL is the proprietary Oracle language used to provide programming features in an Oracle database. The unit covers the use of PL/SQL program units and data structures, stored procedures and functions, database triggers, and packages to process data using database objects. The unit ensure learners extend their Oracle Relational Database Structured Query Language (SQL) skills into writing Oracle Stored Procedures using PL/SQL in a client/ server environment. In both lectures and practical labs, learners will learn PL/SQL Database Programming by using the Oracle SQL*Plus tool and simple text editor. Proper structured programming design and formatting will be taught using flow diagrams and sample code. Learners will also learn how database security issues such as database users, roles and grants apply to the execution of PL/SQL code.,</p>	
<b>Required Materials:</b> Recommended Learning Resources.	<b>Supplementary Materials:</b> Lecture notes and tutor extra reading recommendations.
<p><b>Special Requirements:</b> The unit requires a combination of lectures, demonstrations, discussions, and hands-on practical labs.</p>	
<p><b>Intended Learning Outcomes:</b></p> <p>1 The benefits of using PL/SQL blocks versus several SQL statements; being able to identify the sections of a PL/SQL block and describing their contents</p> <p>2 The purpose of variables; declaring constants and variables in the declarative part of any PL/SQL block, subprogram, or package and the difference between a constant and a variable.</p> <p>3 Understand the IF...ELSE statement; assigning a dynamic data type for a PL/SQL variable and initialising a PL/SQL variable.</p> <p>4 Creating the FOR and WHILE statements; syntax for emulating a REPEAT UNTIL LOOP in Oracle/PLSQL.</p> <p>5 The concept of explicit cursor; examining different approaches to work with explicit cursor and being able to determine when an explicit cursor is required.</p>	<p><b>Assessment Criteria:</b></p> <p>1.1 Identify an anonymous block and its use</p> <p>1.2 Describe how to execute a PL/SQL block</p> <p>1.3 Identify the mandatory and optional sections of a PL/SQL block</p> <p>1.4 Describe basics of programming in PL/SQL</p> <p>1.5 Define cursors, stored procedures and PL/SQL functions</p> <p>1.6 Demonstrate using PL/SQL syntax, data types, variables, constants, records</p> <p>2.1 Identify valid variable names</p> <p>2.2 Explain and list the valid data types for PL/SQL variables</p> <p>2.3 Describe how to declare and use variables in PL/SQL</p> <p>2.4 Define PL/SQL variables and constants</p> <p>2.5 Demonstrate how to use assignment statements to assign values to variables declare</p> <p>3.1 Describe control structures</p> <p>3.2 Determine when it is appropriate to use an IF statement</p> <p>3.3 Identify all the clauses of an IF statement, and state when they should be used</p> <p>3.4 Demonstrate how to use DML statements in a PL/SQL block</p> <p>4.1 Demonstrate creating a basic loop</p> <p>4.2 Demonstrate creating a FOR loop</p> <p>4.3 Demonstrate creating a WHILE loop</p> <p>4.4 Explain the purpose of a loop, and name the types of loops available in Oracle</p> <p>5.1 Declare, open, and close an explicit cursor</p> <p>5.2 Demonstrate how to Fetch data from an explicit cursor</p> <p>5.3 Identify attributes associated with a cursor</p>

<p>6 Understand how PL/SQL allow developers to raise and handle errors (exceptions) in a very flexible and powerful way.</p> <p>7 Using subprograms to build modular applications.</p> <p>8 Promoting the re-use of code through creating general purpose packages.</p> <p>9 Object-oriented development, implementation and the PL/SQL object oriented architectural programming.</p>	<p>5.4 Define a cursor.</p> <p>5.5 Demonstrate how to create a Explicit Cursor.</p> <p>5.6 Demonstrate how to use cursors in PL SQL Block.</p> <p>5.7 Demonstrate how to use explicit cursor attributes.</p> <p>6.1 Evaluate BOOLEAN conditions combined with logical operators</p> <p>6.2 Identify the purpose of the exception-handling section of a PL/SQL block</p> <p>6.3 Explain trap predefined exceptions in a PL/SQL block</p> <p>6.4 Demonstrate trapping user-defined exceptions in a PL/SQL block</p> <p>6.5 Declare a cursor in the subquery of a cursor FOR loop</p> <p>7.1 Define subprograms</p> <p>7.2 Be able to create PL/SQL procedure</p> <p>7.3 Be able to create PL/SQL function.</p> <p>7.4 Demonstrate PL/SQL subprogram declaration.</p> <p>8.1 Be able to create a package</p> <p>8.2 Analyse PL/SQL package advantages</p> <p>8.3 Evaluate the scope of package specification declaration</p> <p>8.4 Evaluate the scope of package specification body</p> <p>8.5 Analyse package features</p> <p>9.1 Explain abstraction as a programming discipline</p> <p>9.2 Define Oracle PL/SQL object types</p> <p>9.3 Examine the advantages of using object types</p> <p>9.4 Outline the structure of an object type</p> <p>9.5 Evaluate components of an object type.</p>
<p><b>Methods of Evaluation:</b> A 2½-hour written examination paper with five essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in Oracle PL/SQL with a weighting of 100%.</p>	

### Recommended Learning Resources: Oracle PL/SQL

<p><b>Text Books</b></p>	<ul style="list-style-type: none"> <li>• Oracle PL/SQL &amp; Oracle 9i. ISBN-10: 0131603981</li> <li>• Easy Oracle PL/SQL Programming: Get Started Fast with Working PL/SQL Code Examples by John Garmany. ISBN-10: 0975913573</li> <li>• Oracle PL/SQL Best Practices by Steven Feuerstein. ISBN-10: 0596514107</li> </ul>
<p><b>Study Manuals</b></p> 	<p>BCE produced study packs</p>
<p><b>CD ROM</b></p> 	<p>Power-point slides</p>
<p><b>Software</b></p> 	<p>Oracle Database</p>