Title	**Demonstrate knowledge of fits, limits, and tolerances in engineering**		
Level	**3**	**Credits**	**2**

Purpose	People credited with this unit standard are able to – explain fits, limits and tolerances as used in engineering; and interpret tolerances as displayed on engineering drawings.

Classification	Mechanical Engineering > Engineering - Measurement

Available grade	Achieved

Explanatory notes

1 References
BS EN ISO 286-1:2010, *Geometrical product specifications (GPS). ISO code system for tolerances on linear sizes. Basis of tolerances, deviations and fits.*
BS EN ISO 286-2:2010, *Geometrical product specifications (GPS). ISO code system for tolerances on linear sizes. Tables of standard tolerance classes and limit deviations for holes and shafts.*

2 Assessment information
– Drawings of fully dimensioned and toleranced components must be available.
– Candidates may refer to tables of limits and fits.
– Evidence provided must be in accordance with the references.

Outcomes and evidence requirements

Outcome 1

Explain fits, limits and tolerances as used in engineering.

Evidence requirements

1.1 The term fit is explained in engineering use.

1.2 The differences between clearance fit, interference fit, and transition fit are explained and an example of each given.

1.3 The terms limit and tolerance are explained in terms of their use and significance in engineering.

Range use and significance – component fit and function, inter-changeability of components, ease of manufacture, economic production.

Outcome 2

Interpret tolerances as displayed on engineering drawings.

Evidence requirements

2.1 Tolerances displayed on engineering drawings of single parts are interpreted in terms of dimensional limits.

2.2 Tolerances displayed on engineering drawings of mating parts are interpreted in terms of dimensional limits, and the type of fit identified.

Planned review date	31 December 2022

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 May 1995	31 December 2011
Revision	2	14 April 1997	31 December 2011
Revision	3	5 January 1999	31 December 2011
Revision	4	23 May 2001	31 December 2011
Review	5	21 February 2005	31 December 2014
Review	6	17 June 2011	31 December 2021
Review	7	16 March 2017	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Please note
Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMRs). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.