AI+ Supply Chain (80 Hours)

This comprehensive 80-hour certification integrates the foundational principles of **AI+ Everyone,** the operational depth of **AI+ Supply Chain**, and the critical ethical framework of **AI+ Ethics** into a single, cohesive program.

Designed for **supply chain managers, logistics professionals, procurement specialists, and operations leaders,** this program provides a strategic, end-to-end understanding of how Artificial Intelligence is reshaping every facet of modern supply chains from sourcing and manufacturing to distribution, demand forecasting, and global risk management.

Participants will build a solid foundation in core AI technologies including machine learning, natural language processing, and generative AI and explore their practical, high-impact applications across key supply chain functions. Beyond technical implementation, the curriculum places equal emphasis on the ethical, legal, and governance imperatives of responsible AI deployment, ensuring leaders can navigate data privacy, algorithmic bias, regulatory compliance (GDPR, CCPA), and global sustainability mandates with confidence.

By merging technical mastery with ethical foresight, this program empowers professionals to not only optimize efficiency and resilience but also to lead their organizations toward transparent, fair, and sustainable supply chains in an increasingly AI-driven global economy.

Module 1: Foundations of AI & Its Strategic Impact on Supply Chains

Duration: 20 hours
Objective: Establish a clear understanding of AI fundamentals, historical evolution, and AI's transformative impact on supply chain functions, preparing learners for deeper technical and ethical exploration.

Topics & Sub-Topics

1. What is Artificial Intelligence? (5 hrs)

- Defining AI, Machine Learning (ML), and Deep Learning (DL) with distinctions.
- Narrow AI vs. General AI: capabilities, limitations, and use cases.
- AI Milestones: Turing Test, neural networks, AI Winter, modern resurgence.
- Demystifying AI: separating science fiction from business reality.

2. AI in Everyday Life and the Workplace (4 hrs)

- Practical examples: smartphones, smart homes, personal assistants.
- AI in workplace operations: warehouse robotics, automated planning, role transformation.

3. The Evolution and Transformation of Supply Chains (6 hrs)

- Traditional SCM overview: procurement, production, distribution, logistics.

- AI-driven transformation: optimization, automation, predictive analytics.
- Case studies: Amazon, Walmart, and how AI improved efficiency & resilience.

4. Ethical Considerations: A Foundational Lens (5 hrs)

- Why AI ethics matter in critical infrastructure.
- Core principles: Transparency, Accountability, Fairness, Privacy.
- Societal impact: employment, economic inequality, and global supply chain dynamics.

Module 2: Core AI Technologies for Supply Chain Optimization

Duration: 20 hours
Objective: Provide a comprehensive overview of ML, NLP, Computer Vision, and Generative AI, and how each optimizes specific supply chain segments.

Topics & Sub-Topics

1. Machine Learning in SCM (5 hrs)

- Supervised vs. unsupervised learning: demand forecasting, anomaly detection.
- Applications: predictive maintenance, route optimization, dynamic pricing.
- Tools & platforms: ML frameworks and cloud services for SCM.

2. Natural Language Processing (NLP) & Computer Vision (5 hrs)

- NLP in SCM: sentiment analysis, contract analysis, communication automation.
- Computer Vision: defect detection, warehouse automation, visual inspections.

3. Generative AI and Advanced Architectures (5 hrs)

- Overview of GANs, VAEs, Transformers vs. discriminative models.
- Applications: demand simulation, network design, synthetic data generation.
- Architectures: Transformers & LSTMs for time-series and text processing.

4. Classical AI and Expert Systems (5 hrs)

- Rule-based systems, decision trees, and scenario simulation.
- Strengths & limitations: combining classical AI with ML for robust solutions.

5. Use-cases

6. Case Study

7. Hands-on

Module 3: Data-Driven Decision Making & Digitization

Duration: 15 hours
Objective: Teach participants how to collect, manage, analyze, and visualize supply chain data using AI to drive strategic decisions and build digital resilience.

Topics & Sub-Topics

1. Data Collection, Quality & Management (5 hrs)

- SCM data sources: ERP, WMS, TMS, weather, market trends, social media.
- Data quality techniques: cleaning, validation, handling missing values/outliers.
- Data governance: ownership, security, compliance (GDPR, CCPA).

2. Supply Chain Analytics (5 hrs)

- Descriptive, predictive, and prescriptive analytics.
- Extracting insights from large datasets.
- Visualization best practices for dashboards and stakeholder reporting.

3. Supply Chain Digitization & Integration (5 hrs)

- Digital supply chain elements: AI, IoT, Blockchain, Big Data.
- System integration strategies (EDI, cloud platforms).
- Push-Pull and hybrid models for agility and efficiency.

4. Use-cases

5. Case Study

6. Hands-on

Module 4: AI for Specific Supply Chain Functions

Duration: 15 hours
Objective: Apply AI practically across procurement, production, logistics, and demand planning.

Topics & Sub-Topics

1. Procurement & Supplier Management (4 hrs)

- Supplier selection using algorithms (cost, risk, sustainability, performance).
- Risk assessment using AI for geopolitical, financial, operational signals.
- Contract analysis automation with NLP.

2. Production & Inventory Management (4 hrs)

- Predictive maintenance using sensor data.
- Inventory optimization: safety stock, reorder points, waste reduction.

- Quality control via computer vision.

3. Logistics & Distribution (4 hrs)

- Route optimization using real-time variables.
- Warehouse automation: robotics, autonomous vehicles, sorting systems.
- Real-time visibility through IoT and AI.

4. Demand Forecasting & Revenue Management (3 hrs)

- Advanced forecasting: ML and generative models.
- External factor integration: promotions, competition, macroeconomic trends.
- Revenue management and AI-driven pricing optimization.

5. Use-cases

6. Case Study

7. Hands-on

Module 5: Ethics, Governance, Future Trends , and Capstone Projects

Duration: 10 hours
Objective: Develop a deep understanding of ethical, legal, and societal implications of AI in supply chains while preparing for future technologies and challenges. Also implementation of capstone projects.

Topics & Sub-Topics

1. Ethical AI in Supply Chains (1 hrs)

- Identifying and understanding bias in AI systems.
- Fairness strategies: diverse datasets, transparency, audits.
- Data privacy and security: encryption, access control, regulatory alignment.

2. Legal Compliance & AI Governance (2 hrs)

- Global regulations (GDPR, CCPA) and their supply chain impact.
- Governance frameworks: policy creation, roles, responsibilities, auditability.
- Liability & accountability in AI-driven decision making.

3. Future Trends & Sustainability (1 hrs)

- Emerging technologies: Quantum Computing, 5G, advanced robotics.
- AI for sustainability: reducing emissions, minimizing waste, supporting SDGs.

- Building future-ready cultures through continuous learning and adaptation.

4. Capstone Projects (6 hrs)

- Capstone Project-1
- Capstone Project-2