Augmented Reality (AR) in Manufacturing Training Course

Professional Development Training Course Outline

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

Course Introduction

Augmented Reality (AR) in Manufacturing Training is a cutting-edge, Industry 4.0-driven learning program designed to transform how industrial skills are developed, practiced, and deployed. By integrating AR technology, digital twin systems, smart factories, IoT-enabled production lines, and immersive workforce training, this course empowers engineers, technicians, and operators to interact with real-time 3D overlays, step-by-step guided instructions, and simulation-based environments directly on physical machinery. It bridges the gap between theoretical knowledge and hands-on industrial execution, significantly improving efficiency, safety, and productivity in modern manufacturing ecosystems.

As global manufacturing shifts toward smart automation, predictive maintenance, AI-assisted operations, and immersive training ecosystems, Augmented Reality is becoming a core enabler of workforce transformation. Augmented Reality (AR) in Manufacturing Training Course equips learners with practical competencies in AR-assisted assembly, maintenance visualization, remote expert support, and real-time workflow optimization. By leveraging immersive simulation, spatial computing, and next-generation visualization tools, organizations can reduce downtime, minimize errors, accelerate onboarding, and build a future-ready workforce aligned with Industry 4.0 and Industry 5.0 paradigms.

Programme Curriculum

Augmented Reality (AR) in Manufacturing Training Course

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Course Duration

10 days

Course Objectives

1. Understand fundamentals of Augmented Reality in Manufacturing
2. Apply Industry 4.0 smart factory concepts
3. Develop AR-based digital twin training models
4. Use AR for predictive maintenance visualization
5. Implement immersive workforce training systems
6. Integrate AR with IoT-enabled production environments
7. Design interactive 3D industrial workflows
8. Improve operational efficiency using real-time AR overlays
9. Enable remote assistance and expert guidance systems
10. Enhance safety using AR hazard simulation
11. Build AR-guided assembly line training modules
12. Apply spatial computing in manufacturing operations
13. Optimize productivity through AI-powered AR analytics

Target Audience

- Manufacturing engineers and industrial designers
- Maintenance and operations technicians
- Production line supervisors
- Quality assurance professionals
- Industrial automation specialists
- Training and development managers
- Engineering students (mechanical, industrial, mechatronics)
- Digital transformation consultants

Course Modules

Module 1: Introduction to Augmented Reality in Manufacturing

- AR fundamentals and ecosystem
- Industry 4.0 integration overview
- Hardware and software tools
- Industrial use cases

- AR vs VR in manufacturing
- **Case Study:** AR adoption in automotive assembly lines improving efficiency by 30%

Module 2: Smart Factory & Digital Transformation

- Smart factory architecture
- Cyber-physical systems
- Connected manufacturing
- Data-driven operations
- Real-time monitoring systems
- **Case Study:** Siemens smart factory implementation using AR dashboards

Module 3: AR Hardware & Devices

- Smart glasses and headsets
- Mobile AR devices
- Industrial wearables
- Sensor integration
- Device calibration techniques
- **Case Study:** Boeing using AR glasses for wiring assembly

Module 4: AR Software Platforms

- Unity & Unreal Engine basics
- AR development kits
- Industrial AR platforms
- Cloud integration
- Application deployment
- **Case Study:** PTC Vuforia used in manufacturing training simulations

Module 5: Digital Twin Integration

- Digital twin concepts
- Real-time synchronization
- Simulation modeling
- Asset replication
- Predictive analytics
- **Case Study:** GE using digital twins for turbine maintenance

Module 6: AR in Assembly Line Training

- Step-by-step AR guidance
- Workflow visualization
- Error reduction systems
- Task automation
- Operator assistance
- **Case Study:** Toyota reducing training time using AR assembly guides

Module 7: Predictive Maintenance with AR

- Equipment monitoring
- Failure prediction

- Maintenance scheduling
- Sensor data visualization
- Fault detection systems
- **Case Study:** Shell refinery predictive AR maintenance system

Module 8: AR for Quality Assurance

- Defect detection overlays
- Inspection workflows
- Compliance validation
- Measurement accuracy tools
- Reporting systems
- **Case Study:** Airbus aircraft inspection using AR overlays

Module 9: Remote Assistance Systems

- Live AR support
- Expert collaboration
- Cloud-based guidance
- Troubleshooting workflows
- Communication tools
- **Case Study:** Bosch remote AR technician support system

Module 10: Safety Training with AR

- Hazard simulation
- Emergency response training
- PPE compliance visualization
- Risk assessment models
- Safety drills
- **Case Study:** Mining industry AR safety simulations reducing accidents

Module 11: Industrial IoT + AR Integration

- Sensor connectivity
- Real-time data streams
- Machine monitoring
- Edge computing
- Smart analytics
- **Case Study:** Smart factory IoT-AR integration in electronics manufacturing

Module 12: AR Workflow Optimization

- Process mapping
- Bottleneck analysis
- Efficiency tracking
- Time-motion studies
- Optimization algorithms
- **Case Study:** Amazon warehouse AR workflow optimization

Module 13: AI-Driven AR Systems

- Machine learning integration
- Intelligent recommendations
- Pattern recognition
- Predictive insights
- Automated decision support
- **Case Study:** AI-assisted AR inspection in semiconductor manufacturing

Module 14: AR Content Development

- 3D modeling techniques
- Animation for industrial use
- UX design for AR
- Interaction design
- Content deployment
- **Case Study:** Ford Motor Company AR training content creation

Module 15: Future of AR in Manufacturing (Industry 5.0)

- Human-robot collaboration
- Cognitive manufacturing systems
- Sustainable smart factories
- Hyper-automation trends
- Next-gen spatial computing
- **Case Study:** Adidas “Speedfactory” AR-enabled production system

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:

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