Enzyme Technology in Fruit and Vegetable Processing Training Course

Professional Development Training Course Outline

Category	Food processing and Technology	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Enzyme technology has emerged as a cornerstone in the modern fruit and vegetable processing industry, transforming raw produce into high-quality, value-added products. By leveraging enzymatic applications, manufacturers can achieve enhanced extraction efficiency, improved flavor profiles, extended shelf life, and superior nutritional retention. Enzyme Technology in Fruit and Vegetable Processing Training Course offers participants a comprehensive understanding of enzyme functionality, optimization strategies, and practical applications in fruit and vegetable processing, equipping professionals with the knowledge to innovate and streamline production processes.

The course emphasizes a practical, hands-on approach, combining theoretical foundations with real-world case studies. Participants will explore the latest enzymatic solutions for juice clarification, pulp treatment, and by-product utilization, while also understanding regulatory standards, safety protocols, and sustainability practices. Through this course, attendees will gain actionable insights to implement enzyme technologies effectively, driving operational efficiency, cost reduction, and product quality improvement across processing units.

Programme Curriculum

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Course Objectives

1. Understand the fundamentals of enzyme structure, function, and classification.
2. Explore enzymatic applications in fruit and vegetable processing.
3. Learn enzyme kinetics and factors affecting enzyme activity.
4. Examine methods for enzyme extraction and purification.
5. Analyze enzymatic clarification techniques in juices.
6. Study enzymatic modification of fruit and vegetable pulp.
7. Understand enzyme-assisted extraction of bioactive compounds.
8. Implement enzyme optimization for yield enhancement.
9. Explore industrial case studies in juice and puree processing.
10. Assess regulatory and safety aspects of enzyme usage.
11. Integrate enzyme technology into sustainable processing practices.
12. Troubleshoot common issues in enzymatic processing.
13. Explore innovations and emerging trends in enzyme technology.

Organizational Benefits

- Improved product quality and consistency.
- Increased extraction yields and reduced waste.
- Enhanced operational efficiency and cost savings.
- Compliance with food safety and regulatory standards.
- Reduced processing time and energy consumption.
- Development of innovative, value-added products.
- Enhanced staff technical knowledge and expertise.
- Better understanding of enzyme selection and optimization.
- Increased customer satisfaction through high-quality products.
- Competitive advantage in the fruit and vegetable processing market.

Target Audiences

1. Food processing engineers and technologists
2. Production managers in fruit and vegetable processing units
3. Quality assurance and quality control professionals
4. R&D personnel in food manufacturing
5. Supply chain and operations managers
6. Food safety auditors
7. Graduate students in food science and technology
8. Entrepreneurs in fruit and vegetable processing

Course Duration: 5 days

Course Modules

Module 1: Introduction to Enzyme Technology

- Overview of enzymes and their industrial significance
- Classification of enzymes used in fruit and vegetable processing
- Mechanism of enzyme action
- Enzyme sources and production methods
- Factors influencing enzyme activity
- Case Study: Enzyme selection for juice clarification

Module 2: Enzyme Kinetics and Activity

- Principles of enzyme kinetics
- Substrate specificity and turnover number
- Effects of pH, temperature, and inhibitors
- Measurement and quantification of enzyme activity
- Industrial relevance of enzyme kinetics
- Case Study: Optimization of pectinase activity in apple juice

Module 3: Enzyme-Assisted Juice Clarification

- Role of pectinases, cellulases, and amylases
- Process design and operational parameters
- Enzyme dosing and reaction time
- Filtration and clarification techniques
- Troubleshooting common issues in juice clarity
- Case Study: Citrus juice clarification using multi-enzyme blends

Module 4: Pulp and Puree Modification

- Enzymatic softening and maceration
- Improving viscosity and texture
- Extraction of soluble solids
- Minimizing fiber content for smooth products
- Industrial processing equipment integration
- Case Study: Pineapple pulp consistency improvement

Module 5: Enzyme-Assisted Extraction of Bioactives

- Phenolics, carotenoids, and flavonoids extraction
- Role of enzyme mixtures in maximizing yield
- Optimization strategies for target compounds
- Scaling up from lab to industrial level
- Quality assessment of extracted bioactives
- Case Study: Carotenoid extraction from tomato pulp

Module 6: Enzyme Optimization and Process Control

- Determining optimal enzyme concentrations
- Temperature and pH adjustments
- Time management for enzymatic reactions

- Monitoring and controlling industrial processes
- Cost-benefit analysis of enzyme usage
- Case Study: Industrial scale optimization of pectinase

Module 7: Regulatory, Safety, and Quality Aspects

- Food safety regulations for enzyme use
- Hazard Analysis and Critical Control Points (HACCP)
- Labeling and documentation requirements
- Risk assessment and mitigation
- Ensuring compliance with local and international standards
- Case Study: Regulatory approval for commercial enzyme blends

Module 8: Innovations and Emerging Trends in Enzyme Technology

- Advances in immobilized enzymes and nanotechnology
- Enzyme recycling and sustainability
- Novel applications in fruit and vegetable processing
- Integration with smart processing technologies
- Market trends and future prospects
- Case Study: Innovative enzyme use in high-value fruit products

Training Methodology

- Interactive lectures and theoretical discussions
- Hands-on laboratory sessions and enzyme trials
- Industrial visits to processing units
- Group assignments and problem-solving workshops
- Case study analysis and group presentations
- Q&A sessions with industry experts

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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