

Title	Describe and apply microbiological fundamentals used in a laboratory in a primary products food processing operation		
Level	3	Credits	5

Purpose	<p>People credited with this unit standard are able to describe: the main types of micro-organisms and their significance; and the major sources of, and methods for minimising, microbial contamination, in a primary products food processing operation.</p> <p>They will also be able to: prepare to conduct microbiological tests in a laboratory; and conduct microbiological tests in a laboratory, in a primary product food processing operation.</p>
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Classification	Primary Products Food Processing > Primary Products Food Processing - Operational Skills
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Available grade	Achieved
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Guidance Information

- Legislation and standards relevant to this unit standard include but are not limited to:
 - Hazardous Substances and New Organisms Act 1996;
 - Health and Safety at Work Act 2015;
 - Health and Safety in Employment Regulations 1995;
 - Resource Management Act 1991;
 - NZS ISO/IEC 17025:2018 *General requirements for the competence of testing and calibration laboratories*; available at <http://www.standards.co.nz> and any subsequent amendments.
- Definitions

Organisational requirements – instructions to staff on policies and procedures which are documented in memo, electronic or manual format and are available in the workplace.

Primary products food processing operation – covers a meat, dairy, seafood, fruit and vegetable and honey processing, food and beverage manufacturing, and other related industries.
- All evidence presented in this unit standard must be in accordance with organisational requirements.

Outcomes and performance criteria

Outcome 1

Describe the main types of micro-organisms and their significance to a primary products food processing operation.

Range micro-organisms include but are not limited to – bacteria, fungi, and virus.

Performance criteria

1.1 Describe micro-organisms in terms of their relationship with food processing.

Range evidence of one example of each micro-organism is required.

1.2 Describe micro-organisms in terms of their effect on product quality.

1.3 Describe the factors that affect growth and survival of micro-organisms in terms of their effect on product quality.

Range factors may include but are not limited to – nutrition, moisture, pH, oxygen, temperature, light, osmotic pressure; evidence of four is required.

1.4 Describe micro-organisms in terms of morphology.

Range size, shape, conformation, spore production, gram +ve and gram -ve.

Outcome 2

Describe the major sources of, and methods for minimising, microbial contamination in a primary products food processing operation.

Range major sources of microbial contamination may include but are not limited to – people, plant, environmental, raw materials.

Performance criteria

2.1 Describe major sources of microbial contamination in terms of their relationship with food processing.

Range evidence of one example of each source is required.

2.2 Describe methods for minimising microbial contamination.

Range evidence of two methods is required.

Outcome 3

Prepare to conduct microbiological tests in a laboratory in a primary products food processing operation.

Performance criteria

- 3.1 Set up microscope in accordance with the manufacturer's specifications.
- 3.2 Carry out media preparation.
Range preparation may include but is not limited to – media, diluents.
- 3.3 Prepare diluents.

Outcome 4

Conduct microbiological tests in a laboratory in a primary products food processing operation, and report non-conformance.

Performance criteria

- 4.1 Conduct microbiological tests.
Range tests may include but are not limited to – swabbing, air sampling, streaking, spreading, pour plate.
- 4.2 Conduct duplicate testing, ensuring microbiological results are within repeatability limits.
- 4.3 Follow up or report any non-conformance.
- 4.4 Record results and calculations.

Replacement information	This unit standard replaced unit standard 4311.
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Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	17 September 2015	31 December 2021
Review	2	24 October 2019	31 December 2024
Reinstatement	3	24 March 2022	N/A

Consent and Moderation Requirements (CMR) reference	0033
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the Hanga-Aro-Rau Manufacturing, Engineering, and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.