

<b>Title</b>	<b>Demonstrate basic engineering workshop skills under close supervision</b>		
<b>Level</b>	<b>1</b>	<b>Credits</b>	<b>12</b>

<b>Purpose</b>	<p>This unit standard covers introductory engineering workshop skills under close supervision, and is intended mainly for use in secondary schools.</p> <p>People credited with this unit standard are able to: demonstrate basic knowledge of engineering workshop tools, processes, fixed machine tools, and surface finishing technique; use and take care of basic engineering workshop tools and equipment; use basic engineering workshop fixed machine tools; and measure machined components and compare with specifications, and give reasons for any variation</p>
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<b>Classification</b>	Mechanical Engineering > Mechanical Engineering Technology
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<b>Available grade</b>	Achieved
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### Explanatory notes

- 1 References
 

Health and Safety at Work Act 2015 and supporting regulations.  
*Safety in Technology Education: A Guidance Manual for New Zealand Schools.*  
 Wellington: Learning Media Limited, 2014. Available at  
<http://technology.tki.org.nz/Technology-in-the-NZC/Safety-in-Technology-Education>.
- 2 Definitions
 

*Close supervision* should be interpreted to mean that the teacher or supervisor is present in the workshop at all times to guide and monitor workshop activities.  
*MIG* – refers to Metal Inert Gas welding.  
*MMAW* – refers to Manual Metal Arc Welding.  
*Sound techniques in the use of tools, equipment, and machine tools* refers to techniques as used in the trade, and typically includes using the correct tool for the job, handling technique, work stance, use of work holding devices, and tool maintenance.  
*TIG* – refers to Tungsten Inert Gas welding.
- 3 Range
  - a examples of engineering materials – ferrous, non ferrous, plastic.
  - b examples of cutting tools – hacksaw, chisels, files, hole punches, tin snips, bench shears, drills, taps, dies.
  - c examples of marking out tools – rules, scribe, dot punch, centre punch, dividers, odd leg callipers, engineers square.

- d examples of engineering measurement tools – callipers, dividers, rules, micrometers, vernier callipers.
  - e examples of joining processes – spot welders, MMAW, MIG and TIG welders, oxygen/acetylene plant, bolts and nuts, screws, rivets, pop rivets.
  - f examples of fixed machine tools – milling machines, drilling machines, lathes.
  - g examples of surface finishing techniques – abrasive paper/cloth, metal blueing, plastic coating, painting.
- 4 Assessment information
- a It is recommended that outcomes 2 and 3 are assessed by means of simple practical engineering projects for which the candidate is given appropriate specifications.
  - b Assessor resource materials are available from Competenz by registering at <http://www.tools4work.co.nz>. A log-in is required to access the resources.

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## Outcomes and evidence requirements

### Outcome 1

Demonstrate basic knowledge of engineering workshop tools, processes, fixed machine tools, and surface finishing technique.

#### Evidence requirements

- 1.1 Cutting tools are identified and their principles of operation outlined.  
Range evidence of five cutting tools is required.
- 1.2 Marking out tools are identified and their principles of operation outlined.  
Range evidence of five marking out tools is required.
- 1.3 Engineering measuring tools are identified and principles of operation outlined.  
Range evidence of three engineering measuring tools is required.
- 1.4 Joining processes are identified and their principles of operation outlined.  
Range evidence of three joining processes is required.
- 1.5 Basic workshop fixed machine tools are identified and principles of operation outlined.  
Range evidence of three basic workshop machines is required.
- 1.6 One surface finishing technique is identified and its principle outlined.

### Outcome 2

Use and take care of basic engineering workshop tools and equipment.

Range evidence of use of at least two materials, three cutting tools, three marking out tools, two measuring tools, two joining processes, and one finishing technique is required.

### Evidence requirements

- 2.1 Use of tools and equipment demonstrates sound techniques in basic workshop applications.
- 2.2 Use of tools and equipment demonstrates safe working practices.
- 2.3 Workshop equipment, tools, and workpieces are cleaned and returned to their correct place of storage.

### Outcome 3

Use basic engineering workshop fixed machine tools.

Range evidence of the use of a drill press and one other fixed machine tool is required.

### Evidence requirements

- 3.1 Use of machine tools demonstrates sound techniques in basic machining applications.
- 3.2 Use of machine tools demonstrates safe working practices.

### Outcome 4

Measure machined components and compare with specifications, and give reasons for any variation.

### Evidence requirements

- 4.1 Machined components are measured and compared with the specifications, and reasons given for any variation.

<b>Planned review date</b>	31 December 2021
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### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 July 2006	31 December 2018
Rollover and Revision	2	17 November 2011	31 December 2018
Review	3	17 November 2016	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0013
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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 (CMR). 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.

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**Comments on this unit standard**

Please contact Competenz [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.