Polymer Materials Processing Training Course

Professional Development Training Course Outline

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

Course Introduction

Polymer materials processing is a cornerstone of modern manufacturing, driving innovation across automotive, packaging, healthcare, electronics, construction, and consumer goods industries. Polymer Processing Training Course is designed to equip participants with advanced knowledge of polymer science, extrusion technology, injection molding, thermoforming, compounding, and sustainable plastics engineering. With global demand rising for lightweight materials, high-performance polymers, recyclable plastics, and smart composites, professionals must master both theoretical fundamentals and industrial applications to remain competitive in today’s evolving manufacturing landscape.

This course provides a comprehensive blend of hands-on industrial training, simulation-based learning, and real-world case studies to develop expertise in polymer rheology, processing optimization, defect analysis, and quality control systems. Participants will gain exposure to cutting-edge trends such as circular economy in plastics, biopolymers, nanocomposites, Industry 4.0 manufacturing, and AI-driven process optimization, ensuring they are fully prepared for next-generation polymer engineering challenges.

Programme Curriculum

Polymer Materials Processing Training Course

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Course Duration

5 days

Course Objectives

1. Master fundamentals of polymer chemistry and material behavior
2. Understand thermoplastics, thermosets, and elastomers processing techniques
3. Gain expertise in injection molding process optimization
4. Learn advanced extrusion technology and die design
5. Develop skills in thermoforming and blow molding operations
6. Apply principles of polymer rheology and flow behavior
7. Identify and troubleshoot processing defects and failures
8. Implement quality control and testing standards
9. Explore biodegradable and sustainable polymer solutions
10. Integrate Industry 4.0 and smart manufacturing in polymer plants
11. Optimize production efficiency and cost reduction strategies
12. Understand polymer compounding and additive technologies
13. Apply real-world industrial case-based problem solving

Target Audience

- Polymer engineers and material scientists
- Manufacturing and production engineers
- Chemical and process engineers
- Quality assurance and quality control professionals
- Plastic product designers and developers
- Industrial technicians in plastics industries
- R&D professionals in polymer and composite sectors
- Technical managers in manufacturing and packaging industries

Course Modules

Module 1: Fundamentals of Polymer Science

- Structure and classification of polymers
- Thermoplastic vs thermosetting behavior
- Molecular weight and polymer properties
- Additives and modifiers in polymers
- **Case Study:** Failure analysis in polyethylene packaging films

Module 2: Polymer Rheology and Flow Behavior

- Viscoelastic properties of polymers
- Melt flow index and viscosity control
- Shear thinning and flow instability

- Temperature-pressure relationships
- **Case Study:** Melt flow optimization in HDPE pipe production

Module 3: Injection Molding Technology

- Injection molding cycle and machine components
- Mold design and cavity optimization
- Defect control
- Process parameter tuning
- **Case Study:** Automotive dashboard injection molding defects correction

Module 4: Extrusion Processing

- Single and twin screw extruders
- Die design and flow uniformity
- Film, sheet, and pipe extrusion
- Cooling and calibration systems
- **Case Study:** PVC pipe extrusion quality improvement project

Module 5: Thermoforming and Blow Molding

- Sheet heating and forming techniques
- Pressure and vacuum forming processes
- Blow molding types and applications
- Material selection for packaging
- **Case Study:** PET bottle production efficiency enhancement

Module 6: Polymer Compounding & Additives

- Fillers, plasticizers, stabilizers
- Masterbatch technology
- Reinforced polymer composites
- Mixing and dispersion techniques
- **Case Study:** Impact resistance improvement in polypropylene composites

Module 7: Quality Control & Testing

- Mechanical and thermal testing methods
- ASTM and ISO standards compliance
- Defect detection and inspection tools
- Statistical process control (SPC)
- **Case Study:** Reducing rejection rates in plastic injection parts

Module 8: Advanced & Sustainable Polymer Processing

- Biopolymers and eco-friendly plastics
- Recycling and circular economy practices
- Nanocomposites and smart materials
- AI and automation in polymer manufacturing
- **Case Study:** Transition from virgin plastics to recycled packaging 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	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

Start Date	End Date	Location	Price
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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