# Advanced Production Engineering Training Course

Professional Development Training Course Outline

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

## Course Introduction

Advanced Production Engineering Training Course is designed to develop world-class expertise in manufacturing optimization, smart production systems, lean engineering, Industry 4.0 integration, and advanced process control. This course equips engineers and technical professionals with the skills required to design, manage, and improve modern production environments using cutting-edge tools, data-driven decision-making, and automation technologies. With industries rapidly shifting toward digital manufacturing, predictive maintenance, and intelligent production systems, this training ensures participants stay ahead in a highly competitive global engineering landscape.

The program emphasizes real-world industrial applications, combining lean manufacturing principles, Six Sigma methodologies, CAD/CAM integration, robotics automation, and production analytics. Participants will gain hands-on exposure to solving complex production challenges such as downtime reduction, quality enhancement, throughput optimization, and cost minimization. By integrating theory with practical case studies from automotive, aerospace, FMCG, and heavy industries, this course builds a strong foundation for becoming a future-ready production engineering professional capable of leading smart factories and advanced manufacturing systems.

## Programme Curriculum

**Advanced Production Engineering Training Course**

**Introduction**

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**Course Duration**

10 days

**Course Objectives**

1. Master Advanced Manufacturing Systems Optimization
2. Develop expertise in Lean Manufacturing & Six Sigma Green Belt Applications
3. Understand Industry 4.0 Smart Factory Architecture
4. Implement Industrial Automation & Robotics Integration
5. Improve Production Planning & Control (PPC) Systems
6. Enhance CAD/CAM-Based Manufacturing Design
7. Apply Predictive Maintenance & Condition Monitoring
8. Optimize Supply Chain & Production Workflow Efficiency
9. Strengthen Quality Assurance & Total Quality Management (TQM)
10. Utilize Data Analytics in Manufacturing Operations
11. Implement Energy-Efficient Production Systems
12. Reduce waste using Kaizen & Continuous Improvement Tools
13. Develop leadership in Digital Manufacturing Transformation

**Target Audience**

1. Mechanical & Industrial Engineers
2. Manufacturing & Production Engineers
3. Quality Assurance Professionals
4. Maintenance & Reliability Engineers
5. Industrial Management Students
6. Factory Supervisors & Plant Managers
7. Supply Chain & Operations Professionals
8. Technical Consultants in Manufacturing Industry

**Course Modules**

**Module 1: Fundamentals of Production Engineering Systems**

- Production system types and classification
- Manufacturing process fundamentals
- Input-output transformation models
- Factory layout principles
- Production lifecycle understanding

- **Case Study:** Automobile assembly line workflow analysis

**Module 2: Advanced Manufacturing Technologies**

- CNC machining systems
- Additive manufacturing (3D printing)
- Hybrid manufacturing processes
- Smart material usage
- Digital prototyping systems
- **Case Study:** Aerospace component rapid prototyping

**Module 3: Lean Manufacturing & Waste Reduction**

- 7 types of waste (Muda) elimination
- Value stream mapping
- Just-In-Time (JIT) systems
- Kanban implementation
- Kaizen continuous improvement
- **Case Study:** FMCG production line waste reduction

**Module 4: Six Sigma Quality Engineering**

- DMAIC methodology
- Statistical process control (SPC)
- Process capability analysis
- Root cause analysis tools
- Defect reduction strategies
- **Case Study:** Defect reduction in electronics manufacturing

**Module 5: Production Planning & Control (PPC)**

- Master production scheduling
- Material requirement planning (MRP)
- Capacity planning
- Job shop scheduling
- ERP integration systems
- **Case Study:** Textile industry production scheduling optimization

**Module 6: Industrial Automation Systems**

- PLC programming basics
- SCADA systems integration
- Sensor-based automation
- Robotics in production lines
- Human-machine interface (HMI)
- **Case Study:** Automated packaging plant optimization

**Module 7: Industry 4.0 & Smart Manufacturing**

- IoT in manufacturing
- Cyber-physical systems
- Digital twin technology

- Cloud-based production systems
- Smart factory architecture
- **Case Study:** Smart factory implementation in automotive industry

**Module 8: CAD/CAM & Product Design Engineering**

- 3D modeling techniques
- CAM toolpath generation
- Product lifecycle management
- Simulation-based design
- Rapid engineering design cycles
- **Case Study:** Machine component design optimization

**Module 9: Production Cost Optimization**

- Cost accounting in manufacturing
- Break-even analysis
- Cost reduction strategies
- Resource allocation optimization
- Budgeting for production systems
- **Case Study:** Cost reduction in food processing plant

**Module 10: Quality Control & Inspection Systems**

- Quality assurance frameworks
- Inspection techniques
- Measurement systems analysis
- Non-destructive testing (NDT)
- ISO quality standards
- **Case Study:** Quality improvement in steel manufacturing

**Module 11: Maintenance Engineering & Reliability**

- Preventive maintenance systems
- Predictive maintenance using IoT
- Failure mode analysis (FMEA)
- Equipment reliability engineering
- Maintenance scheduling
- **Case Study:** Downtime reduction in power plant operations

**Module 12: Supply Chain Integration**

- End-to-end supply chain design
- Inventory management systems
- Logistics optimization
- Vendor management strategies
- Demand forecasting techniques
- **Case Study:** Automotive supply chain optimization

**Module 13: Industrial Safety & Risk Management**

- OSHA safety standards

- Hazard identification systems
- Risk assessment techniques
- Emergency response planning
- Workplace safety audits
- **Case Study:** Accident reduction in chemical plant

**Module 14: Data Analytics in Production Engineering**

- Manufacturing data collection
- Predictive analytics models
- KPI dashboards
- Machine learning applications
- Real-time monitoring systems
- **Case Study:** Predictive failure analysis in CNC machines

**Module 15: Sustainable & Green Manufacturing**

- Energy-efficient production systems
- Carbon footprint reduction
- Waste recycling systems
- Eco-friendly materials
- Sustainable factory design
- **Case Study:** Green manufacturing transformation in packaging industry

## 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** | 04 Dec 2026 | Online | $2,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $3,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $6,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $6,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $12,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $9,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $12,000 |
| **23 Nov 2026** | 04 Dec 2026 | Physical | $12,000 |

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

**Register Online Now**

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