

Title	Describe organic structures and synthesise organic compounds		
Level	5	Credits	6

Purpose	People credited with this unit standard are able to: describe the structure and bonding of organic molecules; describe the mechanism of an organic reaction; and carry out the synthesis of organic compounds utilising particular reaction mechanisms.
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Classification	Science > Chemistry
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Available grade	Achieved
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Guidance Information

- 1 All work must be carried out in accordance with the quality management system, documented protocol system or Standard Operating Procedures typically acceptable in a commercial or research laboratory.
- 2 Health and Safety practices must conform to Australian/New Zealand Standard AS/NZS 2243:2010 Set – Safety in Laboratories, available at <http://www.standards.co.nz> and <http://infostore.saiglobal.com/store>.
- 3 Legislation applicable to this unit standard includes:
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.

Outcomes and performance criteria

Outcome 1

Describe the structure and bonding of organic molecules.

Performance criteria

- 1.1 Bonds are described in terms of overlap of atomic orbitals.
- 1.2 Hybrid orbitals are described in terms of structure and bonding.
- 1.3 Organic molecule resonance is described in terms of bonding and structure.

Outcome 2

Describe the mechanism of an organic reaction.

Range may include – nucleophilic, electrophilic and free radical additions, free radical substitution in alkanes, nucleophilic substitution in haloalkanes, elimination.

Performance criteria

- 2.1 Reagent is classified as an electrophile, a nucleophile, or a free radical, and described in relation to reactions.
- 2.2 Intermediates are identified as carbocations, carbanions, or free radicals, and described in relation to reactions.
- 2.3 Mechanistic pathway is described in relation to the reaction.

Outcome 3

Carry out the synthesis of organic compounds utilising reaction mechanisms.

Range may include – free radical addition or sampling, electrophilic addition, S_N1 , S_N2 , E_1 , E_2 ; evidence of one synthesis is required.

Performance criteria

- 3.1 The organic compound is purified and identified as the required product in accordance with reaction mechanisms used.

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	22 December 1996	31 December 2014
Revision	2	19 February 1998	31 December 2014
Review	3	23 November 1999	31 December 2014
Review	4	18 June 2010	31 December 2022
Rollover	5	27 January 2015	31 December 2022
Rollover and Revision	6	15 June 2017	31 December 2022
Revision	7	26 October 2017	31 December 2022
Review	8	22 October 2020	31 December 2022

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>.