

Field Sciences**Review of *Biochemistry, Immunology, Molecular Biology, and Science - Core* unit standards**

Subfield	Domain	ID
Science	Biochemistry	8043-8060
	Immunology	8026, 8031
	Molecular Biology	8061-8070
	Science - Core	8091, 8136, 8442, 8466

NZQA National Qualifications Services (NQS) has completed the review of the unit standards listed above.

Date new versions published

September 2010

Planned review date

December 2015

Summary

Unit standards in the *Biochemistry, Immunology, Molecular Biology, and Science - Core* domains have been reviewed as part of the planned NQS cycle for maintaining standards.

Feedback from users of these unit standards indicated a need to increase the practical component of the unit standards for them to be nationally endorsed and fit for purpose. The review panel met in October and November 2009 and considered feedback. The review panel and consultation network included representation from secondary, tertiary, and industry organisations. Changes were made to the unit standards and distributed for comment in March 2010 and there was no objection to the changes made through this review.

Main changes

- Explanatory notes relating to legislation, references, and ISO standards were updated.
- Credit allocation for unit standards 8059, 8070, and 8466 was increased to better reflect the learning, practice, and assessment time required to achieve the unit standards.
- Credit allocation for unit standards 8044, 8046, and 8050 was decreased to better reflect the learning, practice, and assessment time required to achieve the unit standards.
- Levels of unit standards 8044, 8049, 8050, and 8070 were decreased to better reflect the outcomes of the unit standards.
- Titles of some of the unit standards were amended to better reflect the outcomes in the standards.
- Unit standard 8053 was replaced by unit standards 26487 and 26488.
- Unit standards 8045 and 8047 were replaced by unit standard 26486.
- Unit standards 8061 and 8062 were replaced by unit standard 26493.
- Unit standards 8068 and 8069 were replaced by unit standard 26494.
- Unit standard 8055 was replaced by unit standard 26490.
- Unit standard 8057 was replaced by unit standard 26491.

- Unit standard 8054 was replaced by unit standard 26489.
- Unit standard 8055 was replaced by unit standard 26490.
- Unit standards 8026 and 8031 were replaced by unit standard 26492.
- Unit standards 8048, 8051, 8052, 8056, 8060, 8063, 8064, 8066, 8136, and 8466 were designated expiring and will not be replaced because they no longer meet the needs of industry.

Category C and D unit standards will expire at the end of December 2012

Impact on existing accreditations

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification	Level	Nature of accreditation	ID	Level
Field	Sciences	4	Standard	26486	5
	Sciences	5	Standard	26491	6
Subfield	Science	4	Standard	26486	5
	Science	5	Standard	26491	6
Domain	Biochemistry	4	Standard	26486	5

Impact on Accreditation and Moderation Action Plan (AMAP)

None.

Impact on registered qualifications

Key to type of impact	
Affected	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
Not materially affected	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following NQS qualifications are impacted by the outcome of this review and will be updated when they are reviewed in 2010. The classifications and/or standards that generated the status *Affected* are listed in **bold**.

Ref	Qualification Title	ID
0234	National Diploma in Science (Level 5)	8466
0235	National Diploma in Science (Level 6) with optional strands in Biology, Chemistry, Food Science, Microbiology, and Molecular Biology/Biochemistry	8026, 8046, 8048, 8466

Detailed list of unit standards – classification, title, level, and credits

All changes are in **bold**.

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
C	Major changes that necessitate the registration of a replacement standard with a new ID
D	Standard will expire and not be replaced

Sciences>Science>Biochemistry

ID	Title	Level	Credit	Review Category
8043	Perform spectrophotometric analyses	5	3	B
8044	Describe and perform laboratory centrifugation techniques Perform laboratory centrifugation techniques	5 4	2 1	B
8045	Perform low pressure column chromatography	5	4	C
8047	Perform paper and thin layer chromatography	4	3	C
26486	Perform paper, thin layer, and column chromatography	5	4	
8046	Perform high pressure liquid chromatography	6	4 3	B
8048	Work with unsealed radioisotopes	6	4	D
8049	Precipitate a protein and perform a dialysis	5 4	2	B
8050	Perform electrophoresis	6 5	6 3	B
8051	Carry out disruption techniques on cells	5	3	D
8052	Determine protein concentration in solution	5	2	D
8053	Determine the kinetic parameters of enzymes	5	4	C
26487	Explain the characteristics of enzymes	5	3	
26488	Determine enzyme activity	5	4	
8054	Demonstrate knowledge of the structure, function, and metabolism of lipids	5	6	C
26489	Demonstrate knowledge of the structure and function of lipids	5	4	
8055	Demonstrate knowledge of the structure, properties, functions, and metabolism of amino acids and proteins	5	6	C
26490	Demonstrate knowledge of the structure, properties, and functions of amino acids and proteins	5	4	
8056	Demonstrate knowledge of carbohydrate structure and properties	5	2	D
8057	Discuss the metabolism of carbohydrates	5	4	C
26491	Discuss the cellular metabolism of glucose, amino acids, and fatty acids	6	6	
8058	Demonstrate knowledge of plant biochemistry	6	6	B
8059	Demonstrate knowledge of animal biochemistry	6	4 6	B

ID	Title	Level	Credit	Review Category
8060	Demonstrate knowledge of endocrinology	6	3	D

Sciences> Science> Immunology

ID	Title	Level	Credit	Review Category
8026	Perform agglutination, precipitation and immunological procedures	6	3	C
8031	Demonstrate knowledge of immunology	6	5	C
26492	Demonstrate and apply knowledge of the immune system	6	6	

Sciences> Science> Molecular Biology

ID	Title	Level	Credit	Review Category
8061	Purify Deoxyribonucleic Acid (DNA)	6	2	C
8062	Purify Ribonucleic Acid (RNA)	6	4	C
26493	Purify Nucleic Acids	6	4	
8063	Perform a nucleic acid blotting technique	6	4	D
8064	Demonstrate knowledge of nucleic acid structure and properties	5	2	D
8065	Perform a restriction enzyme digestion	6	3	B
8066	Introduce Deoxyribonucleic Acid (DNA) into bacteria	6	4	D
8067	Perform a polymerase chain reaction (PCR)	6	3	B
8068	Demonstrate knowledge of gene cloning and analysis	6	2	C
8069	Demonstrate knowledge of gene transfer techniques	6	2	C
26494	Demonstrate knowledge of recombinant DNA techniques	6	4	
8070	Demonstrate knowledge of gene structure, replication, and expression	6 5	4 5	B

Sciences>Science>Science - Core

ID	Title	Level	Credit	Review Category
8091	Use and maintain a light microscope	4	2	B
8136	Plan and manage a science field trip	5	4	D
8442	Demonstrate knowledge of sampling for laboratory analysis	4	2	D
8466	Demonstrate competence in principles of laboratory measurement and recording Demonstrate competent use of principles of laboratory measurement and recording procedures	4 4	3 4	B