Grain Storage and Processing Engineering 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

Grain Storage and Processing Engineering is a critical discipline within the agricultural value chain that focuses on the safe handling, preservation, transformation, and value addition of grains such as maize, wheat, rice, sorghum, millet, and barley. With rising global food demand, post-harvest losses, and increasing pressure on food security systems, modern grain storage technology, silo management systems, drying techniques, fumigation protocols, and automated grain processing solutions have become essential. Grain Storage and Processing Engineering Training Course is designed to equip learners with advanced technical knowledge and practical competencies in post-harvest grain handling, storage infrastructure design, grain quality preservation, and processing engineering systems.

The course integrates engineering principles, food safety standards, and industrial processing technologies to address challenges such as moisture control, pest infestation, aflatoxin prevention, milling efficiency, and supply chain optimization. Participants will gain hands-on exposure to modern storage facilities, digital monitoring systems, and industrial grain processing equipment. The program is ideal for strengthening capacity in agribusiness, food processing industries, warehouse management, and agricultural engineering sectors, ensuring improved food security, reduced post-harvest losses, and enhanced grain value chain profitability.

Programme Curriculum

Grain Storage and Processing Engineering Training Course

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Course Duration

5 days

Course Objectives

1. Understand advanced grain storage engineering systems and infrastructure design
2. Apply modern post-harvest loss reduction technologies
3. Master moisture content control and grain drying techniques
4. Implement integrated pest management in stored grains
5. Develop skills in silo management and bulk storage operations
6. Ensure compliance with food safety and grain quality standards
7. Analyze grain processing flow systems and milling operations
8. Optimize grain handling logistics and supply chain efficiency
9. Operate automated grain cleaning, grading, and sorting machines
10. Apply fumigation and fumigant safety protocols effectively
11. Design energy-efficient grain drying and aeration systems
12. Utilize digital grain monitoring and IoT-based storage solutions
13. Enhance value addition and agro-processing business development strategies

Target Audience

1. Agricultural Engineers
2. Agribusiness Entrepreneurs
3. Food Processing Technologists
4. Warehouse and Silo Managers
5. Post-Harvest Technology Specialists
6. Government Agricultural Officers
7. Farmers and Cooperatives Leaders
8. Supply Chain and Logistics Professionals in Agriculture

Course Modules

Module 1: Fundamentals of Grain Storage Engineering

- Principles of grain physiology and respiration
- Types of storage systems
- Structural design considerations for storage facilities

- Environmental factors affecting grain quality
- Introduction to post-harvest loss mechanisms
- **Case Study:** Analysis of maize storage losses in East African grain silos and mitigation strategies.

Module 2: Post-Harvest Handling and Grain Preservation

- Harvesting and threshing best practices
- Cleaning and pre-storage treatment
- Moisture testing and control techniques
- Grain cooling and aeration systems
- Handling contamination risks
- **Case Study:** Reduction of rice spoilage in commercial warehouses using improved handling protocols.

Module 3: Grain Drying Technologies and Moisture Control

- Mechanical vs solar drying systems
- Grain moisture measurement tools
- Heat transfer principles in drying
- Energy-efficient drying technologies
- Drying defects and prevention methods
- **Case Study:** Wheat drying optimization in large-scale commercial farms reducing aflatoxin risk.

Module 4: Pest Management and Fumigation Systems

- Identification of storage pests (weevils, beetles, mites)
- Integrated Pest Management (IPM) strategies
- Safe use of fumigants and chemicals
- Hermetic storage technologies
- Monitoring pest infestation levels
- **Case Study:** Successful elimination of maize weevil infestation in hermetic storage bags in Kenya.

Module 5: Grain Processing and Milling Engineering

- Grain cleaning, grading, and sorting systems
- Milling technologies
- Roller mills vs hammer mills operations
- Flour quality control and testing
- By-product utilization
- **Case Study:** Efficiency improvement in wheat flour milling plant reducing waste by 25%.

Module 6: Storage Facility Design and Automation Systems

- Design of modern silos and warehouses
- Structural safety and ventilation systems
- Automation and sensor integration
- Temperature and humidity control systems
- Smart storage management systems
- **Case Study:** Smart silo installation in a commercial grain depot improving monitoring accuracy.

Module 7: Grain Quality Assurance and Food Safety Standards

- Grain grading and classification systems

- Aflatoxin testing and control
- HACCP and ISO food safety compliance
- Laboratory testing methods
- Traceability systems in grain supply chains
- **Case Study:** Implementation of HACCP in maize processing plant improving export quality compliance.

Module 8: Grain Value Chain and Agro-Processing Economics

- Grain marketing and pricing systems
- Value addition opportunities in agro-processing
- Supply chain optimization techniques
- Storage cost-benefit analysis
- Agribusiness investment planning
- **Case Study:** Profit increase in sorghum processing enterprise through value-added product diversification.

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:

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