Whitireia NEW ZEALAND | WelTec Te Whare Wānanga o te Awakairangi

School of Construction and Engineering Trades

NZ2660

New Zealand Certificate in Plumbing, Gasfitting and Drainlaying (Level 3)

Student Handbook

NZ Certificate in Plumbing, Gasfitting and Drainlaying (Level 3)

Available on the Programme Site on Moodle

This document is correct at time of publishing – February 2026

Table of Contents

School Welcome	3
Use of Handbook	3
Plumbing Team	3
Resources	4
Programme Aim	4
Graduate Outcomes	4
Programme Outline	4
Teaching and Learning Methods	7
Assessment	8
Personal Responsibility	8
Course Outlines	9

School Welcome

Neil McDonald (Head of School)

Nau mai, Haere mai. Welcome to the School of Construction and Engineering Trades.
The School of Construction and Engineering Trades is proud to offer the best range of trades training in the region. Our programmes provide learning opportunities in a comprehensive range of theoretical and practical skills directly related to the workplace and our graduates are in high demand throughout the many industries we support.

The School of Construction and Engineering Trades offers you a learning environment that is as close to the real world as we can make it. Your learning will go beyond the classroom, and you will spend much of your time developing the hands-on skills which you will require if you are to succeed in your chosen field.

Learning at WelTec is a two-way partnership. You will learn from an experienced team of highly respected and professional tutors. They will do all they can to help you while you are here, but your success will not just depend on us.

You must bring with you a keen attitude to your studies, a willingness to learn, and respect for those around you who also wish to learn.

When you immerse yourself in your programme of study with energy and enthusiasm you will leave here with a qualification that will enable you to build your future. I wish you all the best for your studies.

Ngā mihi
Neil McDonald
Head of School

Use of Handbook

This handbook provides important information about your programme of study this year. It outlines what you can expect to achieve and regulations that you need to know about.

The Student Guide provides more information about the services that are available at WelTec to help you succeed in your studies. It refers you to policies and procedures that apply to ākonga. The Student Guide is available in a downloadable version on Moodle and the website and in a printed copy at the School Administration office.

Plumbing Team

Stig Brinkley (Programme Manager)

Tutors

Stephen Dennis
Jason Hedley-Stevens
Ron Heywood
Andrew Lyle
Lenard Pasene
Jan Esterhuizen
Cody Thomas

Resources

Students to Supply/bring:

- Personal PPE equipment: Steel toe capped safety boots
- Pen
- Warwick 2B8 Exercise Book
- Pencil
- Pencil sharpener
- Eraser
- Compass
- Ruler
- Vivid
- 45° set square
- 60° set square

Programme Aim

The aim of this programme is to:

1. Prepare potential Plumbers, Gasfitters and Drainlayers for an apprenticeship to help meet the demand in the sector.
2. Allow learners/ ākonga to gain real world experience, skills and knowledge and utilise this to contribute to the learning and achievement of the programme and the qualification.
3. Provide a quality body of learning that meets industry standards and requirements consistently.
4. Allow graduates to gain employment and/or progress to the Level 4 PGD apprenticeship programmes

Graduate Outcomes

Graduates will be able to:

1. Apply good conduct, ethical, and legal practices to work in a plumbing, gasfitting, and drainlaying environment.
2. Apply safe working procedures and practices, and identify hazards in a plumbing, gasfitting, and drainlaying working environment.
3. Assist with the installation of basic plumbing, gasfitting, and drainlaying systems and components including the following: hot and cold water supply; sanitary plumbing of appliances and fixtures; foul water; drainlaying including associated components; basic sheet metal

Employment Pathways

Graduates *are* ***not*** qualified to practice as a plumber, gasfitter or drainlayer.

Graduates of this qualification may work as a plumbing apprentice, gasfitting apprentice, or drainlaying apprentice.

Graduates may also be able to work in a related area in the construction industry.

Pathways to Further Study

If Graduates gain an apprenticeship they may progress to:

- New Zealand Certificate in Drainlaying (Level 4)
- New Zealand Certificate in Gasfitting (Level 4)
- New Zealand Certificate in Plumbing (Level 4)

Programme Outline

The programme content includes safe working procedures and practices, the installation of basic plumbing, gasfitting, and drainlaying systems and components, patterns, tools, regulatory and ethical frameworks, excavating and trenching, water basics, water supply pipework, basic sanitary plumbing systems.

Course Code	Course title	Level	Credit	Compulsory or Elective
BD3140	Essential Safety Skills for PGD	3	19	C
BD3141	Patterns, Tools, Regulatory and Ethical Considerations	3	14	C
BD3142	Introduction to Drainlaying	3	11	C
BD3143	Introduction to Plumbing	3	23	C
BD2100	Introduction to Gasfitting	2	4	C

Essential Safety Skills for PGD

This course provides the learner/ ākonga with a working knowledge of essential safety skills for plumbing, gasfitting, drainlaying and workplace obligations.

Patterns, Tools, Regulatory and Ethical Considerations

This course provides learners/ ākonga with a working knowledge of the regulatory and personal ethical framework and the ability to work capably when interacting with tools, drawing and sheet metal.

Introduction to Drainlaying

This course provides learners/ ākonga with an overview of drainlaying as a career and develops the knowledge and skills for excavation and trenching.

Introduction to Plumbing

This course provides learners/ ākonga with an overview of plumbing as a career and the knowledge and skills related to water basics, water supply pipework and basic sanitary plumbing systems.

Introduction to Gasfitting

This course provides learners/ ākonga with an overview of gasfitting as a career and the trade science in gasfitting including knowledge of gasfitting safety requirements.

This is a 70 credit programme, divided into five compulsory courses. There are forty nine (49) unit standard credits embedded across the five courses.

Timetable

This programme is taught over 3 days 8.00am-4.30pm face to face each day.

Progress Through the Programme

This programme is completed in 20 weeks of study, full time, with an additional 2x 1 week holiday break during the duration.

Award of Qualification

Learners/ākonga must successfully complete all five compulsory courses to be awarded NZ2660 New Zealand Certificate in Plumbing, Gasfitting, and Drainlaying (Level 3).
Our student guide contains more information about support during your study including information on financial support, careers advice, difficulties, disabilities and wellbeing, facilities, student spaces and services.

Teaching and Learning Methods

A variety of learning and teaching activities are planned throughout the programme to meet the learning outcomes of courses. These activities are allocated time within the overall programme hours and more specifically identified within each course.
Learning activities in the programme include:

Activity	**Description**
Classroom activities	Lectures, tutorials, individual and group work, role plays, simulated workplace learning, presentations
Online learning activities	Synchronous and asynchronous. Learners/ākonga participate in online discussion groups, engage in online exercises and formative assessment activities
Practical demonstrations	Learners/ākonga observe a range of practical skills demonstrated by the tutor to underpin practical components in courses
Guest speakers	Industry professionals or graduates share experiences with learners/ākonga of working in the relevant area/s of study
Assessment preparation	Learners/ākonga completes assignment/s on time, and is prepared for supervised assessments
Workshop	Learners/ākonga practices skills or develop outputs to meet assessment task requirements
Group study	Learners/ākonga works in groups to meet assessment task requirements
Independent study	Learners/ākonga engage in a variety of tutor recommended or self-selected materials to meet assessment outcomes
Information gathering, readings	Learners/ākonga discusses gathered information in tutor-directed activities, and in assessment (including evidence for portfolio)
Project work	Learners/ākonga works on projects to progressively achieve outcomes

Tutors advise students/ākonga of the activities relevant to each course in course outlines.

Assessment

The Plumbing, Gasfitting and Drainlaying Level 3 programme will be assessed using competency-based assessments. Theory and practical assessments will be assessed against course learning outcomes and assessment criteria and aligned with the graduate outcome practical competencies and knowledge requirements. Where there are associated unit standards the assessment will ensure that all unit standard outcomes are met.

Portfolios will be used extensively in this programme as a record of learning. A portfolio is a compilation of evidence presented by the student in a way that demonstrate their acquired knowledge, competencies and capabilities. Each course's portfolio will consist of several components/project outcomes and students will be required to complete and submit each component in order to pass the course.

The portfolio will demonstrate achievement of the learning outcomes and include, but not be limited to, evidence of:

- Successful project completion
- Teamwork and communication
- Industry standards (timekeeping, attendance, appropriate clothing)
- Health and safety practices

Learners/ākonga will meet all competency requirements in order to pass the course and can resit each component once. Each portfolio will be completed progressively, and key components summatively assessed throughout the course. The final product will be submitted at the completion of the course.

As indicated by the focus of the learning outcomes and assessment criteria, application of skills and knowledge is ensured through the use of projects and theory and practical assessment components that simulate plumbing, gasfitting and drainlaying workplace contexts and processes. These may include written assessments, presentations, reports, and group assessment activities that will require integration of knowledge and skills to demonstrate rounded learning in this discipline, and to deliver a quality customer experience.

Knowledge quizzes and other activities are used formatively to assist with knowledge and skill development.

Learners/ākonga will also be expected to demonstrate and maintain the standards required of a plumbing, gasfitting and drainlaying workplace such as teamwork, customer service, time management, decision making, effective communication, honesty, integrity, reliability, respect, and compliance with legal requirements. This will be assessed through tutor and peer observation.

Personal Responsibility

We are committed to providing a safe and positive learning and working environment for all learners/ākonga, so everyone can meet their learning goals. You can expect to be treated with fairness, dignity and respect by staff and other students. For further information on what we will provide and what is expected of you as a learner/ākonga please click here

Course Outlines

Code	Title
BD3140	Essential Safety Skills for PGD
Level	**Credits**
3	19
Learning hours	Total hours 180 (tutor-directed 130, self-directed 50)

Aim

The aim of this course is to provide the learner/ ākonga with a working knowledge of essential safety skills for plumbing, gasfitting, drainlaying and workplace obligations.

Learning outcomes

By the end of this course the learner/ākonga will be able to:

1. Provide first aid and basic life support
2. Plan a confined space entry, with knowledge of the hazards associated with confined spaces
3. Describe the hazards of asbestos and related safety measures
4. Understand the obligations of being an employee

Content

LO1

- Assessment and management of people to provide first aid, in an emergency, and to provide basic life support.

LO2

- Confined spaces, their permit notification and implementation requirements.
- The responsibilities and duties of people entering confined spaces or conducting observation duties for confined spaces.
- The hazards and controls within confined spaces including an emergency procedure plan for a confined space

LO3

- Asbestos and its types, products, uses, and the hazards and risks associated with asbestos.
- The legal rights and responsibilities to manage respiratory risk for people doing asbestos-related work.
- The rights, responsibilities, and safe work practices for people undertaking asbestos-related work.

LO4

- Personal presentation at work
- Reasons for disciplinary action at work.
- Health and safety obligations at work.
- Workplace practices related to:
    - time management and punctuality
    - use of electronic devices

- breaks
- personal appointments and absences
- task/production deadlines
- care of equipment
- privacy

Assessments

Assessment Method	Learning Outcome/s
Portfolio of evidence	1 - 4

Successful completion of course

Learners/ākonga must pass all assessments to be competent in this course including carrying out all tasks in a safe manner and to industry standard

Resources

Stationery

Assessment Standards

Learners/ākonga will be assessed against the evidence requirements for the following standards:

Std #	Title	Level	Credit	Version
6400	Manage first aid in an emergency situation	3	2	8
6401	Provide first aid	2	1	7
6402	Provide basic life support	2	2	9
18426	Demonstrate knowledge of hazards associated with confined spaces	3	4	9
17599	Plan a confined space entry	4	5	7
30596	Demonstrate knowledge of asbestos and safety measures for asbestos-related work	3	2	2
4249	Describe obligations as an employee	1	3	8

Code	Title
BD3141	Patterns, Tools, Regulatory and Ethical Considerations
Level	**Credits**
3	14
Learning hours	Total hours 140 (tutor-directed 100, self-directed 40)

Aim

The aim of this course is to provider learners/ ākonga with a working knowledge of the regulatory and personal ethical framework and the ability to work capably when interacting with tools, drawing and sheet metal.

Learning outcomes

By the end of this course the learner/ākonga will be able to:

1. Understand the regulatory and personal ethical framework that impacts work in the plumbing, gasfitting, and drainlaying sector.
2. Work with tools used in plumbing and drainlaying projects.
3. Draw simple sheet metal patterns.

Content

LO1

- The ethical and legal responsibilities in relation to plumbing, gasfitting, or drainlaying services.
- Ethics and ethical behaviour in and around customers' properties, and on-site customer communication and interaction.
- Personal presentation, and behaviours that may lead to disciplinary action, health and safety obligations, and workplace practice in terms of workplace requirements.
- The roles and inter relationships of key stakeholders in the regulatory environment for the plumbing, gasfitting, and drainlaying sector.
- The relevant Acts, regulations, standards, and codes, and the relationship between them.
- The impact of the regulatory framework for practitioners in the plumbing, gasfitting, and drainlaying sector:
    - minimum standards for registration
    - terms and conditions of licence
    - authorised work
    - supervision requirements
    - competency standards
    - complaints
    - disciplinary processes
    - prosecutions

LO2

- Use of hand tools for plumbing or drainlaying projects including:
    - how to maintain plumbing and drainlaying hand tools
    - selection and use of portable power tools for plumbing or drainlaying projects
    - maintenance of plumbing and drainlaying portable power tools

LO3

- Two-dimensional simple patterns for plumbing or gasfitting sheet metal components on card.
    - Parallel line development
    - Simple radial development
    - True shape pattern of an angled cut to a square component.
- Forming three-dimensional plumbing or gasfitting sheet metal components from patterns.
- Modifying patterns that are not able to be formed from original pattern to meet practical requirements.

Assessments

Assessment Method	**Learning Outcome/s**
Portfolio of evidence	1 - 3

Successful completion of course

Learners/ākonga must pass all assessments to be competent in this course including carrying out all tasks in a safe manner and to industry standard.

Resources

Stationery, Drawing Equipment (pencil, eraser, sharpener, compass, protractor).

Assessment Standards

Learners/ākonga will be assessed against the evidence requirements for the following standards:

Std #	**Title**	**Level**	**Credit**	**Version**
21881	Describe ethical and legal considerations for plumbing, gasfitting, or drainlaying services	2	2	3
30536	Demonstrate knowledge of the regulatory framework for plumbing, gasfitting, and drainlaying	4	5	1
30557	Select, describe, use, and maintain tools for plumbing and drainlaying projects	2	4	1
25413	Draw and form simple patterns for plumbing and gasfitting sheet metal components	2	3	2

Code	Title
BD3142	Introduction to Drainlaying
Level	**Credits**
3	11
Learning hours	Total hours 110 (tutor-directed 60, self-directed 50)

Aim

The aim of this course is to provider learners/ ākonga with an overview of drainlaying as a career and develops the knowledge and skills for excavation and trenching.

Learning outcomes

By the end of this course the learner/ākonga will be able to:

1. Use basic calculations in a given trade situation
2. Excavate and trench for plumbing, gasfitting, or drainlaying.

Content

LO1

- Measure and calculate using metric measurement systems.
- Solve formulae-based problems in each trade situation.
- Convert metric units in each trade situation.
- Interpret information from tables.

LO2

- How to determine the position of the excavation or trench and allow for other services,
- Collapse control in respect of excavations,
- Excavation dewatering,
- Notification requirements and procedures for excavation and trenching,
- The concepts and principles underpinning excavation, trenching, and backfilling for plumbing and drainlaying.
- Excavate and trench for plumbing, gasfitting or drainlaying:
    - determine the lines and levels
    - determine the position of the excavation or trench
    - excavate to a stable sub-base
    - carry out backfilling and clear the site

Assessments

Assessment Method	Learning Outcome/s
Portfolio of evidence	1 - 2

Successful completion of course

Learners/ākonga must pass all assessments to be competent in this course including carrying out all tasks in a safe manner and to industry standard.

Resources

Calculator, Stationery, PPE (boots).

Assessment Standards

Learners/ākonga will be assessed against the evidence requirements for the following standards:

Std #	Title	Level	Credit	Version
30692	Perform basic calculations used in a given trade situation	2	2	1
30532	Demonstrate knowledge of excavating and trenching for plumbing, gasfitting, or drainlaying	3	5	1
30533	Position, excavate, and backfill excavations and trenches for plumbing, gasfitting, or drainlaying	3	4	1

Code	Title
BD3143	Introduction to Plumbing
Level	**Credits**
3	23
Learning hours	Total hours 230 (tutor-directed 115, self-directed 115)

Aim

The aim of this course is to provider learners/ ākonga with an overview of gasfitting as a career and the trade science in gasfitting including knowledge of gasfitting safety requirements.

Learning outcomes

By the end of this course the learner/ākonga will be able to:

1. Demonstrate knowledge of water basics including the properties of water, materials and their application in plumbing and drainlaying.
2. Determine water supply requirements and how to install, secure and maintain pipework
3. Install basic sanitary plumbing systems.

Content

LO1

- The properties of water including:
  - density
  - energy transfer
  - qualities of potable, grey, recycled, and foul water
- Less frequently used materials in plumbing and drainlaying and:
  - when less frequently used materials should and should not be used in plumbing or drainlaying projects
  - the compatibility and protection considerations of materials

LO2

- How to:
  - determine the water supply requirements in buildings
  - install and secure water supply pipework
  - maintain and repair water supply pipework in buildings
- Explain the following aspects of water supply pipework in buildings:
  - the applicable regulatory requirements
  - selection of the methods and materials applied to the installation, securing and maintenance

LO3

- The regulatory requirements and selection of methods and materials for the installation and maintenance of sanitary appliances and fixtures.
- The selection of appropriate sanitary appliances and fixtures,
- The positioning of sanitary appliances and fixtures,
- The installation, connection, and commissioning of sanitary appliances and fixtures,
- The maintenance of sanitary appliances and fixtures.
- Install basic sanitary plumbing systems:
  - identify components used in water supply systems
  - record dimensions, mark, cut, join, and test water supply pipework
  - identify components used in sanitary plumbing systems and their correct positioning

- record dimensions, mark, cut, join, and test pipework for foul water
- install sanitary fixtures in accordance with job requirements

Assessments

Assessment Method	Learning Outcome/s
Portfolio of evidence	1 -3

Successful completion of course

Learners/ākonga must pass all assessments to be competent in this course including carrying out all tasks in a safe manner and to industry standard.

Resources

PPE (boots), Stationery.

Assessment Standards

Learners/ākonga will be assessed against the evidence requirements for the following standards:

Std #	Title	Level	Credit	Version
30616	Demonstrate knowledge of water, material properties, and of less frequently used materials in plumbing and drainlaying.	3	3	1

Code	Title
BD2100	Introduction to Gasfitting
Level	**Credits**
2	4
Learning hours	Total hours 40 (tutor-directed 35, self-directed 5)

Aim

The aim of this course is to provider learners/ ākonga with an overview of gasfitting as a career and the trade science in gasfitting including knowledge of gasfitting safety requirements.

Learning outcomes

By the end of this course the learner/ākonga will be able to:

1. Describe how to work in gas contaminated environments.
2. Explain the trade science of gasfitting.

Content

LO1

- Describe the types of gasses that may contaminate work environments, and their properties that allow identification.
- Explain the specific hazards of working where gasses are present including fire.
- Explain the actions to take in the event of a gas fire and the actions in the event of exposure to toxic gasses.

  (Gas may include ground and sewer gases and fumes, exhaust fumes).

LO2

- The properties of gasses encountered in gasfitting work.
- The application of gasses commonly encountered in gasfitting:
  - common uses
  - safe storage requirements
- Common requirements for the safe handling of gas and associated equipment.
- Potential hazards arising from uncontrolled gas:
  - fire
  - explosion
  - asphyxiation
  - carbon monoxide poisoning
  - signs of a person being gas affected

Assessments

Assessment Method	Learning Outcome/s
Portfolio of evidence	1 - 2

Successful completion of course

Learners/ākonga must pass all assessments to be competent in this course including carrying out all tasks in a safe manner and to industry standard.

Resources

Stationery.

Assessment Standards

Learners/ākonga will be assessed against the evidence requirements for the following standards:

Std #	Title	Level	Credit	Version
21883	Demonstrate knowledge of working in gas contaminated environments in plumbing, gasfitting or drainlaying	2	3	3