

## Achievement Standard

<b>Subject Reference</b>	Generic Technology 2.12				
<b>Title</b>	Demonstrate understanding of advanced concepts used in manufacturing				
<b>Level</b>	2	<b>Credits</b>	4	<b>Assessment</b>	Internal
<b>Subfield</b>	Technology				
<b>Domain</b>	Generic Technology				
<b>Status</b>	Registered	<b>Status date</b>	17 November 2011		
<b>Planned review date</b>	31 December 2019	<b>Date version published</b>	17 November 2016		

This achievement standard involves demonstrating understanding of advanced concepts used in manufacturing.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Demonstrate understanding of advanced concepts used in manufacturing.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of advanced concepts used in manufacturing.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of advanced concepts used in manufacturing.</li> </ul>

### Explanatory Notes

- This achievement standard is derived from Level 7 of the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at <http://seniorsecondary.tki.org.nz>.

Further information can be found at <http://www.technology.tki.org.nz/>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Ministry of Education at <http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education>, and the Health and Safety at Work Act 2015.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- 2 *Demonstrate understanding of advanced concepts used in manufacturing* involves:
- explaining how safety issues were addressed in a manufacturing process
  - identifying the impacts of new technologies and/or techniques on the suitability of different types of manufacturing systems and increased possibilities for quality control
  - identifying the influences of customer, social and environmental drivers on priorities within a manufacturing process.

*Demonstrate in-depth understanding of advanced concepts used in manufacturing* involves:

- explaining how quality management techniques have impacted on a manufacturing process.

*Demonstrate comprehensive understanding of advanced concepts used in manufacturing* involves:

- discussing how and why quality management techniques have been important in changing manufacturing practices.

- 3 Safety issues in manufacturing include those associated with the outcome, the workers involved in its production, and environmental impacts.
- 4 New technologies and/or techniques may include but are not limited to: computer numerical controlled (CNC) machine tools, electronics assemblies, programmable logic control (PLC), Supervisory Control and Data Acquisition (SCADA) control systems, and force field analysis.
- 5 Types of manufacturing systems include but are not limited to:
- one-off custom manufacturing of a unique single product
  - batch, intermittent or short-run manufacturing - multiple copies of the same product or a single batch of a processed product
  - continuous (often called 'assembly line') manufacture
  - flexible manufacture and customisation.
- 6 Quality management techniques may include but are not limited to Total Quality Management (TQM) and Six Sigma.
- 7 Manufacturing processes may include but are not limited to: milk powder manufacture, beer brewing, meat packing and freezing, carpet manufacture, urea from natural gas, newsprint, oil refining, injection moulded plastics, electronics, fish filleting and freezing, rotationally moulded plastics, superphosphate, agricultural machinery, possum and merino yarn, marine/leisure products, niche furniture and garment manufacture.
- 8 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

**Quality Assurance**

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233