# FlexSim Core Simulation Modeling Professional Training Course

## Target Audience

This course is designed for industrial engineers, process engineers, simulation analysts, operations managers, logistics professionals, manufacturing engineers, warehouse planners, and service system designers who want to build practical simulation modeling skills using FlexSim 2026. It is suitable for beginners as well as professionals who want to understand discrete-event simulation, create realistic 3D simulation models, analyze operational systems, validate workflows, and optimize manufacturing, warehouse, logistics, and service operations through simulation-based decision making.

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## Course Outcomes

- Understand discrete-event simulation concepts and simulation modeling philosophy
- Navigate and work efficiently in the FlexSim modeling environment
- Create 3D simulation models using standard object libraries
- Build process flows involving sources, queues, processors, and outputs
- Model real-world conveyor systems, operator movement, and coordinated events
- Incorporate operators, transporters, cranes, and task executers into workflows
- Define flow item types and use labels for routing and data-driven logic
- Link 3D models with Process Flow for advanced logic control
- Gather operational data and create dashboards for visualization and analysis
- Run simulation scenarios, validate models, and optimize system performance
- Apply FlexSim modeling techniques to warehouse, manufacturing, and service operations

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## Course Objectives

- Develop strong foundations in discrete-event simulation and FlexSim modeling workflows
- Build proficiency in creating practical 3D simulation models

- Train participants in modeling movement, handling, routing, and coordinated operational events
- Introduce advanced process logic through Process Flow integration
- Enable learners to collect, visualize, and analyze operational data effectively
- Provide skills for validation, experimentation, and optimization of simulation models
- Reinforce learning through practical exercises in manufacturing, logistics, and service systems
- Prepare participants for real-world industrial simulation projects using FlexSim 2026

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## Course Outline

The course comprises 40-hours of theory and labs and is divided into 12 different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

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## Table of Contents

## Chapter 1. Introduction to Simulation and FlexSim Environment

- Introduction to discrete-event simulation
- Simulation modeling concepts
- Understanding simulation philosophy
- Building incrementally
- Model validation concepts
- Identifying key system constraints
- Overview of FlexSim 2026
- Navigating the 3D modeling environment
- Understanding the object library
- Managing model views
- Working with interface controls
- Model setup fundamentals

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## Chapter 2. Working with the FlexSim Modeling Environment

- Creating new models
- Understanding object properties
- Using drag-and-drop modeling
- Configuring model settings
- Working with 3D navigation tools
- Managing model hierarchy
- Using built-in libraries
- Customizing workspace layout
- Saving and managing projects

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## Chapter 3. Basic 3D Modeling Logic and Flow

- Introduction to Sources
- Creating Queues
- Working with Processors
- Building simple process layouts
- Connecting objects using connects logic
- Configuring input and output logic
- Controlling flow of items
- Managing process sequencing
- Basic routing logic
- Incremental model development

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## Chapter 4. Advanced Object Flow and Operational Logic

- Push logic modeling
- Pull logic modeling
- Using lists in modeling
- Creating conditional routing
- Event-driven logic
- Coordinated operational events

- Synchronizing multiple processes
- Basic networking concepts
- Modeling operational dependencies

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## Chapter 5. Resources and Task Executers

- Introduction to Operators
- Modeling transporter systems
- Working with cranes
- Transport references
- Task sequence concepts
- Assigning work to resources
- Resource scheduling
- Multi-resource coordination
- Resource utilization analysis
- Advanced task executer workflows

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## Chapter 6. Conveyor Systems Modeling

- Introduction to conveyor systems
- Conveyor object setup
- Conveyor routing logic
- Accumulation and release behavior
- Merging and splitting conveyor flow
- Transfer points
- Sensor-based control logic
- Conveyor system coordination
- Real-world conveyor modeling scenarios

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## Chapter 7. Flow Items and Labels

- Creating flow item types

- Customizing item properties
- Numeric labels
- String labels
- Data storage using labels
- Dynamic label assignment
- Using labels for routing logic
- Decision-based item flow
- Tracking item-level information
- Advanced label-driven logic

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## Chapter 8. Process Flow Integration

- Introduction to Process Flow
- Process Flow interface
- Activities and tokens
- Linking Process Flow with 3D models
- Controlling 3D objects using activities
- Flexible logic development
- Decision activities
- Resource allocation in Process Flow
- Synchronizing Process Flow and 3D logic
- Hybrid simulation workflows

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## Chapter 9. Modeling Real-World Systems

- Manufacturing simulation models
- Warehouse process simulation
- Inventory movement simulation
- Logistics workflow simulation
- Operator movement simulation
- Coordinated event systems

- Service operation simulation
- Queue behavior in service systems
- Multi-stage operational models
- Scenario-based modeling exercises

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## Chapter 10. Data Gathering and Visualization

- Simulation statistics collection
- Key performance indicators
- Creating dashboards
- Pie charts
- Bar charts
- Content graphs
- Time-based charts
- Operational metric tracking
- Resource utilization visualization
- Flow analysis dashboards
- Reporting simulation outputs

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## Chapter 11. Simulation Validation and Optimization

- Model validation techniques
- Identifying bottlenecks
- Constraint analysis
- Running simulation scenarios
- Comparing alternative scenarios
- Sensitivity analysis
- Experimentation methods
- Performance evaluation
- Basic optimization workflows
- Improving operational efficiency through simulation

## Chapter 12. End-to-End Simulation Project

- Problem definition
- System mapping
- Model creation
- Resource modeling
- Process Flow integration
- Dashboard development
- Scenario experimentation
- Validation of results
- Optimization study
- Final simulation project presentation