Industrial Design Engineering 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

Industrial Design Engineering in Manufacturing is a future-focused discipline that integrates advanced product design, engineering innovation, and smart manufacturing systems to create efficient, sustainable, and market-ready industrial solutions. Industrial Design Engineering in Manufacturing Training Course equips learners with cutting-edge knowledge in CAD modeling, additive manufacturing, product lifecycle management, and Industry 4.0 integration, enabling them to transform conceptual ideas into scalable industrial products.

In today’s competitive global market, industries demand professionals skilled in design optimization, digital manufacturing workflows, prototyping technologies, and automation-driven production systems. This course bridges the gap between engineering design and real-world manufacturing execution, empowering participants to develop high-performance products aligned with modern industrial standards and sustainability goals.

Programme Curriculum

Industrial Design Engineering in Manufacturing Training Course

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Course Duration

5 days

Course Objectives

1. Master industrial product design engineering principles
2. Understand advanced manufacturing technologies and smart factories
3. Apply CAD/CAM/CAE software in product development
4. Develop skills in rapid prototyping and 3D printing
5. Learn product lifecycle management (PLM) systems
6. Integrate Industry 4.0 and IoT in manufacturing design
7. Optimize manufacturing processes for cost and efficiency
8. Apply design thinking and innovation methodologies
9. Enhance ergonomic and human-centered design skills
10. Implement sustainable and eco-friendly manufacturing practices
11. Understand materials engineering for industrial applications
12. Improve quality control and lean manufacturing systems
13. Develop capability in digital twin and simulation technologies

Target Audience

1. Mechanical & Industrial Engineering students
2. Manufacturing engineers and technicians
3. Product design engineers
4. CAD/CAM professionals
5. Automotive and aerospace industry professionals
6. Startup founders in product innovation
7. Technical diploma holders in engineering fields
8. R&D and innovation department staff

Course Modules

Module 1: Fundamentals of Industrial Design Engineering

- Introduction to industrial design principles
- Design process lifecycle overview
- Engineering design thinking frameworks
- Role of manufacturing in product development
- Tools used in modern design engineering
- **Case Study:** Development of ergonomic power tool design for industrial workers

Module 2: CAD/CAM & Digital Product Design

- 2D and 3D CAD modeling techniques
- CAM integration for manufacturing
- Parametric and surface modeling

- Design validation using simulation tools
- Software tools (SolidWorks, AutoCAD, CATIA)
- **Case Study:** Designing a lightweight automotive chassis using CAD optimization

Module 3: Advanced Manufacturing Technologies

- CNC machining and automation systems
- Additive manufacturing (3D printing)
- Laser cutting and precision engineering
- Smart factory systems
- Robotics in manufacturing
- **Case Study:** Production of customized drone components using 3D printing

Module 4: Product Lifecycle Management (PLM)

- Stages of product lifecycle
- Digital PLM systems
- Design iteration and version control
- Collaboration in engineering teams
- Data-driven product improvement
- **Case Study:** PLM implementation in consumer electronics manufacturing

Module 5: Materials & Manufacturing Engineering

- Engineering materials selection
- Composite materials and alloys
- Material testing and performance analysis
- Sustainable material usage
- Failure analysis in product design
- **Case Study:** High-strength bicycle frame development using composite materials

Module 6: Industry 4.0 & Smart Manufacturing

- IoT in manufacturing systems
- Cyber-physical production systems
- Digital twin technology
- AI-driven production optimization
- Real-time data monitoring
- **Case Study:** Smart factory automation in automotive assembly line

Module 7: Rapid Prototyping & Innovation

- Prototyping techniques and tools
- 3D printing workflows
- Design iteration cycles
- Innovation and product validation
- User testing and feedback integration
- **Case Study:** Prototype development of medical assistive device for rehabilitation

Module 8: Lean Manufacturing & Quality Engineering

- Lean manufacturing principles

- Six Sigma quality control
- Waste reduction techniques
- Process optimization strategies
- Continuous improvement systems
- **Case Study:** Lean transformation in consumer appliance 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

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