

## Module One

### Data Modeling Concepts

- The Data Modeling Life Cycle
  - Where Data Modeling Begins and Ends
  - Between Business Needs and Implemented Data
- Kinds of Data Systems: Business Uses of Data
- Data Characteristics: Understanding Properties of Data
- Data Modeling Techniques: An Overview of Many Techniques
- Data Modeling Framework for BI: Where and What to Model

## Module Two

### Business Data Models

- Business Context
  - Business Drivers, Goals, and Strategies
  - Business Domains
  - Business Information Needs
  - Business Subjects
- Gathering Business Questions
  - The Modeling Process
  - Working with the Business
  - An Example
- Analyzing Business Questions
  - The Modeling Process
  - Mapping Facts and Qualifiers – Finding the Facts
  - Mapping Facts and Qualifiers – Fact/Qualifier Associations
  - An Example
- Fact Analysis and Refinement
  - Removing Redundancy
  - An Example
- Qualifier Analysis and Refinement
  - Finding Hierarchies
  - Explicit and Implicit Qualifiers
- Fact/Qualifier Analysis Results
  - An Example
- Business Dimensional Modeling
  - The Modeling Process
  - An Example

## Module Three

### Logical Data Models

- What to Model
  - The Data and Information Pipeline
- Understanding Data Structures
  - Why Sources Matter
  - Extracting Source Data Structure
  - Source Data Profiling
- Logical Relational Modeling
  - The Modeling Process
  - Logical Models for Data Warehouse and ODS
  - A Data Warehouse Example
  - Logical Models for Marts and Reporting

- A Relational Data Mart Example
- Logical Dimensional Modeling
  - Data Structure of Business Metrics
  - The Modeling Process
  - Modeling Meters and Measures
  - Adding the Dimensions
  - Refining and Enriching the Dimensions
  - Declaring the Grain
  - Refining and Enriching the Measures
- Logical Models and Business Metrics
  - Creating a Catalog of Metrics
  - Classifying Metrics
  - An Example
- Logical Models and Business Analytics
  - Analytics Applications
  - Data Mining Applications
- Logical Models and Master Data Management
  - Identity Management
  - Hierarchy Management
- Logical Models and Unstructured Data
  - Unstructured Data and Content Management
  - Unstructured Data and Text Analytics

## Module Four

### Implementation Data Models

- Data Structure in Transaction Systems
  - Extracting the Structure of Existing Data
- Structural Modeling and Data Integration
  - From Business Models to Technology Models
  - Normalization
  - The Normalization Process
  - A Normalization Example
  - Time-Variant Data Structures
  - A Snapshot Example
  - An Audit Trail Example
  - An Example of States
  - Access, Navigation, Security, and Distribution
  - Access and navigation Examples
  - Security and Distribution Examples
- Structural Modeling and Business Analytics
  - From Metrics Models to Technology Models
  - Star-Schema Design
  - Star-Schema Design Process
  - Star-Schema Design- Modeling Dimension Tables
  - Star-Schema Design- Fact Table Key
  - Analytic Application and Data Structures
  - Data Mining Data Structures
- Physical Design Overview
  - The Results of Physical Design and Implementation
- Some Optimization Techniques
  - Derivation
  - Aggregation

- Summarization
- Horizontal Partitioning
- Vertical Partitioning
- Optimization Summary
- Physical Design and Implementation
  - Implementing Relational Data
  - Implementing Business Analytics
  - Implementing OLAP

## **Module Five**

A Quick Review

## **Appendices**

Appendix A - Entity-Relationship Modeling Basics

- Relational Data Design
- Introduction to Entity/Relationship Modeling
  - E/R Model Components
    - Entities and Attributes
    - Relationships
    - Subtypes and Supertypes
  - Reading E/R Models: E/R Models for Communication

Appendix B – Case Study