

Title	Culture microorganisms		
Level	5	Credits	4

Purpose	People credited with this unit standard are able to: describe growth requirements of microorganisms; grow microorganisms under optimal growing conditions; and maintain culture and stocks.
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Classification	Science > Microbiology
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Available grade	Achieved
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Guidance Information

- All work must be carried out in accordance with the quality management system, documented protocol system or Standard Operating Procedures (SOP) acceptable in a commercial or research laboratory.
- Health and Safety practices must conform to Australian/New Zealand Standard AS/NZS 2243 – *Safety in Laboratories* Parts 1, 2, 3, 7 and 10 available at <http://www.standards.co.nz> and <http://infostore.saiglobal.com/store>.
- Legislation applicable to this unit standard includes:
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.
- Glossary
Laboratory procedures refer to documented systems or processes of operation which may be found in a SOP manual, quality management system, or in protocol system documentation. These procedures are external and/or internal laboratory requirements governing laboratory work.
- Recommended for entry: Unit 8040, *Perform aseptic laboratory techniques*; and Unit 26117, *Work safely in a science laboratory*.

Outcomes and performance criteria

Outcome 1

Describe growth requirements of microorganisms.

Range Death Time, Thermal Death Rate, Decimal Reduction Time.

Performance criteria

- 1.1 The minimal nutrient requirements of selected microorganisms are described in terms of microbial growth.
- 1.2 Complex and chemically defined media are compared in terms of their use for microbial growth.
- 1.3 Types of media are described in terms of culturing microorganisms.
- Range selective media, differential media, enrichment media.

Outcome 2

Grow microorganisms under optimal growing conditions.

Range may include – temperature, pH, water activity, redox potential, light frequency, atmosphere.

Performance criteria

- 2.1 Systems to grow microorganisms are compared in terms of optimal growth.
- Range systems include – steady state, closed.
- 2.2 Culturing of microorganisms is carried out under optimal growing conditions in accordance with laboratory procedures.
- Range culturing includes – broth, plate, slant.
- 2.3 Microorganism population density is monitored in accordance with laboratory procedures.
- Range lag phase, exponential phase, stationary phase.

Outcome 3

Maintain culture and stocks.

Performance criteria

- 3.1 A selected medium is prepared in accordance with laboratory procedures.
- 3.2 A culture medium is inoculated and incubated for optimal growth in accordance with laboratory procedures.
- 3.3 Culture is assessed for purity in accordance with laboratory procedures.

- 3.4 Culture is maintained to ensure viable and pure stocks in accordance with laboratory procedures.

Range stab cultures, glycerol, dimethyl sulfoxide freezing at -20 °C to -80 °C.

Replacement information	This unit standard and unit standard 26110 replaced unit standard 8034.
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Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 2010	N/A
Rollover	2	27 January 2015	N/A
Review	3	27 September 2018	N/A

Consent and Moderation Requirements (CMR) reference	0113
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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 NZQA National Qualifications Services nqs@nzqa.govt.nz if you wish to suggest changes to the content of this unit standard.