Field   Sciences

Review of *Mathematics* and *Statistics and Probability* unit standards

Subfield	Domain	ID
Mathematics	Algebra	11102, 11106, 11107, 11108, 11112, 11117, 12337-12345
	Calculus	11104, 11105, 11109, 11110, 11111, 11113-11116
	Geometry	5269
	Mathematical Studies	7566
	Trigonometry	11103
Statistics and Probability	Probability	12347
	Statistics	5271, 7562, 11118, 11120-11130, 12335

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

Summary

The standards have had minimal usage since their registration.

There is no identified need to replace any of the standards in view of the current and future developments in the educational and vocational environments for the recognition for mathematical and statistical knowledge and skills.

Representatives from tertiary education organisations, industry, secondary schools, and the New Zealand Association of Mathematics Teachers recommended that these standards be designated expiring and not replaced due to very low and dwindling usage and the development of other assessment methods and tools for assessing mathematical knowledge and skills that are more applicable to workplace environments and candidates' needs.

Category D unit standards will expire at the end of December 2013

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 table identifies a qualification developed by another SSB that is impacted by the outcome of this review. The SSB has been advised that the qualification requires revision.

Ref	Qualification Title	Classification or ID	SSB Name
0453	National Diploma in Surveying (Level 6) with an optional strand in Mine Surveying	5269, 11102, 11104,11105, 11106, 11107, 11109	InfraTrain New Zealand

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

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 > Mathematics > Algebra

ID	Title	Level	Credit	Review Category
11102	Use algebraic formulae, equations and graphs to solve problems	4	3	D
11106	Use the properties of vectors to solve physical problems	5	2	D
11107	Use determinants and matrices to solve problems that can be modelled by systems of linear equations	5	2	D
11108	Use the graphs and properties of hyperbolic functions to solve problems	5	1	D
11112	Use functions of complex variables to solve problems	6	2	D
11117	Use financial mathematical methods to solve problems	5	2	D
12337	Demonstrate understanding of function properties and apply them to sinusoids and other wave forms	5	2	D
12338	Use power series, hyperbolic functions and functions of a complex variable to solve problems	6	4	D
12339	Use complex algebra to solve problems in ac circuits	5	3	D
12340	Analyse electrical networks using matrix algebra	5	4	D

ID	Title	Level	Credit	Review Category
12341	Graph functions using two dimensional polar coordinates and use three dimensional coordinate systems	5	1	D
12342	Find continuous and discrete Fourier transforms for simple functions and interpret the result	6	3	D
12343	Model simple circuits as differential equations, solve and interpret the solutions	6	5	D
12344	Use Boolean algebra to set up, simplify and interpret logical expressions	4	3	D
12345	Apply mathematical methods to an application of electrical engineering	6	2	D

Sciences > Mathematics > Calculus

ID	Title	Level	Credit	Review Category
11104	Use integration techniques to model and solve problems	4	3	D
11105	Use differential equations to model, solve and interpret physical situations	4	3	D
11109	Represent functions by power series to solve problems	5	2	D
11110	Use methods of multivariate calculus to solve problems involving functions of up to three variables	6	3	D
11111	Solve problems using further methods of integration	6	3	D
11113	Use first and second order differential equations to solve problems	6	2	D
11114	Use Laplace transform methods to solve differential equations	6	2	D
11115	Find Fourier series for periodic functions and discuss applications	6	2	D
11116	Find Fourier transforms for non-periodic functions	6	1	D

Sciences > Mathematics > Geometry

ID	Title	Level	Credit	Review Category
5269	Apply mathematics to conic sections and other curves	4	4	D

Sciences > Mathematics > Mathematical Studies

ID	Title	Level	Credit	Review Category
7566	Carry out a mathematical research project	4	3	D

Sciences > Mathematics > Trigonometry

ID	Title	Level	Credit	Review Category
11103	Use graphs of trigonometric functions and trigonometric equations to solve problems	4	2	D

Sciences > Statistics and Probability > Probability

ID	Title	Level	Credit	Review Category
12347	Use the Gaussian probability density function in noise analysis	6	2	D

Sciences > Statistics and Probability > Statistics

ID	Title	Level	Credit	Review Category
5271	Identify features of, and evaluate, statistical reports	4	2	D
7562	Carry out a statistical research project	4	3	D
11118	Apply basic principles of experimental design for experiments which involve statistical analysis	4	3	D
11120	Investigate and report on relationships between pairs of categorical variables	5	3	D
11121	Use Exploratory Data Analysis on data sets with several variables	5	3	D
11122	Explain sampling distributions and estimate population parameters from large simple random samples	4	3	D
11123	Make point estimates from population parameters using small samples and find confidence intervals	4	3	D
11124	Carry out hypothesis tests on single variables and on comparisons of two variables	5	3	D
11125	Carry out non-parametric hypothesis tests	5	2	D
11126	Design and report on a survey which uses simple random sampling methods	5	3	D
11127	Design simple, stratified and cluster sampling schemes to form estimates of population parameters	5	3	D
11128	Explore time series for trend, and, seasonal and residual variation	5	3	D
11129	Calculate, use and interpret index numbers	5	3	D
11130	Use statistical quality assurance techniques in given situations	5	3	D
12335	Use hypothesis testing on means or proportions and draw conclusions	4	3	D