

Logical Data Modeling

From Data Structure to Meaning and Reasoning



2 DAYS | 14 ENGAGEMENT HOURS | LIVE TEAM TRAINING OR ANYTIME ELEARNING | 1.4 CEUs / 14 IIBA PDUs OR CDUs

Course Overview

Inteq's Logical Data Modeling training course provides a modern, business-oriented approach to translating real-world concepts, rules, and terminology into clear, adaptable models that bridge business and technology.

The logical data model is no longer solely a precursor to database design. It is the enterprise's canonical reference model - the single authoritative representation of business concepts, relationships, and data-oriented business rules - consumed by applications, analytics, AI-assisted development, and AI agents alike.

Participants learn to identify business entities, attributes, and relationships; distinguish transactional and analytical requirements; and organize data in ways that scale across enterprise systems. Through hands-on Entity Relationship diagramming, participants develop accurate, extensible models that support application development, reporting, BI and analytics, and the semantic grounding of AI.

The stakes have changed. AI-generated applications and AI agents act on whatever consistency or inconsistency they encounter. A semantic model built on a weak logical data model inherits structural ambiguity as definitional ambiguity; an ontology built on a weak semantic model inherits definitional ambiguity as a reasoning defect.

The course extends classical modeling rigor with enhanced data patterns, decision-level analytical requirements, model transformation, normalization, enterprise consistency, and the progression from logical data model to semantic layer, ontology, and knowledge graph.

Business Impact

Organizations often treat data modeling as a technical documentation step. That approach leaves business meaning fragmented across applications, reports, teams, and platforms. Logical data modeling replaces local assumptions with a disciplined enterprise reference model.

By mastering these methods, you and your team can improve data quality and integrity, strengthen collaboration between business and technology, support better applications and decisions, and establish the analytical foundation on which scalable agentic AI and reliable AI-assisted development depend.

You will learn

Professional capabilities you and your team can apply immediately.

- Translate real-world business concepts and rules into clear logical data models
- Model entities, attributes, relationships, cardinality, dependency, and metadata
- Apply baseline and complex Entity Relationship patterns
- Distinguish transactional and analytical data requirements
- Normalize and generalize data structures for enterprise reuse
- Create a canonical reference model for systems, analytics, and AI
- Progress from logical data model to semantic layer, ontology, and knowledge graph
- Ground AI-assisted development and AI agents in approved business meaning

Detailed Course Outline

A business-oriented framework for clear, scalable logical data models and AI-ready semantic foundations

Course Overview

Introduction and Foundation

- Essential data-oriented concepts and business vocabulary
- The distinction between transactional and analytical data requirements
- E/R diagrams as the foundation for accurate logical data modeling
- The logical data model as the enterprise's canonical reference model
- The analytical foundation required by enterprise systems, analytics, AI-assisted development, and AI agents

Framework for E/R Diagramming

- Entity types, attributes, and metadata
- Cardinality, dependencies, and foundational relationships
- Consistent, business-oriented logical data modeling techniques
- Entities as clearly defined business concepts
- Relationships as semantic assertions between business concepts
- Cardinality and dependency as machine-interpretable business rules
- Classical data modeling rigor as the foundation for semantic grounding

Diagramming Baseline Rules and Patterns

- Domain entities and the business concepts they represent
- Associative relationships
- Domain-based relationships
- Repeating groups and recurring data structures
- Transactional data patterns
- Structural precision that keeps meaning unambiguous for human developers, AI-assisted development, and AI agents

Diagramming Complex Rules and Patterns

- Super-type and sub-type structures
- Recursive hierarchies and network structures
- Role-based associations
- Time-dependent data structures

Logical Data Modeling - Case Study

Work on a complex real-world case that provides an invaluable template you and your team can leverage to develop professional-level logical data models in your organization. The resulting models also serve as the canonical reference foundation for enterprise systems, analytics, and AI.

BI and Analytic Requirements

- Tactical and strategic business questions
- Reporting, business intelligence, and analytical requirements
- Facts, dimensions, and the relationships required for meaningful analysis
- Dimensional modeling techniques
- Decision-level data requirements

Business Rule Generalization

- Data normalization
- Entity and relationship generalization
- Metadata analysis
- Identification of shared enterprise abstractions and reusable business concepts
- Simplifying and strengthening enterprise-level logical data models

Practical Guidance & Best Practices

- Scaling logical data models across business functions and enterprise domains
- Transforming logical models into physical data designs
- Leveraging reference models, metadata standards, and implementation best practices
- Grounding AI retrieval in valid entities, relationships, metadata, and definitions
- Using metadata and definitions as context for AI-assisted development and AI agents
- Governing the logical data model as a living enterprise asset
- Supporting applications, analysts, AI-assisted development, and AI agents from a shared analytical foundation

Who Should Attend

- Business analysts, systems analysts, and requirements professionals
- Data modelers, data architects, and enterprise information architects
- Database designers, developers, and solution architects
- BI professionals, reporting specialists, and analytics teams
- Data governance, digital transformation, AI readiness, and agentic AI teams
- New and experienced data modeling practitioners

Course Includes

- 1.4 CEUs and 14 IIBA PDUs or CDUs
 - Personalized digital badge
 - Certificate of completion
 - Comprehensive course manual
 - Models, frameworks, patterns, and methods
- Available through live Team Training or self-paced Anytime eLearning.

Prerequisites and Curriculum Alignment

None. No previous logical data modeling, E/R diagramming, database design, programming, analytics, or AI experience is required. The course introduces the concepts and patterns systematically.

- Logical Data Modeling is the 'ground-the-work' stage of Inteq's business transformation curriculum
- It complements Business Systems Analysis, Business Process Modeling & Analysis, and Business Process Reengineering
- It provides the prerequisite foundation for Advanced Data Modeling and Querying Complex Data Patterns
- It establishes the semantic and structural foundation used by enterprise AI and agentic AI initiatives