Intelligent Decision Support in Manufacturing Training Course

Professional Development Training Course Outline

Category	Manufacturing	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Intelligent Decision Support in Manufacturing Training Course is designed to empower professionals with advanced capabilities in AI-driven decision-making, smart manufacturing systems, predictive analytics, and real-time industrial optimization. As global manufacturing evolves toward Industry 4.0 and Industry 5.0 ecosystems, organizations are increasingly relying on data-driven intelligence, machine learning models, and digital twin technologies to enhance productivity, reduce operational costs, and improve supply chain resilience. This course provides a comprehensive foundation in leveraging intelligent decision support systems (IDSS) to transform traditional manufacturing into a fully optimized, autonomous, and adaptive production environment.

Participants will gain hands-on exposure to advanced analytics platforms, industrial IoT integration, cloud-based manufacturing intelligence, and cognitive decision systems. The training emphasizes practical implementation of predictive maintenance, real-time production optimization, and AI-based quality control systems. By combining theory with real-world applications, learners will be equipped to design and deploy intelligent manufacturing ecosystems that enhance agility, efficiency, and competitiveness in global markets.

Programme Curriculum

Intelligent Decision Support in Manufacturing Training Course

Introduction

Intelligent Decision Support in Manufacturing Training Course is designed to empower professionals with advanced capabilities in AI-driven decision-making, smart manufacturing systems, predictive analytics, and real-time industrial optimization. As global manufacturing evolves toward Industry 4.0 and Industry 5.0 ecosystems, organizations are increasingly relying on data-driven intelligence, machine learning models, and

digital twin technologies to enhance productivity, reduce operational costs, and improve supply chain resilience. This course provides a comprehensive foundation in leveraging intelligent decision support systems (IDSS) to transform traditional manufacturing into a fully optimized, autonomous, and adaptive production environment.

Participants will gain hands-on exposure to advanced analytics platforms, industrial IoT integration, cloud-based manufacturing intelligence, and cognitive decision systems. The training emphasizes practical implementation of predictive maintenance, real-time production optimization, and AI-based quality control systems. By combining theory with real-world applications, learners will be equipped to design and deploy intelligent manufacturing ecosystems that enhance agility, efficiency, and competitiveness in global markets.

Course Duration

5 days

Course Objectives

1. Master Intelligent Decision Support Systems (IDSS) in manufacturing environments
2. Understand Industry 4.0 and Smart Factory Transformation frameworks
3. Apply AI and Machine Learning in production optimization
4. Develop predictive maintenance models for industrial equipment
5. Integrate Industrial Internet of Things (IIoT) systems for real-time analytics
6. Utilize Big Data Analytics for manufacturing decision-making
7. Implement Digital Twin technology for process simulation and optimization
8. Enhance Supply Chain Intelligence and predictive logistics planning
9. Optimize production scheduling using intelligent algorithms
10. Improve quality control through AI-powered inspection systems
11. Build real-time dashboards for manufacturing performance monitoring
12. Enable automation-driven decision workflows in smart factories
13. Strengthen cyber-physical system integration for manufacturing intelligence

Target Audience

1. Manufacturing Engineers
2. Industrial Data Analysts
3. Operations Managers
4. Production Supervisors
5. Supply Chain Professionals
6. Automation Engineers
7. IT and IoT Specialists in Manufacturing
8. Quality Assurance Managers

Course Modules

Module 1: Foundations of Intelligent Manufacturing Systems

- Introduction to Industry 4.0 & 5.0 concepts
- Overview of Intelligent Decision Support Systems
- Role of AI in manufacturing transformation
- Data-driven production environments
- Smart factory architecture overview
- **Case Study:** Tesla Gigafactory smart manufacturing model

Module 2: Industrial IoT and Data Integration

- IoT sensors in production lines
- Real-time data acquisition systems
- Edge computing in manufacturing
- Cloud-based data integration
- Machine connectivity protocols
- **Case Study:** Siemens connected factory ecosystem

Module 3: AI and Machine Learning in Manufacturing

- Supervised and unsupervised learning models
- Predictive analytics for production efficiency
- AI-driven defect detection systems
- Process optimization algorithms
- Machine learning lifecycle in industry
- **Case Study:** Bosch AI-based quality inspection system

Module 4: Predictive Maintenance and Asset Intelligence

- Condition-based monitoring systems
- Failure prediction models
- Equipment lifecycle optimization
- Sensor-driven maintenance strategies
- Downtime reduction techniques
- **Case Study:** General Electric predictive maintenance platform

Module 5: Digital Twin and Simulation Technologies

- Digital twin architecture
- Virtual modeling of production systems
- Simulation-based optimization
- Real-time synchronization with physical assets
- Scenario testing and forecasting
- **Case Study:** Boeing digital twin aircraft manufacturing

Module 6: Smart Supply Chain and Logistics Intelligence

- AI-driven demand forecasting
- Supply chain risk analytics
- Inventory optimization models
- Real-time logistics tracking systems
- Supplier performance intelligence
- **Case Study:** Amazon smart logistics optimization system

Module 7: Decision Support Dashboards and Visualization

- KPI-driven dashboard design
- Real-time manufacturing analytics
- Data visualization techniques
- Alert and recommendation systems
- Executive decision support systems

- **Case Study:** Schneider Electric smart factory dashboard

Module 8: Cyber-Physical Systems and Automation Strategy

- Integration of physical and digital systems
- Autonomous production workflows
- Robotics in manufacturing intelligence
- Cybersecurity in industrial systems
- Future of autonomous factories
- **Case Study:** FANUC automated robotics manufacturing plant

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com