

## Course 273

# Data Warehousing: Dimensional Modeling

### (3 days)

#### Course Description...

As an organization's operational systems grow, the need to obtain meaningful information about the business becomes a priority. A data warehouse is an effective way to provide a decision-support environment for analyzing and reporting enterprise information without putting stress on the operational systems. This course covers the issues involved in planning, designing, building, populating, and maintaining a data warehouse in an Oracle 11G environment. In this course students study how to design a data warehouse using standard Dimensional Modeling Techniques. Tasks include business modeling, entity relationship diagramming using dimensional modeling to produce Star schemas. Students reinforce the concepts in project workshops and view the Oracle implementation features via live demos.

#### Learning Objectives...

- Understand the reasons for developing a Data Warehouse
- Learn the concepts and terminology related to a Data Warehouse
- Use entity relationship diagrams to transform the business model into a dimensional model
- Define the process of designing a data warehouse database model
- Transform the dimensional model into a physical data design
- Explain the central concepts of dimensional data models
- Understand the ETL (Extract, Transform, Load) process
- Plan for the on-going requirements changes associated with Data Warehousing
- Understand the features Oracle provides for processing the Star Schema
- Tune statements for optimal performance

#### Who should attend...

Audience includes business analysts, project managers, database administrators, data warehouse designers, application developers, and key personnel involved in the data warehouse project.

#### Prerequisites...

No specific prerequisites other than basic familiarity with a relational database and SQL.



## Course Outline

### Unit 1: Business Intelligence and Data Warehousing

Unit Objectives

**The Road Map to Business Intelligence (BI)**

**Data Warehouses Compared with Online Transaction Processing (OLTP)**

- Management information systems and decision support systems (DSS)

**Business Drivers for Data Warehouses**

- Typical uses of a data warehouse

### Unit 2: Defining Data Warehouse Concepts and Terminology

Unit Objectives

**Common Data Warehouse Definitions**

- Data warehouse properties and characteristics

**Warehouse Development Approaches**

- Components of data warehouse design and implementation
- Components of a data warehouse

### Unit 3: Establish the Data Warehouse Architecture

**Data Warehouse Compared with Data Mart**

- Dependent and independent data marts

**Why a Data Warehouse Architecture is necessary**

- Specify a Dimensional Model
- Ensure that the Data Warehouse Architectural Bus is designed

### Unit 4: What is Dimensional Modeling?

Unit Objectives

**Why Dimensional Models are necessary**

- Modeling for Data Warehousing versus Online systems
- The nature of Data Warehousing queries
- The strengths of the Dimensional Modeling

### Unit 5: Fact and Dimensional Tables

Unit Objectives

**What is a Fact?**

- Characteristics and classifications
- Must all Facts be additive?

**What is a Dimension?**

- Attributes
- Drilling Up and Down
- Can I Snowflakes?

**Data Marts or Data Warehouse**

- Using Conformed Dimensions



## Unit 6: Dealing with Different Types of Dimensions

Unit Objectives

### Changing Dimensions

- Slow Types 1-4
- Rapidly Changing Small Dimensions
- Large Dimensions
- Degenerate and Junk Dimensions

## Unit 7: Designing the Dimensional Model

Unit Objectives

### Four Step Approach

- Choosing the Data Mart
- Establishing the Grain of the Fact Table
- Using Conforming Dimensions
- Choosing the Facts

### Suppose I change my mind?

- Implications
- Planning for the future

## Unit 8: ETL Design and Development

Unit Objectives

- Define what the Extract/Transform/Load (ETL) process is
- Discuss Data Cleansing Issues
- Look at alternatives for Loading the Data into an Oracle database

## Unit 9: Implementing the Dimensional Model Design in Oracle

Unit Objectives

### Star Schemas

- Challenges and Issues

### Tuning Ad Hoc Queries

- Key tuning requirements
- Star Transformations
- Star Schema Index Design
- Bit Maps

### Implementing Aggregates

- Which aggregates should be built?
- Using Materialized Views

### Partitioning for Performance, Availability, and Manageability

- Partitioning Tables
- Partitioning Indexes

## Unit 10: Summary

Next Steps...

*Please contact your ROI representative to discuss course customization!!!*