Accredited Africa Training Institute for Capacity Development
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COURSE BROCHURE

Juice Clarification Process Optimisation Techniques Training

Agriculture and Nature Conservation / Secondary Agriculture

Unit Standard 114286 · NQF Level 5 · 16 Credits · 13 Days

COURSE OVERVIEW

This course equips learners with advanced techniques to optimise juice clarification processes in food and beverage manufacturing. Participants will gain the skills to improve yield, reduce waste, and ensure consistent product quality through process analysis and control. The training focuses on practical application of optimisation strategies within a quality management framework.

Category	Agriculture and Nature Conservation
Subfield	Secondary Agriculture
Unit Standard	114286
Accreditation	SAQA Accredited · NQF Level 5 · 16 Credits
Duration	13 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Analyse current juice clarification processes to identify inefficiencies and quality issues.
- Apply optimisation techniques such as enzyme treatment, flocculation, and filtration adjustments to improve yield and clarity.
- Evaluate the impact of process variables (temperature, pH, enzyme dosage) on clarification efficiency.
- Implement monitoring and control measures to maintain consistent product quality.
- Design process modifications to reduce waste and operational costs.
- Demonstrate compliance with food safety and quality standards during process optimisation.

WHO SHOULD ATTEND

- Process engineers, production supervisors, and quality assurance personnel working in juice manufacturing or related food processing industries who are responsible for clarification operations and process improvement.

COURSE OUTLINE

Day 1: Introduction to Juice Clarification

- Overview of juice processing and clarification objectives
- Quality parameters: turbidity, colour, suspended solids
- Principles of sedimentation and filtration
- Common issues: haze, browning, microbial spoilage
- Introduction to clarification aids (enzymes, fining agents

Day 2: Raw Juice Characteristics and Pre-treatment

- Raw juice composition: pectins, starches, proteins, polyphenols
- Variability due to fruit variety, maturity, and season
- Pre-treatment: enzymatic hydrolysis, heat treatment, pH adjustment
- Laboratory methods for pectin and starch testing

Day 3: Enzymatic Clarification Techniques

- Types of enzymes: pectinases, amylases, cellulases
- Enzyme kinetics and factors affecting activity
- Dosage optimisation trials
- Enzyme inactivation methods
- Case studies: apple, grape, citrus juice

Day 4: Fining Agents and Their Application

- Fining agents: bentonite, gelatin, PVPP, silica sol
- Mechanisms: adsorption, coagulation, charge neutralisation
- Fining trial design and evaluation
- Residual fining agent testing
- Regulatory and labelling considerations

Day 5: Filtration Technologies – Part 1

- Filtration principles: depth vs surface filtration
- Filter media: diatomaceous earth, membrane, cloth
- Plate-and-frame filter press: setup, operation, cleaning
- Pre-coating and body feed techniques

Day 6: Filtration Technologies – Part 2

- Cross-flow filtration: microfiltration, ultrafiltration
- Membrane types and configurations
- Flux decline and fouling mechanisms
- Cleaning-in-place (CIP) procedures
- Troubleshooting: blinding, channeling, pressure drop

Day 7: Centrifugation and Sedimentation

- Centrifuge types: disc stack, decanter
- Operating parameters: G-force, feed rate, bowl speed
- Sedimentation tanks and clarifiers
- Sludge handling and disposal
- Comparison with filtration

Day 8: Process Optimisation and Control

- Design of experiments (DoE) for clarification
- Response surface methodology
- Process control: pH, temperature, flow rate
- Key performance indicators: clarity, yield, throughput
- Data analysis and interpretation

Day 9: **Quality Control and Laboratory Analysis**

- Turbidity measurement (NTU
- Colour measurement (absorbance
- Suspended solids determination
- Haze and stability tests
- Microbiological analysis
- Record keeping and reporting

Day 10: **Troubleshooting and Problem Solving**

- Common problems: poor clarity, low yield, filter blockage
- Root cause analysis techniques
- Corrective actions: adjustments to enzymes, fining agents, filtration
- Preventive maintenance of equipment
- Case studies from industry

Day 11: **Advanced Techniques and Innovations**

- Emerging technologies: electrofiltration, ultrasonic clarification
- Novel fining agents: chitosan, plant-based proteins
- Enzyme immobilisation and reuse
- Water and energy efficiency
- By-product valorisation (e.g., pectin recovery

Day 12: **Process Integration and Scale-up**

- Process flow diagrams for clarification
- Scale-up considerations: mixing, heat transfer, residence time
- Pilot plant trials and data collection
- Cost-benefit analysis
- Case study: designing a line for tropical fruit juice

Day 13: **Course Review and Assessment**

- Review of key concepts and techniques
- Written assessment (theory
- Practical assessment (operation of equipment, lab tests
- Feedback and discussion
- Action plan for continuous improvement

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **16 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 45,700.00	**R 45,700.00**
1	In-House	R 59,400.00	**R 59,400.00**
1	On-Campus (Pretoria)	R 68,500.00	**R 68,500.00**

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	26 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	26 Aug 2026	On-Campus	Mauritius
11 Aug 2026	27 Aug 2026	On-Campus	Cape Town, South Africa
12 Aug 2026	28 Aug 2026	On-Campus	Dubai, UAE
13 Aug 2026	31 Aug 2026	On-Campus	Pretoria, South Africa
14 Aug 2026	01 Sep 2026	On-Campus	Abu Dhabi, UAE
17 Aug 2026	02 Sep 2026	On-Campus	Shenzhen, China
18 Aug 2026	03 Sep 2026	On-Campus	Dubai, UAE

Contact us if no suitable date is listed — on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit **www.aaticd.co.za**, open the page for this course (Unit Standard 114286) and click **Get A Quote / Apply**. Select your training method and number of delegates — your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to **apply@aaticd.co.za** — our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically — the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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