

# Common Course Outline

CINS 256

Advanced Oracle

4 Semester Hours

## The Community College of Baltimore County

### Description

#### **Advanced Oracle Programming**

Discusses Oracle application schemas, working with objects, preparing databases and developing applications; addresses PL/SQL extensions, tuning concepts, and Oracle performance.

3 credits: 2 lecture hours, 2 laboratory hours.

Prerequisite: CINS 156 or consent of the Program Director or Academic Dean.

### Overall Course Objectives

Upon completion of this course the student will be able to:

1. explain Oracle architecture and storage concepts
2. use PL/SQL in application development
3. create application schemas
4. work with object types
5. use Oracle indexes to improve performance

### Major Topics

These topics will be covered in the following general order:

1. Application schema
  - a. Oracle architecture
  - b. Basic storage concepts
  - c. Managing storage structures
  - d. Space management
  - e. Using the data dictionary
2. Object concepts
  - a. Object methods
  - b. Object variables
  - c. Updating the database
3. Preparing the database
  - a. Populating the database
  - b. Maintaining data integrity
4. Developing applications

- a. Procedures, functions, packages, and triggers
- b. Exceptions and debugging
- c. Interacting with the file system
- d. Job scheduling
5. Working with Oracle PL/SQL extensions
  - a. Advanced queueing
  - b. Using external procedures
6. Resolving Problems
  - a. Managing dependencies
  - b. Trigger problems
  - c. Advanced security techniques
  - d. Locking and read consistency
7. Tuning concepts and tools
  - a. Introduction to tuning
  - b. Performance design
  - c. Using the diagnostic tools
8. Oracle performance tools
  - a. Basic indexing
  - b. Partitioned indexes
  - c. Reverse key indexes and bitmap indexes
  - d. Clusters and hash clusters
9. Query tuning
  - a. Utilizing hints
  - b. The driving table
  - c. Parallel operations
  - d. Tuning examples
10. Application tuning
  - a. Shared SQL area
  - b. Temporary tables
  - c. Using ROWID in PL/SQL
  - d. Client/server performance

### **Course Requirements**

Grading/exams: Grading procedures will be determined by the individual faculty member, will be provided the first week of class, and will include the following:

1. Minimum of 6 lab projects
2. Minimum of four tests
3. Comprehensive final

Writing: The individual faculty member will determine specific writing assignments.

### **Other Course Information**

This course is an elective in the Computer Programming Degree option.

This course is also an elective in the Programming Certificate option.  
This course is taught in a combination of lecture and computerized laboratory environment.  
This course is the second course in a two course sequence.

Individual faculty members may include additional course objectives, major topics, and other course requirements to the minimum expectations state in the Common Course Outline.