Achievement Standard

Subject Reference	Science 1.3				
Title	Describe aspects of biology				
Level	1	**Credits**	5	**Assessment**	External
Subfield	Science				
Domain	Science – Core				
Registration date	21 October 2003	**Date version published**	21 October 2003		

This achievement standard involves describing aspects of biology.

Note: A student cannot use credit for both this achievement standard and AS90163, Biology 1.3 or AS90168, Biology 1.8, towards a national qualification including a National Certificate of Educational Achievement.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Describe aspects of biology.	• Explain aspects of biology.	• Discuss aspects of biology.

Explanatory Notes

1 This achievement standard is derived from *Science in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1993, p. 64; *Biology in the New Zealand Curriculum,* Learning Media, Ministry of Education, 1994, p.14; and *Pūtaiao i roto i te Marautanga o Aotearoa,* Learning Media, Ministry of Education, 1996, 'Ō Mataora: Te Waonui', p. 28–29.

2 *Aspects of biology* will be selected from:

- Micro-organisms:
  - structure of bacteria, fungi and viruses
  - culturing micro-organisms
  - life processes of micro-organisms: nutrition, growth, respiration (aerobic and anaerobic), reproduction and excretion by bacteria and fungi, and reproduction of viruses

- effects of micro-organisms on nutrient recycling, food production, disease in living things
- manipulation of factors that can affect the life processes of micro-organisms including temperature, moisture, nutrients, pH and oxygen availability.
  The student will be expected to be familiar with the following terms associated with micro-organisms: inoculate, extracellular digestion, enzyme, pathogen, saprophyte, aerobic, anaerobic, hyphae, spores, sporangium, toxin, disinfectant, and antibiotic.

- Transfer of genetic information:
  - the roles of, and the relationship between, chromosomes, genes, alleles and DNA
  - the purpose of mitosis and meiosis, where they occur and the effect on chromosome number (note: the names of stages are not required)
  - simple monohybrid inheritance patterns showing complete dominance, sex determination, possible genotypes, and phenotype ratios
  - a contemporary application of genetics. Questions will be resource based. The context will be selected from selective breeding, cloning or genetic modification.
    The student will be expected to be familiar with the following genetic terms: gamete, zygote, dominant, recessive, homozygous, heterozygous, pure breeding, Punnett square, and pedigree chart.

3 Terms:
- *Describe* requires the student to recognise, name, draw, give characteristics of or an account of.
- *Explain* requires the student to provide a reason as to how or why something occurs.
- *Discuss* requires the student to show understanding by linking scientific ideas. It may involve students in justifying, relating, evaluating, comparing and contrasting, analysing.

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against achievement standards.

2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference 0226