Application Pack

New Zealand Certificate in Mechanical Engineering (Trade) (Level 4)

With strands in Fitting and Machining, General Engineering, Machining, Maintenance Engineering, and Toolmaking

(NZ2714) 280-300 credits, version 1

Your Experience: Our Qualifications

About the New Zealand Certificate in Mechanical Engineering (Trade)

This qualification recognises the skills required to safely and independently perform engineering tasks within a chosen engineering trade discipline, to industry standards. Specific roles for each of the strands may include:

- Fitting and Machining strand - Fitter Turner, Fitter
- General Engineering strand - General Engineer
- Machining strand - Machinist
- Maintenance Engineering strand - Maintenance Engineer, Heavy Industrial Engineer, e.g. marine/rail/electrical
- Toolmaking strand - Toolmaker, Die Maker, Mould Maker

English Language

If English is not your first language, you may also be required to provide evidence of your English language skills as listed below. If you have no evidence of your English language skills and are a New Zealand citizen, resident or permanent resident, contact us.

• **IELTS 5.5 Academic** (no lower than 5.5 in any subtest).

This level of English is essential. If you are international and can demonstrate to us that your English is above this level we may accept you for assessment without an IELTS test.

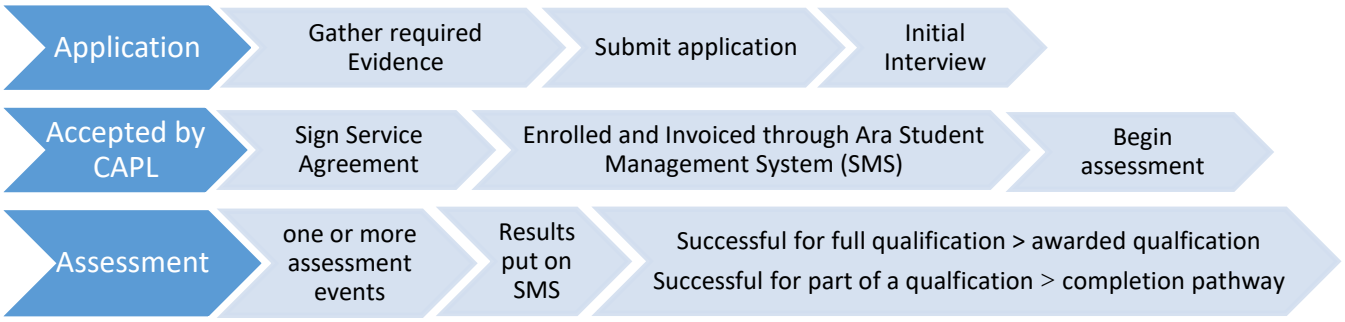
About assessment

To achieve the New Zealand Certificate in Mechanical Engineering (Trade), Level 4 plus one strand you need to match all the outcomes of the graduate profile (page 4) for this qualification. This graduate profile is the knowledge and skills a student is expected to show after successfully completing an apprenticeship in this industry. To show that you have the required knowledge and skills our assessor will ask you questions, at least partially based on evidence you provide, during a series of meetings. He may visit you at your work, and may ask you to demonstrate skills if you have no other evidence. Assessment is integrated; the questions asked and practical demonstrations and workplace visit required will allow our assessor to judge whether you have achieved the graduate profile outcomes being assessed.

After your application is received, you will be contacted within the following fortnight for an initial interview with an assessor to discuss your application. If your application is accepted, you will be sent a service agreement. If you accept this, the assessor will contact you to work out an assessment schedule with you.

Assessment for the whole qualification usually takes 3-6 months. Should you fail any part of any assessment, you may need to undergo further assessment, or enrol in a course of study. Any costs associated with this are additional. If we consider

Summary of Process



Fee

The cost of assessment for the full qualification (one strand) in 2019 is $2346.00. Any fees for enrolments required due to gaps in knowledge and skills are additional and not part of the CAPL process.

Fixed discounts may be available if evidence is provided of having already achieved a significant number of mechanical engineering unit standards or having achieved other relevant qualifications (with similar content).

International Students must pay in full within 30 days of receiving an Invoice from Ara; residents and New Zealand citizens have the option of paying by regular instalment (following a successful credit check).

Graduate Profile Evidence Requirements

Graduates of this qualification will be able to:

1. Apply an understanding of the relevant Health and Safety legislation and workplace safety culture in order to work safely and meet responsibilities in a commercial mechanical engineering environment
2. Interpret drawings and/or specifications and select and use the appropriate materials, processes, tools and equipment for the mechanical engineering task being undertaken
3. Apply knowledge of relevant engineering principles and practices, and problem solving skills, to perform engineering tasks to industry standards
4. Apply an understanding of effective and efficient processes and principles, and quality systems to the production of components and/or provision of services in a commercial mechanical engineering environment
5. Practise effective communication within a mechanical engineering team and the wider workplace
6. Recognise the limits of own ability and the importance of working with integrity and maintaining currency in the mechanical engineering field

Graduates of the *Fitting and Machining* strand will also be able to:

- Build and install complex machines where both precision fitting and machining skills are required

Graduates of the *Machining* strand will also be able to:

- Plan, sequence, and machine complex engineering components to a high degree of tolerance and finish, using current and relevant machining technologies and techniques

Graduates of the *General Engineering* strand will also be able to:

- Build, maintain, and repair a broad range of machinery and equipment using fitting, machining, fabrication, hydraulics, pneumatics, and welding skills and knowledge

Graduates of the *Maintenance Engineering* strand will also be able to:

- Apply knowledge of maintenance engineering strategies and practices to monitor, inspect, maintain and repair facilities or plant and equipment.

Graduates of the *Toolmaking* strand will also be able to:

- Apply knowledge of tool design and function to manufacture tooling for relevant industrial processes, using current and relevant manufacturing technologies and techniques

If you choose more than one strand, the fee will be higher than that listed above for a single strand qualification.

Specific Evidence Requirements Tables

Please look through all the tables below first before beginning to outline your evidence. These completed tables form part of your application.

For each graduate outcome on the following pages please:

A. Tick the boxes for the outcome requirements you know or have skills in, and can provide evidence for.

B. In the *Evidence you can provide* column, write the number equivalent to the type of evidence you can give for each **outcome requirement** from the numbers below (use as many numbers (types of evidence) as you can).

1	*Talk about this with the assessor*	**2**	*Provide written or photo evidence*	**3**	*Provide proof from an employer*	**4**	*Demonstrate this*

For example for Outcome 2, 1st requirement: ***Can you:*** ☐ ***Produce and read engineering sketches*** you might put 1, 2, 3, 4 ***or*** 1, 4, or another combination.

Be prepared to supply your supporting evidence. The same evidence can be used for more than one outcome. This evidence can include relevant courses undertaken and workplace responsibilities (e.g. Site Safe Passport, Health and Safety officer, welding ticket/procedure), photos, employer attestations/references, etc.

Graduate Profile Outcomes	**Evidence you can provide**
1. Apply an understanding of Health and Safety legislation and workplace safety	
Do you: ☐ Explain your own responsibilities in the workplace under relevant current Acts and Regulations ☐ Explain why and how you guard machines ☐ Work safely and contribute to a safe workplace ☐ Explain how to identify, assess and control hazards; and isolate, report on, and audit machines ☐ Explain what Personal Protective Equipment (PPE) is and what PPE is required by your industry	
2. Interpret drawings and/or specifications & select and use appropriate materials, processes, tools and equipment	
Can you: ☐ Produce and read engineering sketches ☐ Produce and read simple component drawings ☐ Explain limits and fits, and geometrical tolerancing ☐ Calculate and use mechanical engineering units of measurement (Metric) ☐ Plan a job – process analysis, sequence, risk assessment, job costing, best materials to use, ergonomics, understand how objects fit together in 3D ☐ Explain the composition and characteristics of engineering materials (including where you would find this information if you work with a new material) ☐ Choose available and appropriate process/tools/ equipment to suit, material, plan, etc ☐ Provide an overview of manufacturing processes **Although not required you may also be able to provide evidence of:** ☐ Using Basic Computer Aided Design (CAD) ☐ Understanding Computer Numerical Control (CNC) machines ☐ Using marking out equipment	

Graduate Profile Outcomes	Evidence you can provide
1. Apply relevant engineering principles and practices, and problem solving skills	
Can you: ☐ Apply calculations and measurements ☐ Use tools and equipment correctly ☐ Monitor condition and safety of tools and equipment ☐ Undertake basic fault finding and root cause analysis ☐ Explain damage minimisation ☐ Select and inspect simple lifting appliances, sling and secure loads, and carry out lifting procedures ☐ Carry out all work efficiently and according to specifications ☐ Self-inspect and understand Non Destructive Testing ☐ Calibrate measuring equipment ☐ Interpret relevant standards	
2. Apply an understanding of effective and efficient processes and principles, and quality systems to the production of components and/or provision of services	
Can you: ☐ Explain different quality system models, e.g. lean manufacturing ☐ Identify and eliminate wasteful processes ☐ Apply the concepts of continuous improvement ☐ Explain quality control ☐ Explain process planning ☐ Deliver in full, on time and to specifications	
3. Practise effective communication within a mechanical engineering team and the wider workplace	
Can you: ☐ Confirm and clarify instructions ☐ Explain the importance of completing workplace documentation ☐ Communicate with teammates, customers, supervisors, other management (including awareness of other cultures and languages in the workplace). ☐ Communicate health and safety matters	
4. Recognise the limits of own ability and the importance of working with integrity and maintaining currency in the mechanical engineering field	
Can you: ☐ Work to an acceptable standard for a tradesperson ☐ Seek advice or guidance when required ☐ Show an understanding of alternative manufacturing and engineering processes **Although not required you may also be able to provide evidence of:** ☐ Showing continual/lifelong learning and knowledge acquisition ☐ Showing you research new technology, processes, practices, equipment	

STRANDS – choose one *(you may choose more, but additional fees apply)*

FITTING AND MACHINING STRAND	
Graduate Profile Outcomes	**Evidence you can provide**
Build and install complex machines where both precision fitting and machining skills are required	
Can you: ☐ Demonstrate precision fitting and machining skills ☐ Manufacture and /or assemble components and equipment ☐ Align components to close tolerances **You will also need to show evidence for 2 additional areas of skill; choose at least 1 from <u>each</u> of the two sections below:** ☐ Have advanced knowledge of fluid power installations and preventative maintenance technologies. ☐ Project of your choice showing advanced Fitting & Machining skills ☐ Use mathematical skills, concepts and understandings to perform calculations and solve problems within engineering contexts. ☐ Use Computer Aided Manufacturing (CAM) software packages including managing CAD/CAM data exchange and integration through multiple software applications and formats.	
☐ Apply advanced operational knowledge of engineering principles in the workplace ☐ Operational and theoretical knowledge of planning and conducting site installations including, rigging and the use of mobile and fixed platforms. ☐ Strand Based positional welding ☐ Pressure vessel and pipework (welding, joining, testing, etc)	

MACHINING STRAND	
Graduate Profile Outcomes	**Evidence you can provide**
Plan, sequence, and machine complex engineering components to a high degree of tolerance and finish using current and relevant machining technologies and techniques	
Can you: ☐ Undertake precision machining and achieve relevant fits, tolerances and finishes ☐ Produce finished component(s) to customer requirements, from a CAD model ☐ Program, set and operate CNC machines and set and operate other machine tools ☐ Plan and sequence for a highly efficient operation (production runs) ☐ Use specialized tooling, cutting technology and equipment **You will also need to show evidence for 2 additional areas of skill; choose from the list below:** ☐ Use mathematical skills, concepts and understandings in order to perform calculations and solve problems within engineering contexts. ☐ Use Computer Aided Manufacturing (CAM) software packages including managing CAD/CAM data exchange and integration through multiple software applications and formats. ☐ Use advanced manual high precision machining and measuring strategies for high precision applications.	

GENERAL ENGINEERING STRAND	
Graduate Profile Outcomes	**Evidence you can provide**
Build, maintain, and repair a broad range of machinery and equipment using fitting, machining, fabrication, hydraulics, pneumatics, and welding skills and knowledge	
Do you: ☐ Have relevant fitting and welding skills ☐ Have general machining skills ☐ Have general fabrication skills ☐ Have knowledge of fluid power systems and their applications ☐ Undertake general maintenance and repair of machinery and equipment ☐ Align components to close tolerances **You will also need to show evidence for 2 additional areas of skill; choose at least 1 from <u>each</u> of the two sections below:** ☐ Have advanced knowledge of fluid power installations and preventative maintenance technologies. ☐ Use mathematical skills, concepts and understandings to perform calculations and solve problems within engineering contexts. ☐ Operational and theoretical knowledge of planning and conducting site installations including, rigging and the use of mobile and fixed platforms. ☐ Pressure vessel and pipework (welding, joining, testing, etc)	

MAINTENANCE ENGINEERING STRAND	
Graduate Profile Outcomes	**Evidence you can provide**
Apply knowledge of maintenance engineering strategies and practices to monitor, inspect, maintain and repair facilities or plant and equipment.	
Can you: ☐ Read and interpret complex drawings and schematics ☐ Show your understanding of, and can select and apply, appropriate current maintenance techniques and strategies for your industry ☐ Monitor, inspect and maintain, and repair a range of industrial plant and equipment, ensuring reliability ☐ Contribute to the identification of opportunities for continuous improvement **You also need to show evidence for 2 additional areas of skill; choose from the list below:** ☐ Use mathematical skills, concepts and understandings in order to perform calculations and solve problems within engineering contexts. ☐ Apply advanced operational knowledge of engineering principles in the workplace. ☐ Operational and theoretical knowledge of planning and conducting site installations including, rigging and the use of mobile and fixed platforms.	

TOOLMAKING STRAND	
Apply knowledge of tool design and function to manufacture tooling for relevant industrial processes, using current and relevant manufacturing technologies and techniques	
Can you: ☐ Explain relevant precision machining processes ☐ Explain 3D modelling technology ☐ Apply knowledge of fits and tolerances to the tool and end product ☐ Produce a finished tool to customer requirements, from a CAD model ☐ Program, set and operate CNC machines and set and operate other machine tools ☐ Explain material properties and their treatments (including where you would find this information if you work with a new material) ☐ Explain the end use of the tool, including component materials ☐ Can program the sequence of mould/tool development and manufacture ☐ Explain how objects fit together in 3D ☐ Undertake precision fitting (hand skills) **You also need to show evidence for 2 additional areas of skill; choose from the list below:** ☐ show mathematical skills, concepts and understandings in order to perform calculations and solve problems within engineering contexts. ☐ Use Computer Aided Manufacturing (CAM) software packages including managing CAD/CAM data exchange and integration through multiple software applications and formats. ☐ Use advanced manual high precision machining and measuring strategies for high precision applications.	

Application checklist

Please email your application to capl@ara.ac.nz or post it to:

CAPL
Academic Innovation & Research
Ara
PO BOX 540
Christchurch 8140

How do I apply?
To make a CAPL application you need to send us:

YourChecklist

1. **Your completed application form** ☐
2. **Your summary of evidence tables** ☐
3. **Your current and detailed Curriculum Vitae (CV) or work history** which should contain: ☐
   - Relevant work history including your positions, tasks and responsibilities
   - Formal qualifications eg school, polytechnic, university, trade certificates
   - Informal qualifications eg 'in house' workplace training workshops
   - Relevant life experience or transferable skills

Your CV format may be quite different from this. Please use whatever format is understood by your industry but in depth enough to show your level of skills and knowledge for the qualification you are applying for.

4. **If you are an employee within a company please supply us with an attestation* from your current employer** and, if possible, employers you've worked for over the past five years. We will need to be able to contact your employer/s to verify this evidence.
   OR ☐
   If you are self-employed please supply us with attestations* from two or more people or companies you work with, or for. We will need to be able to contact your attesters to verify this evidence.

   **An attestation is a letter or email where the writer is certifying (attesting) that they personally witnessed or know something to be true. Each attestation we require must tell us:*
   - *the nature of the job/work that you worked on*
   - *when and where it was carried out (for example: 12 residential builds in Canterbury from 2014 -2017)*

   and can include:
   - *the quality of the completed job/work*
   - *your performance*

5. **Identification documents** ☐
   Bring with you to the initial interview your birth certificate or passport proving your identity, plus permanent residency, visa and change of legal name certificate [e.g. marriage certificate], if relevant.

   If your interview is by video conferencing rather than in person, please MAIL an ORIGINAL verified copy (a verified photocopy of your original document), signed as being a true and accurate copy by one of the positions listed below. We cannot accept a scanned or photographed copy.
   - Justice of the Peace (listed in the Yellow Pages)
   - Solicitor
   - Registrar or Deputy Registrar of the Courts

   The following needs to be included on the copy to be considered a verified copy: the words "original sighted"; company or position, name, and signature of the person sighting the original document.

Applicant Details (to be completed by applicant):

Last Name:	Click to enter name.	First Name:	Click to enter name.
Preferred first name:	Click to enter.	Date of Birth:	Click to enter date of birth.
Mobile:	Mobile number.	Other phone:	Home or work phone.
Email:	Click here to enter preferred contact email.	Male: ☐ Female: ☐ Other Gender: ☐	
Postal Address:	Click to enter address we can post to.		
Last Secondary school you attended (or write overseas if outside NZ)	Click to enter school.		
Highest secondary school level achieved (or write overseas qualification)	Click to enter		
Your last year at Secondary School:	Click to enter.	First year of tertiary study (any qualification):	Click to enter.

Tick the box if English is your first language or the language you were educated in ☐

Personal statement which summarise your experience and learning, and which supports this application:

Applicant Evaluation ***(to be completed by Ara staff):***

Recommendation (include facilitation course if relevant):
Click here to enter text. The box will expand as you write.

Approved by:		Date:		*Programme Leader or CAPL assessor*
Approved by:		Date:		*CAPL staff*