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 Taxonomies
  - Data Properties
  - Data Characteristics
- Data Modeling Framework for BI
  - Where and What to Model

Module Two: Business Data Models

- Business Context
  - Business Drivers, Goals, and Strategies
  - Business Information Needs
  - Business Domains
  - Business Subjects
- Business Data Model Development
  - Top-Down – Incremental and Iterative
- 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
  - 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
• Logical Relational Modeling
  o The Modeling Process
  o Logical Models for Data Warehouse and ODS
  o A Data Warehouse Example
  o Logical Models for Marts and Reporting
• Logical Dimensional Modeling
  o Data Structure of Business Metrics
  o The Modeling Process
  o Modeling Meters and Measures
  o Adding the Dimensions
  o Refining and Enriching the Dimensions
  o Declaring the Grain
  o Refining and Enriching the Measures
• Logical Models and Business Metrics
  o Creating a Catalog of Metrics
  o Classifying Metrics
  o An Example
• Logical Models and Business Analytics
  o Analytics Applications
  o Data Mining Applications
• Logical Models and Master Data Management
  o Identity Management
  o Hierarchy Management
• Logical Models and Unstructured Data
  o Unstructured Data and Content Management
  o Unstructured Data and Text Analytics
  o Big Data

Module Four: Implementation Data Models

• Data Structure in Transaction Systems
  o Extracting the Structure of Existing Data
• Structural Modeling and Data Integration
  o From Business Models to Technology Models
  o Normalization
  o The Normalization Process
  o A Normalization Example
  o Time-Variant Data Structures
  o A Snapshot Example
  o An Audit Trail Example
  o An Example of States
  o Access, Navigation, Security, and Distribution
  o Access and Navigation Examples
  o Security and Distribution Examples
• Structural Modeling and Business Analytics
  o From Metrics Models to Technology Models
Module Five: Summary and Conclusion

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

Appendix C: Exercises

- Exercise One – Business Domains
- Exercise Two – Business Subjects
- Exercise Three – Fact Qualifier Matrix
- Exercise Four – Fact Qualifier Matrix Refinement
- Exercise Five – Logical Dimensional Model
- Exercise Six – Star Schema

Appendix D: Bibliography and References