Advanced Food Preservation Techniques and Controls Training Course

Professional Development Training Course Outline

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

Course Introduction

Food preservation is one of the most critical aspects of ensuring global food security, quality, and safety. With rapid technological advancements and rising consumer demands for healthy, safe, and long-lasting products, advanced food preservation techniques are essential for food industries. From extending shelf life to maintaining nutritional integrity, effective preservation methods help minimize post-harvest losses, support sustainable supply chains, and reduce waste. Trending approaches such as high-pressure processing, modified atmosphere packaging, nanotechnology, and natural preservatives are revolutionizing how industries maintain the quality of perishable products. Advanced Food Preservation Techniques and Controls Training Course equips professionals with in-depth knowledge and practical skills to implement cutting-edge preservation strategies while complying with international food safety standards.

The course is designed for food technologists, quality control managers, production supervisors, and supply chain experts seeking to stay ahead in an evolving global market. Participants will explore modern preservation controls, microbial risk management, automation systems, and emerging global regulations. By engaging with real-world case studies, hands-on exercises, and expert-led sessions, learners will gain actionable insights for enhancing operational efficiency, sustainability, and profitability in food businesses. This program empowers organizations to adopt robust preservation systems, improve consumer trust, and maintain competitive advantage in a rapidly changing industry.

Programme Curriculum

Advanced Food Preservation Techniques and Controls Training Course

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Course Objectives

1. Understand the fundamentals of advanced food preservation techniques.
2. Apply modern technologies such as high-pressure processing and nanotechnology.
3. Implement microbial risk management and contamination control.
4. Enhance knowledge of modified atmosphere packaging and cold chain systems.
5. Integrate natural preservatives for clean-label product development.
6. Explore automation and digital transformation in preservation processes.
7. Analyze food preservation regulations and global compliance standards.
8. Develop strategies for sustainable and eco-friendly preservation systems.
9. Evaluate food quality, safety, and nutritional retention methods.
10. Apply predictive modeling for shelf-life extension.
11. Assess new innovations in biotechnology and smart packaging.
12. Gain practical insights from international case studies.
13. Strengthen organizational resilience and consumer trust.

Organizational Benefits

- Reduced food losses and waste management costs
- Improved compliance with international food safety regulations
- Enhanced brand reputation and consumer trust
- Increased product shelf life with optimized preservation systems
- Competitive advantage in domestic and global markets
- Improved operational efficiency and production consistency
- Integration of digital technologies in food processing systems
- Stronger food safety culture across the organization
- Development of eco-friendly and sustainable preservation practices
- Enhanced profitability through innovative food preservation solutions

Target Audiences

- Food technologists and scientists

- Quality assurance and control managers
- Production supervisors in food processing plants
- Supply chain and logistics professionals
- Regulatory compliance officers
- Research and development specialists
- Food safety auditors and consultants
- Entrepreneurs and managers in food industries

Course Duration: 10 days

Course Modules

Module 1: Fundamentals of Food Preservation

- History and evolution of food preservation
- Importance of preservation in food security
- Traditional vs modern techniques
- Role of temperature and environmental control
- Preservation and nutritional value
- Case Study: Traditional preservation vs modern application

Module 2: Microbial Control in Food Preservation

- Understanding microbial spoilage
- Microbiological safety standards
- Bacteriostatic and bactericidal methods
- Heat treatments and cold preservation
- Predictive microbiology tools
- Case Study: Controlling Listeria in dairy processing

Module 3: High-Pressure Processing (HPP)

- Principles of high-pressure processing
- Applications in fruit juices, meats, and seafood
- Advantages over thermal processing
- Safety and nutritional impacts
- Equipment and operational considerations
- Case Study: Commercial success with HPP juices

Module 4: Modified Atmosphere Packaging (MAP)

- Principles of modified and controlled atmospheres
- Oxygen, carbon dioxide, and nitrogen roles
- MAP for fresh produce and meats
- Limitations and risks of MAP
- Integration with cold chain logistics
- Case Study: MAP in global meat supply chains

Module 5: Cold Chain Management and Refrigeration Systems

- Importance of cold chain in preservation
- Freezing, chilling, and refrigeration principles

- Monitoring temperature and humidity
- Energy efficiency in cold chains
- Innovations in refrigeration technology
- Case Study: Global vaccine cold chain and food lessons

Module 6: Natural Preservatives and Clean-Label Solutions

- Growing demand for natural additives
- Antimicrobial plant extracts
- Fermentation-derived preservatives
- Labeling challenges and regulations
- Consumer acceptance and market trends
- Case Study: Natural preservatives in bakery products

Module 7: Nanotechnology in Food Preservation

- Introduction to nanotechnology in foods
- Nano-encapsulation for preservatives
- Nanocoatings and smart films
- Regulatory and ethical concerns
- Market potential and innovations
- Case Study: Nanotechnology in dairy shelf-life extension

Module 8: Biotechnology and Food Preservation

- Role of enzymes in preservation
- Genetic modification for shelf stability
- Biopreservation using probiotics
- Advances in fermentation science
- Challenges in biotechnology applications
- Case Study: Biopreservation in cheese and yogurt

Module 9: Packaging Innovations and Smart Packaging

- Active vs intelligent packaging systems
- Indicators for freshness and spoilage
- RFID-enabled tracking
- Eco-friendly biodegradable packaging
- Future trends in packaging technology
- Case Study: Smart packaging in seafood supply

Module 10: Automation and Digital Transformation in Preservation

- IoT-enabled monitoring systems
- AI applications in predictive preservation
- Robotics in food processing lines
- Blockchain in traceability
- Benefits and challenges of automation
- Case Study: AI-driven shelf-life prediction

Module 11: Food Preservation Regulations and Global Standards

- International preservation regulations
- Role of FDA, EFSA, and Codex Alimentarius
- HACCP and ISO standards
- Certification processes
- Trade and export compliance
- Case Study: Regulatory compliance in global exports

Module 12: Sustainable and Eco-Friendly Preservation Systems

- Reducing carbon footprint in preservation
- Renewable energy in cold storage
- Eco-friendly packaging and materials
- Zero-waste production systems
- Circular economy applications
- Case Study: Sustainable seafood preservation projects

Module 13: Shelf-Life Evaluation and Predictive Modeling

- Principles of shelf-life testing
- Analytical and sensory methods
- Accelerated shelf-life studies
- Modeling microbial growth
- Data-driven decision making
- Case Study: Shelf-life modeling in packaged salads

Module 14: Risk Management and Crisis Control

- Identifying preservation-related risks
- Food recalls and safety issues
- Business continuity planning
- Risk communication strategies
- Building resilient supply chains
- Case Study: Crisis response in frozen food contamination

Module 15: Future Trends in Food Preservation

- Emerging preservation technologies
- Consumer-driven innovations
- Integration of sustainability and safety
- Global food security challenges
- Role of research and innovation
- Case Study: Future of plant-based food preservation

Training Methodology

- Interactive instructor-led sessions
- Hands-on demonstrations with modern preservation equipment
- Real-world case studies and group discussions
- Role-play scenarios for risk management and decision-making
- Digital simulations for predictive shelf-life modeling
- Continuous feedback and participant engagement

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

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