RARITAN VALLEY COMMUNITY COLLEGE
COMPUTER SCIENCE (CS) DEPARTMENT

CISY-286, Intro to Oracle: SQL & PL/SQL

I. Basic Course Information

A. Course Number and Title:

CISY-286, *Intro to Oracle: SQL & PL/SQL*

B. Date of Revision: November 2006

C. Course Developers: Stephen T. Brower and Pratap Reddy

D. Sponsoring Department: Computer Science (CS) Department

E. Semester Credit Hours: 3

F. Weekly Contact Hours: 4 (2 lecture, 2 lab)

G. Prerequisite: *CISY 285 Database Development & Design* or permission of instructor

H. Laboratory Fees: Yes, at current rate

II. Catalog Description

(Prerequisite: CISY 285 Database Development & Design or permission of instructor) In this introductory Oracle course, students will be introduced to SQL and PL/SQL functions. They will learn how to create and maintain database objects and how to store, retrieve, and manipulate data. In addition, students will also learn how to create PL/SQL blocks of application code that can be shared by multiple forms, reports, and data management applications.

III. Statement of Course Need

This course prepares students for entry-level positions in Oracle Database development. A vast majority of professional Relational Database Designers use Oracle as the tool of choice for database deployment. Designers need to layout the relational design and then implement that design in a database environment.

IV. Place of Course in College Curriculum

Required for following programs:

- Database Certificate – Oracle Emphasis

An option for following programs:

- Web Programming Certificate

- Programming Elective
- C.I.S. Elective
- Free Elective

V. Outline of Course Content

SQL:

- Database Normal Forms
- Basic components of SQL statements
- Coding SQL in the SQL*Plus environment
- Text functions
- Number functions
- Date manipulation
- Conversion Functions
- Grouping
- Subqueries
- UNION, INTERSECT and MINUS
- SQL*Plus Reports
- Manipulation Data (INSERT, UPDATE, DELETE) and Transactional Control
- Data Transformation (DECODE)
- Creating and Altering Tables
- Creating and Altering Views
- Security through Roles
- Creating additional Indexes
- Creating Sequences for Primary Keys

PL/SQL:

- PL/SQL: Variables
- PL/SQL: Single Row Queries
- PL/SQL: Interacting with the environment
- PL/SQL: Conditional Logic (IF THEN)
- PL/SQL: Loops
- PL/SQL: Multiple Row Queries using Cursors
- PL/SQL: Creating Simple Stored Procedures and Functions

VI. Educational Goals and Learning Outcomes

General Education Goals

At the conclusion of the course, students will be able to:

1. Demonstrate proficiency in using SQL syntax and PL/SQL functions in developing solutions that reflect both critical and creative thought (G.E. 1, 3)

2. Apply quantitative reasoning to interpret data in relational databases used in solving problems (G.E. 7)

Learning Outcomes

At the conclusion of the course, students will be able to:

1. Recognize SQL syntax and PL/SQL functions while reading and analyzing SQL database language code

2. Design, develop and test SQL statements in the SQL*Plus environment

3. Design and develop a relational database with appropriate tables, forms and reports

4. Create and maintain Tables with Primary and Foreign Key constraints

5. Develop and run database views and queries

6. Describe and create Indexes, sequences and other database objects

7. Monitor database table transactions (insertions/deletions/updates) using Oracle transactional controls

8. Design, develop and test PL/SQL programs for accessing data in Oracle tables using appropriate Selects and database Cursors

9. Perform string and data manipulations, datatype conversions, data transformations and numeric analyses using appropriate Oracle functions

VII. Modes of Teaching and Learning

- Lecture/Discussion – Lecture with demonstration of writing SQL and PL/SQL to solve problems.
- Laboratory – Lab time to analyze user needs to design and develop SQL and PL/SQL solutions through Labs and Projects.

VIII. Papers, Examinations, and other Assessment Instruments

- Labs - In-class assignments
- Computer Projects – In-class and out of class projects
- Exams – Hands on exams

IX. Grade Determinants

- Labs
- Projects
- Hands on Exams
- Final Exam and/or Final Project

X. Textbook: Suggestions

Oracle Database 10g SQL, Jason Price, McGraw-Hill Osborne Media, 2004

Oracle 10g: The Complete Reference, Kevin Loney, McGraw-Hill Osborne Media, 2004

XI. Resources

- Latest version of Oracle on a Windows , Solaris, or UNIX Server capable of handling 25 concurrent user sessions
    - If using Windows Server then *UNIX Services for Windows*, and *VIM(vi Improved)* also needed
- Workstations with network access inside RVCC's firewall
- Microsoft Windows on workstation
- SQL*Plus on workstation compatible with Oracle on server
- Telnet on workstation
- Internet Explorer on workstation
- Annual membership in Oracle Academic Initiative for at least 25 concurrent user licenses

Note: RVCC is currently a member of the Oracle Academic Initiative with 75 concurrent user licenses. Being a member allows RVCC to advertise the class with Oracle in the title and RVCC is entitled to the latest version of Oracle for the server and SQL*Plus for the workstations.