



Australian Government

FBPTEC4007 Describe and analyse data using mathematical principles

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 mathematical principles to analyse and interpret data relating to the properties and production process for food products, using common units of measurement, formulae and mathematical skills.

The unit applies to individuals who provide and communicate solutions to a range of predictable and sometimes unpredictable problems. They take responsibility for their own work and for the quality of others' work within known parameters.

No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.

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. Use common units of measurement and dimensions in calculations for physical properties of materials and food	1.1 Identify International System of Units (SI) and related unit symbols 1.2 Apply common formulae used to measure characteristics of food 1.3 Perform calculations involving fractions and ratios

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
2. Apply linear algebra to analyse workplace information	2.1 Perform linear algebraic calculations to determine unknown values 2.2 Apply principles of transposing values to solve workplace problems
3. Use graphs to analyse workplace information and analyse process control	3.1 Identify data analysis and presentation requirements 3.2 Generate graphs to analyse and display workplace information 3.3 Construct a statistical process control (SPC) chart to measure attributes and variables

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	Read and interpret workplace information to determine the need for mathematical interpretation
Navigate the world of work	Follow the international conventions for units of measurement

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPTEC4007 Describe and analyse data using mathematical principles	FDFTEC4007A Describe and analyse data using mathematical principles	Updated to meet Standards for Training Packages Prerequisites removed Minor changes to Performance Criteria	Equivalent unit

		for clarity	
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Links

Companion Volume Implementation Guides are found in VETNet: -

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

Assessment Requirements for FBPTEC4007 Describe and analyse data using mathematical principles

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Performance Evidence

An individual demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit.

There must be evidence that the individual has accurately described and analysed food processing data and capability using mathematical principles, including each of the following:

- identifying and using the appropriate International System of Units (SI) of measurement
- applying relevant formulae to measure a specific physical characteristic of a food product or processes
- selecting calculation requirements (such as adjusting a recipe formulation) to:
 - select required formulae
 - express the problem as an equation
 - identify the known and unknown values
 - manipulate equations by transposing values as required
 - convert units into compatible formats (i.e. SI units, multiples and sub-multiples)
 - calculate percentages and ratios
 - conduct the calculation to obtain a solution
- calculating standard deviation for a specified set of data, using the correct formula
- constructing a statistical process control (SPC) chart
- identifying mean, median and mode
- identifying upper and lower control limits for a specific food processing scenario
- recording the result in the appropriate units and level of detail.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- SI units of measurement and related unit symbols relevant to the food industry
- the principles of transposing values to solve workplace problems
- relevant formulae to measure physical characteristics of food products or processes

- processes for developing charts and graphs
- variety of calculations to determine unknown values, including:
 - percentages and ratios
 - standard deviation
 - conversion of units into compatible formats
 - target (mean value) for the process
 - upper and lower control limits
 - heat transfer rates
 - pressure
- commonly derived units/measurements, related formulae and their application in a food processing context, including:
 - density and specific gravity
 - viscosity
 - temperature
 - volume, weight and mass
 - vector and scalar quantities
 - velocity
 - other measures as appropriate to a production process.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- resources, equipment and materials:
 - production processing information
 - workplace documentation, including sampling plans
- specifications:
 - control chart formats
 - data collection methods and log sheets.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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