



Australian Government

FBPTEC4004 Apply basic process engineering principles to food processing

Release: 1

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Modification History

Release	Comments
Release 1	This version released with the FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Application

This unit of competency describes the skills and knowledge required to apply the principles of engineered systems and equipment commonly used in the food processing industry. It includes mapping production processes and measuring outputs, including yields and material variances.

The unit applies to individuals who work with systems and equipment used for heat transfer, refrigeration, pumping, evaporation and drying equipment in the food processing industry. They provide solutions to a range of predictable and sometimes unpredictable problems.

No occupational licensing or certification requirements apply to this unit at the time of publication. However, legislative and regulatory requirements for food processing exist, so local requirements must be checked. All work must comply with Australian food safety standards and relevant codes of practice.

Pre-requisite Unit

Nil

Unit Sector

Technical (TEC)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Map a production process	1.1 Identify the scope of a production process for mapping 1.2 Select and use appropriate process mapping symbols 1.3 Develop a map that identifies the relationship of each step in the

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<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	process
2. Calculate yields and efficiencies of a production process	2.1 Identify inputs and outputs of a production processing system 2.2 Collect information required to monitor the performance of a production process 2.3 Calculate yields, efficiencies and material variances
3. Apply principles of fluid flow to a production process	3.1 Identify fluid properties of food that affect flow 3.2 Identify components and related equipment used in a food pumping process 3.3 Identify features of the system design that affect performance of the pumping system 3.4 Identify the effect of pumping on fluid properties 3.5 Establish the operating capacity of pumping systems used in the production process 3.6 Review or establish procedures for the safe use of pumping equipment
4. Apply principles of heat transfer to a production process	4.1 Identify types of heat transfer in a food production process 4.2 Identify methods and related equipment used to transfer heat 4.3 Recognise types of heat transfer media 4.4 Identify and contrast operating principles of cooling, chilling and freezing processes 4.5 Assess effects of heat transfer on product and material properties 4.6 Establish operating capacity of heat transfer equipment used in the production process 4.7 Review or establish procedures for the safe use of heat transfer equipment
5. Apply principles of evaporation to a production process	5.1 Identify methods and related equipment used for controlling evaporation in food processing 5.2 Analyse the effect of evaporation on product and material properties 5.3 Identify tests used to determine the concentration of a liquid 5.4 Establish the operating capacity of evaporation equipment used in the production process

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	5.5 Review or establish procedures for the safe use of evaporation equipment
6. Apply principles of drying to a production process	6.1 Identify methods and related equipment used for drying food 6.2 Assess the effect of drying on product and material properties 6.3 Identify tests used to determine moisture content of materials and products 6.4 Establish operating capacity of drying equipment used in the production process 6.5 Review and establish procedures for the safe use of drying equipment
7. Apply principles of process control to management of production processes	7.1 Locate sensors and instrumentation providing input information to the control system 7.2 Identify consequences of a system malfunction

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Interpret and analyse system specifications and other documentation to determine requirements
Writing	Produce written and diagrammatic documents that convey information about components of food processing and engineered solutions
Numeracy	Perform mathematical calculations to interpret and record complex engineering principles for food production processes
Get the work done	Problem-solve issues as they arise

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPTEC4004 Apply basic process engineering principles to food processing	FDFTEC4004A Apply basic process engineering principles to food processing	Updated to meet Standards for Training Packages Prerequisites removed Minor changes to Performance Criteria for clarity	Equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>