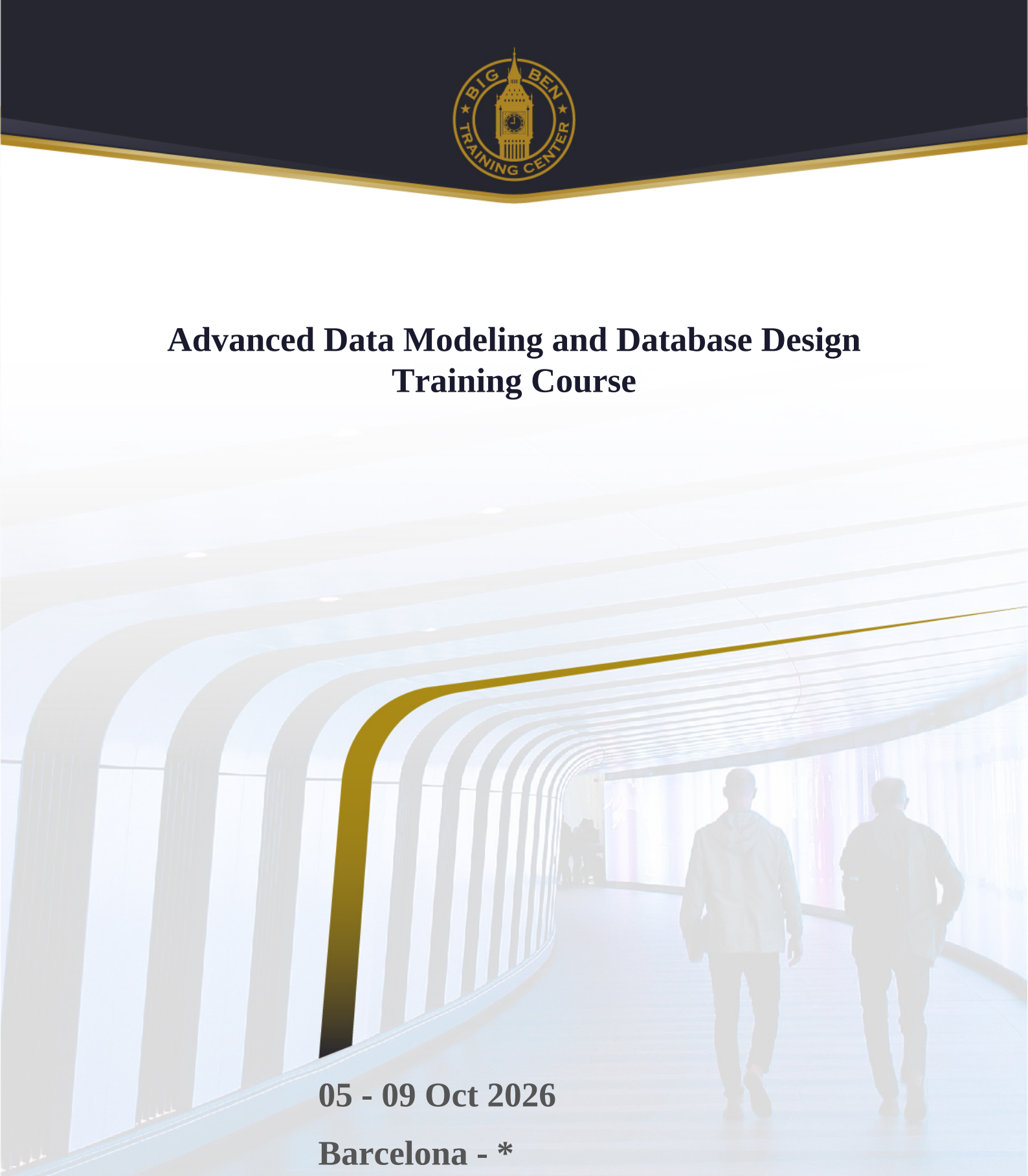
Advanced Data Modeling and Database Design Training Course



05 - 09 Oct 2026

Barcelona - *

5700 € (Per Person)

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Course Introduction / Overview:

In the digital age, data is everywhere, but its true power can only be unlocked when it is organized in a logical and efficient way. Data modeling and database design are the fundamental skills that allow you to build the foundation for any data-driven application or business intelligence system. This training course is designed to take participants beyond the basics, giving them a deep understanding of advanced data modeling techniques and best practices for creating scalable, high-performance databases. We will cover conceptual, logical, and physical data models, as well as the principles of normalization, denormalization, and dimensional modeling. The course will also cover database performance, security, and the trade-offs between different database architectures. In his classic book "Database Management Systems," Raghu Ramakrishnan argues that a well-designed database is essential for the efficiency and integrity of any information system. At BIG BEN Training Center, we understand that a strong data foundation is crucial for any organization's success. This training course will give participants the skills to design databases that are not only efficient but also adaptable to changing business needs.

Target Audience / This training course is suitable for:

- Data architects and database designers.
- Data engineers and data analysts.
- Application developers and software engineers.
- Business intelligence professionals.
- IT and system administrators.
- Anyone responsible for database performance.
- Aspiring data professionals.

Target Sectors and Industries:

- Technology and software development.
- Financial services.
- Retail and e-commerce.
- Healthcare.
- Manufacturing.
- Government agencies and the public sector.
- Telecommunications.

Target Organizations Departments:

- IT and Technology.
- Data and Analytics.
- Software Development.
- Business Intelligence.
- Data Science.
- Database Administration.

Course Offerings:

By the end of this course, the participant will have mastered the following skills:

- Design and create conceptual, logical, and physical data models.
- Apply normalization and denormalization techniques effectively.
- Create dimensional models for data warehousing.
- Optimize database schemas for performance and scalability.
- Understand and use different data modeling notations, like ERDs.
- Implement data integrity and security controls at the database level.
- Evaluate the trade-offs between relational and NoSQL databases.
- Communicate data design decisions to both technical and business teams.

Course Methodology:

This training course is built around a practical, hands-on methodology. The learning environment is a mix of interactive lectures and a series of design workshops and case studies. Participants will be given real-world business scenarios and asked to work in groups to design a complete database schema, from the initial conceptual model to the final physical design. Our expert trainers will provide personalized feedback on their designs, helping them refine their skills and understanding of advanced concepts. We believe that learning is a process of active creation, not passive reception. Our methodology makes sure that participants leave with a portfolio of designs and the confidence to take on complex database design projects in their professional careers.

Course Agenda (Course Units):

Unit One: Foundations of Data Modeling.

- Introduction to data modeling concepts.
- The three levels of data models: conceptual, logical, and physical.
- Entities, attributes, and relationships.
- Understanding different data modeling notations.
- Tools for data modeling.
- The importance of business requirements in data design.
- Case study: creating a conceptual model for a business.

Unit Two: Relational Database Design and Normalization.

- Introduction to relational theory.
- The rules of normalization: 1NF, 2NF, and 3NF.
- When to use denormalization.
- Designing a relational schema.
- Working with primary and foreign keys.
- Using data integrity constrains.
- Practical exercises in normalizing a dataset.

Unit Three: Dimensional Modeling for Business Intelligence.

- Introduction to dimensional modeling.
- Fact tables and dimension tables.
- Star and snowflake schemas.
- Slowly changing dimensions.
- Using dimensional modeling for reporting.
- Designing a data warehouse schema.
- Case study: creating a model for a sales analysis database.

Unit Four: Advanced Design and Performance.

- Understanding indexing strategies.
- Views, stored procedures, and triggers.
- Partitioning and sharding.
- Database performance optimization.
- Security considerations in database design.
- Working with different database systems.
- Scalability and design for growth.

Unit Five: Modern Data Modeling.

- Introduction to NoSQL data modeling.
- Graph, document, and key-value models.
- Choosing the right database for the job.
- Data modeling for big data.
- Data governance in a modern database.
- Data modeling tools and best practices.
- Final project: designing a database for a new application.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Given that data is constantly growing in volume and complexity, how can a thoughtful database design not only optimize performance but also ensure the long-term integrity and flexibility required to meet unforeseen business needs?

What unique qualities does this course offer compared to other courses?

This training course is unique because it provides a complete, strategic perspective on data modeling and database design. While many courses focus on just one database technology or the basics of normalization, this program gives participants a deep understanding of the principles that apply to all types of databases, from traditional relational systems to modern NoSQL architectures. The course is highly practical, with hands-on workshops and real-world case studies that challenge you to design a database from scratch. This focus on building a strong theoretical and practical foundation makes this course an essential investment for anyone who wants to build a career in data architecture or database design.