

Title	Demonstrate knowledge of the structure, properties, and functions of amino acids and proteins		
Level	5	Credits	4

Purpose	People credited with this unit standard are able to: describe the chemical structure and properties of amino acids; describe the structure and functions of peptides and proteins; and explain the physical and chemical properties of proteins.
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Classification	Science > Biochemistry
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Available grade	Achieved
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Guidance Information

None.

Outcomes and performance criteria

Outcome 1

Describe the chemical structure and properties of amino acids.

Performance criteria

- 1.1 An L-amino acid is described using a diagram in relation to its structure.
- 1.2 The system for classifying amino acids in relation to proteins is described.
- 1.3 Acid-base dissociation characteristics of amino acids are described in relation to their structure.
- Range characteristics include – isoelectric point, amphoteric, zwitterions.
- 1.4 Procedures for qualitative and quantitative analysis are described for amino acids.
- Range ninhydrin, fluorometric.

Outcome 2

Describe the structure and functions of peptides and proteins.

Performance criteria

- 2.1 Protein structure is described in terms of levels of organisation.
Range primary, secondary, tertiary, quaternary.
- 2.2 Physiological functions of peptides and proteins are described in relation to their structure.

Outcome 3

Explain the physical and chemical properties of proteins.

Performance criteria

- 3.1 Factors affecting protein solubility are explained in terms of their structure.
Range pH, ionic strength, temperature.
- 3.2 Denaturation and its causes are explained in terms of protein structure.
Range temperature, pH, alcohol, surfactants, salts.
- 3.3 Precipitation and its causes are explained in terms of protein structure.
Range temperature, solvent, salt concentration, agitation, pH.
- 3.4 Destructive and non-destructive methods are described in relation to protein determination.
Range two of – biuret, Lowry, UV-absorption, Bradford dye binding, turbidometry.
- 3.5 A method for the determination of amino acid composition is described in relation to proteins.

Replacement information	This unit standard replaced unit standard 8055.
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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	17 September 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>.