# Training Course on Dynamic Simulation of Supply Chain and Logistics

Professional Development Training Course Outline

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|---|---|---|---|
| **Category** | Development | **Duration** | 10 Days |
| **Base Fee** | $3,000 USD | **Delivery Mode** | Online / On-site Hybrid |

## Course Introduction

In today's rapidly evolving business landscape, the ability to proactively analyze and optimize complex supply chain and logistics networks is no longer a luxury, but a necessity for sustained competitive advantage. This intensive training course on **Dynamic Simulation** empowers professionals to leverage cutting-edge modeling and simulation techniques to gain deep insights into their operational flows, identify potential bottlenecks, and make data-driven decisions that enhance efficiency, resilience, and overall performance. By mastering the principles of **supply chain modeling**, participants will learn to create virtual representations of their real-world systems, enabling them to test various scenarios, evaluate the impact of disruptions, and ultimately design more robust and agile logistics strategies. This program equips individuals with the practical skills and theoretical understanding to transform raw data into actionable intelligence, driving significant improvements in cost-effectiveness and customer satisfaction.

This comprehensive curriculum delves into the core concepts of **logistics optimization** through simulation, providing a hands-on approach to building, validating, and analyzing dynamic models. Participants will explore the application of various simulation software tools and methodologies to address real-world challenges across the entire value chain, from sourcing and production to warehousing and distribution. The course emphasizes the development of critical thinking and problem-solving skills, enabling graduates to confidently apply simulation techniques to improve forecasting accuracy, optimize inventory levels, streamline transportation processes, and mitigate risks. By focusing on practical application and industry best practices, this training ensures that participants can immediately contribute to their organizations' strategic goals and achieve tangible results in their supply chain and logistics operations.

## Programme Curriculum

**Training Course on Dynamic Simulation of Supply Chain and Logistics**

## Introduction

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## Course Duration

10 days

## Course Objectives

Upon successful completion participants will be able to:

1. Understand the fundamental principles of **dynamic simulation** and its application in supply chain management.
2. Identify key performance indicators (KPIs) relevant to **supply chain performance** and model their behavior in simulation environments.
3. Develop conceptual models of complex **logistics networks**, including material flow, information flow, and financial flow.
4. Utilize industry-standard **simulation software** to build, validate, and experiment with supply chain models.
5. Apply **statistical analysis** techniques to interpret simulation outputs and draw meaningful conclusions.
6. Evaluate the impact of various **supply chain disruptions** and develop mitigation strategies using simulation.
7. Optimize **inventory management policies** and reduce holding costs through simulation-based analysis.
8. Improve the efficiency of **transportation and warehousing operations** by identifying bottlenecks and optimizing resource allocation.
9. Analyze the impact of different **sourcing and procurement strategies** on overall supply chain performance.
10. Apply **lean principles** and simulation to identify and eliminate waste in logistics processes.

11. Evaluate the effectiveness of different **supply chain technologies** (e.g., RFID, automation) through simulation.
12. Develop **scenario planning capabilities** to assess the resilience and adaptability of supply chain designs.
13. Communicate simulation results effectively to stakeholders and drive **data-driven decision-making** within the organization.

**Organizational Benefits**

- Gain data-backed insights to make more informed strategic and operational decisions.
- Identify and eliminate inefficiencies and bottlenecks within the supply chain.
- Optimize inventory levels, transportation routes, and resource allocation to lower operational expenses.
- Proactively assess and mitigate the impact of potential disruptions, ensuring business continuity.
- Develop the capability to quickly adapt to changing market conditions and customer demands.
- Improve demand planning accuracy and reduce the bullwhip effect.
- Maximize the effectiveness of assets, equipment, and personnel.
- Improve service levels and responsiveness through optimized logistics processes.

**Target Participants**

This training course is designed for professionals involved in various aspects of supply chain and logistics, including:

1. Supply Chain Managers
2. Logistics Analysts
3. Operations Managers
4. Inventory Planners
5. Demand Planners
6. Warehouse Managers
7. Transportation Specialists
8. Consultants in Supply Chain and Logistics

**Course Outline**

**Module 1: Introduction to Dynamic Simulation in Supply Chain and Logistics**

- Fundamentals of simulation modeling and its benefits.
- Applications of dynamic simulation in various industries.
- Key concepts and terminology in simulation.
- Overview of different types of simulation (discrete-event, continuous, agent-based).
- The role of simulation in strategic and operational decision-making.

**Module 2: Principles of Supply Chain and Logistics Management**

- Understanding the end-to-end supply chain.
- Key processes in logistics: sourcing, production, warehousing, transportation.
- Importance of flow and synchronization in supply chains.
- Identifying key performance indicators (KPIs) in supply chain and logistics.
- The impact of globalization and digitalization on supply chains.

**Module 3: Conceptual Modeling of Supply Chain Systems**

- Defining system boundaries and objectives for simulation.
- Identifying key entities, resources, and processes within the supply chain.
- Developing process flow diagrams and value stream maps.
- Representing material, information, and financial flows.
- Understanding the interactions and dependencies within the system.

**Module 4: Introduction to Simulation Software**

- Overview of popular simulation software tools (e.g., AnyLogic, Simio, Arena).
- Understanding the user interface and basic functionalities.
- Creating simple simulation models using graphical interfaces.
- Defining model parameters, variables, and distributions.
- Running initial simulations and interpreting basic outputs.

**Module 5: Data Collection and Analysis for Simulation**

- Identifying data requirements for building accurate models.
- Methods for collecting real-world data (e.g., historical records, sensor data).
- Data cleaning, validation, and preprocessing techniques.
- Fitting probability distributions to empirical data.
- Using statistical software for data analysis.

**Module 6: Building and Validating Simulation Models**

- Developing detailed simulation models based on conceptual designs.
- Implementing process logic, resource constraints, and decision rules.
- Animating the simulation model for visual representation.
- Techniques for model verification and validation.
- Calibrating the model to real-world system behavior.

**Module 7: Experimentation and Scenario Analysis**

- Defining experimental scenarios to address specific business questions.
- Setting up simulation runs with different input parameters.
- Understanding the concept of warm-up period and run length.
- Performing sensitivity analysis to identify critical factors.
- Evaluating the performance of different scenarios using defined KPIs.

**Module 8: Simulating Inventory Management Systems**

- Modeling different inventory control policies (e.g., EOQ, reorder point).
- Analyzing the impact of demand variability and lead times.
- Evaluating the trade-offs between inventory holding costs and service levels.
- Simulating multi-echelon inventory systems.
- Applying simulation to optimize safety stock levels.

**Module 9: Simulating Transportation and Distribution Networks**

- Modeling different transportation modes and network structures.
- Analyzing the impact of routing and scheduling decisions.
- Simulating warehouse operations and material handling processes.
- Evaluating the performance of different distribution strategies.

- Using simulation to optimize fleet size and resource allocation.

**Module 10: Simulating Manufacturing and Production Processes**

- Modeling different production systems (e.g., job shop, flow shop).
- Analyzing capacity constraints and bottleneck identification.
- Simulating scheduling and sequencing rules.
- Evaluating the impact of process variability and downtime.
- Applying simulation to improve throughput and reduce lead times.

**Module 11: Risk and Disruption Analysis using Simulation**

- Identifying potential risks and disruptions in the supply chain.
- Modeling the impact of events such as supplier failures, natural disasters, and demand spikes.
- Developing and evaluating mitigation strategies through simulation.
- Assessing the resilience and robustness of supply chain designs.
- Performing stress testing and contingency planning using simulation.

**Module 12: Applying Lean Principles with Simulation**

- Identifying waste in supply chain and logistics processes using simulation.
- Modeling lean techniques such as value stream mapping and pull systems.
- Evaluating the impact of lean implementation on performance metrics.
- Using simulation to optimize flow and reduce cycle times.
- Combining simulation with other lean tools and methodologies.

**Module 13: Simulation of Advanced Supply Chain Technologies**

- Modeling the impact of RFID and sensor technologies on inventory visibility.
- Analyzing the benefits of automation and robotics in warehousing and logistics.
- Evaluating the effectiveness of digital twins in supply chain management.
- Simulating the integration of IoT and big data analytics in supply chain operations.
- Assessing the impact of blockchain technology on supply chain transparency and security.

**Module 14: Communicating Simulation Results and Driving Decisions**

- Visualizing simulation outputs using charts, graphs, and dashboards.
- Presenting simulation results to different stakeholders effectively.
- Quantifying the benefits and return on investment of simulation projects.
- Developing action plans based on simulation insights.
- Integrating simulation into the organizational decision-making process.

**Module 15: Advanced Simulation Techniques and Future Trends**

- Introduction to agent-based modeling and its applications in supply chains.
- Overview of system dynamics and its use in strategic planning.
- Exploring the integration of simulation with optimization techniques.
- Discussing emerging trends in simulation and digital supply chains.
- Best practices for implementing and sustaining simulation capabilities within an organization.

**Training Methodology**

This training course will employ a blended learning approach incorporating:

- Interactive lectures and presentations

- Hands-on exercises and case studies
- Individual and group simulation projects
- Discussions and knowledge sharing
- Practical application of simulation software
- Real-world examples and industry best practices

**Register as a group from 3 participants for a Discount**

**Send us an email:** info@fineskilltrainingcenter.org **or call** *+254769199797*

***Certification***

*Upon successful completion of this training, participants will be issued with a globally- recognized certificate.*

***Tailor-Made Course***

*We also offer tailor-made courses based on your needs.*

**Key Notes**

**a.** The participant must be conversant with English.

**b.** Upon completion of training the participant will be issued with an Authorized Training Certificate

**c.** Course duration is flexible and the contents can be modified to fit any number of days.

**d.** The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

**e.** One-year post-training support Consultation and Coaching provided after the course.

**f.** Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

## Upcoming Scheduled Sessions

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **21 Sep 2026** | 02 Oct 2026 | Online | $2,000 |
| **21 Sep 2026** | 02 Oct 2026 | Physical | $3,000 |

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **21 Sep 2026** | 02 Oct 2026 | Physical | $0 |
| **21 Sep 2026** | 02 Oct 2026 | Physical | $0 |
| **21 Sep 2026** | 02 Oct 2026 | Physical | $0 |
| **21 Sep 2026** | 02 Oct 2026 | Physical | $0 |
| **21 Sep 2026** | 02 Oct 2026 | Physical | $0 |
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