

PRINCIPLES OF DAIRY PLANT UTILITIES

ISCED UNIT CODE: 0721 541 06A

TVET CDACC UNIT CODE: DA/CU/PM/CC/02/6/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply principles of Dairy plant utilities

Duration of Unit: 120 hours

Unit Description

This unit specifies the competencies required to apply dairy plant utilities principle. It involves applying unit operations principles, steam generation, refrigeration, pneumatic, waste management and water management principles.

Summary of Learning Outcomes

By the end of this unit, the learner should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Apply steam generation principles	30
2.	Apply refrigeration system principles	20
3.	Apply pneumatic system principles	20
4.	Apply waste management principles	30
5.	Apply water management principles	20
Total		120

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Apply steam generation principles	1.1. Steam generation principles 1.1.1.1. Steam distribution	<ul style="list-style-type: none">• Practical assessment• Oral questioning

	<p>1.1.1.2. Steam utilization</p> <p>1.1.1.3. Steam generation system</p> <p>1.2. Record keeping of steam generation system</p>	<ul style="list-style-type: none"> • Portfolio of evidence • Third party report • Written tests
2. Apply refrigeration system principles	<p>2.1. Refrigeration system</p> <p>2.1.1. Importance in dairy preservation</p> <p>2.1.2. Types</p> <p>2.1.3. Operation</p> <p>2.2. Maintenance of refrigeration system</p> <p>2.3. Chilled water conveyance</p> <p>2.4. Record keeping of refrigeration system</p>	<ul style="list-style-type: none"> • Practical assessment • Oral questioning • Portfolio of evidence • Third party report • Written tests
3. Apply pneumatic system principles	<p>3.1. Pneumatic system operation</p> <p>3.2. Vacuum generation</p> <p>3.3. Utilization of vacuum in machine/equipment</p> <p>3.4. Record keeping of pneumatic system</p>	<ul style="list-style-type: none"> • Practical assessment • Oral questioning • Portfolio of evidence • Third party report • Written tests
4. Apply waste management principles	<p>3.1 Dairy waste segregation</p> <p>3.2 Dairy waste treatment</p> <p>3.3 Analysis of treated dairy waste</p> <p>3.4 Collection, sorting and retail</p> <p>3.5 Processing into raw materials and products</p> <p>3.6 Production of handicrafts and consumer goods</p> <p>3.7 Transforming organic waste into energy and fertilizer</p>	<ul style="list-style-type: none"> • Practical assessment • Oral questioning • Portfolio of evidence • Third party report • Written tests
5. Apply water management principles	<p>5.1 Sources of water</p> <p>5.1.1 Wells</p> <p>5.1.2 Rainfall</p> <p>5.1.3 Rivers</p>	<ul style="list-style-type: none"> • Practical assessment • Oral questioning

	<p>5.1.4 Boreholes</p> <p>5.2 Analysis of water quality</p> <p> 3.3.1 Mineral tests</p> <p> 3.3.2 pH test</p> <p> 3.3.3 Basic water test</p> <p>5.3 Utilization of water</p> <p> 7..1 Water harvesting structures</p> <p> 7..2 Construction of water harvesting structure</p> <p> 7..3 Usage of water</p>	<ul style="list-style-type: none"> • Portfolio of evidence • Third party report • Written tests
--	---	--

Suggested Methods of Delivery

- Practical
- Direct instruction
- Demonstration by trainer
- Practice by the trainee
- Group discussion
- Field trips

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	Learning Materials			
9.	Textbooks		5 pcs	1:5
10.	Production Manuals		5	1;5
11.	PowerPoint presentations	For trainer's use		
12.	Projector		1	1;25
13.	Assorted Flash Cards		5	1;5

14.	Whiteboard		1	1;25
15.	Rolls flip charts		1	1;25
16.	Assorted colour of whiteboard markers	For trainers Use		
B	Learning Facilities & infrastructure			
11.	Lecture/theory room		1	1:25
12.	Workshop		1	1:25
13.	Laboratory		1	1:25
14.	Site/industry		1	1:25
C	Consumable materials			
26.	Molasses		1ltr	1:5
27.	Pollard		2kgs	2:5
28.	Maize bran		2kgs	2;5
29.	Cotton seed cake	easyvet.com	2kgs	2;5
30.	Sunflower seed cake	easyvet.com	2kgs	2;5
31.	Milk /product samples		500ml	500mls:5
D	Tools and Equipment			
36.	Source of heat		5 pcs	1:5
37.	PPES		1pcs	1:1
38.	Feed mixers		1 pcs	1:25
39.	Calculators		1 pcs	1:25
40.	Computers		5 pcs	1:5
41.	Grinders		1pcs	1:25
42.	Pelleting machines		1 pcs	1:25
43.	Feed analysis equipment		1pcs	1:25
44.	Lactometer		5pcs	1:5
45.	Alcohol			

46.	Test tubes		10	10;5
47.	Animal pregnancy testing kits		1	1:5
48.	Semen collection kits		1	1:5
49.	Milking churn		1	1:5
50.	Milking bucket		1	1:5
51.	Udder towel		2	1:5
52.	Milking salve		10g	10g:5
53.	California Mastitis test		1	1:5
54.	Hammer		1	1:5
55.	Nails		1	1:5
56.	Saw		1	1:5
57.	Poles		1	1:5
58.	Slasher		1	1:5