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.

Classification	Science > Microbiology

Available grade	Achieved

Guidance Information

1 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.

2 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.

3 Legislation applicable to this unit standard includes:
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.

4 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.

5 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 $^{-}20\ ^{0}C$ to $^{-}80\ ^{0}C$.

Replacement information	This unit standard and unit standard 26110 replaced unit standard 8034.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 May 2010	31 December 2025
Rollover	2	27 January 2015	31 December 2025
Review	3	27 September 2018	31 December 2025
Review	4	30 November 2023	31 December 2025

Consent and Moderation Requirements (CMR) reference	0113

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.