School of Construction and Engineering Trades

NZ3915

New Zealand Certificate in Electric Vehicle Automotive Engineering (Level 5)

Student Handbook

NZ Certificate in Electric Vehicle Automotive Engineering (Level 5)

Available on the Programme site on Moodle

This document is correct at time of publishing - February 2025

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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 Whitireia and WelTec to help you succeed in your studies. It refers you to policies and procedures that apply to students. The Student Guide is available in a downloadable version on Moodle and the website and in a printed copy at the School Administration office.

Programme Staff

Tom Dailly (Programme Manager)

Tutors

Kerry Butters
Grant Davies
Husmuck Kala

Programme Aim

This programme provides the automotive engineering industry with individuals who have attained the knowledge and skills required to safely and effectively diagnose and repair faults in electric vehicles. Electric vehicles include both battery electric, and hybrid electric vehicles or machines. This programme is aimed at people working or intending to work in an advanced technical role within an electric vehicle automotive context. It has been designed for experienced automotive engineering technicians. Graduates may have some responsibility for representing the business and for the overall performance of the workshop. Graduates of this programme will not be recognised as manufacturer-specific technicians.

Programme Outline

Automotive Management. The aim of this course is to enable learners to oversee team responsibilities, including compliance.
Apply leadership and basic business management skills within the workplace.
Monitor and maintain a safe and effective automotive workplace to comply with legislative and company requirements.
Drive Systems. The aim of this course is to enable learners to diagnose, analyse and repair uncommon and complex electric vehicle drive system faults to meet industry standards.
Analyse uncommon and complex electric vehicle or machine drive system faults to determine what restorative action is required.
Restore and service electric vehicle or machine drive systems to meet industry, legislative requirements, taking into account manufacturer recommendations.
Energy Supply Systems. The aim of this course is to enable learners to diagnose, analyse and repair uncommon and complex electric vehicle energy supply system faults to meet industry standards.
Analyse uncommon and complex electric vehicle or machine energy supply system faults and to determine what restorative action is required.
Restore and service electric vehicle or machine energy supply systems to meet industry, legislative requirements, taking into account manufacturer recommendations.
High Voltage Auxiliary Systems. The aim of this course is to enable learners to diagnose, analyse and repair uncommon and complex electric vehicle sub-system faults to meet industry standards.
Analyse uncommon and complex electric vehicle or machine auxiliary faults to determine restorative action required.
Restore and service electric vehicle or machine sub-systems to meet industry, legislative requirements, taking into account manufacturer recommendations.

Programme Structure

This programme will be delivered part-time over a year. It is predicted that most students will be employed as automotive technicians and therefore the programme is structured in a way to meet the needs of these students. Courses are delivered sequentially on campus and on-line delivery with block courses throughout the year.

Course Descriptors:

Automotive Management

SMS Code	EV501001	*Teacher-directed learning hours*	100
Level	5	*Authentic work experience learning hours*	
Credits	10	*Student-managed learning hours*	
Prerequisites		*Total Learning Hours*	100
NQF Unit standards assessed in this course:			
This course approved in another Programme: No			

Aim

The aim of this course is to enable learners to oversee team responsibilities, including compliance

Learning Outcomes

At the successful completion of this course, students will be able to:

1. Apply leadership and basic business management skills within the workplace.
2. Monitor and maintain a safe and effective automotive workplace to comply with legislative and company requirements.

Indicative Content

May include the following topics

- Current leadership techniques
- Mentoring and leadership
- Estimate and quote restorative actions on vehicles or machinery
- Current business analytical techniques
- Ensure customer relations comply with company standards
- Continuity and efficiency of work flow in working environment
- Record keeping respective of work environment
- Customer Service and good business practice
- Time management, organisation and prioritising
- Health and Safety work Act 2015
- Policies and procedures – Legislation

Assessment

Assessment Activity	Weighting	Learning Outcomes	Assessment Grading Scheme	Completion Requirements
Portfolio Assessment Automotive Management		LO1, 2	Competency	Must pass
Practical assessment		LO2	Competency	Must pass

Drive Systems

SMS Code	EV502001	*Teacher-directed learning hours*	200
Level	5	*Authentic work experience learning hours*	
Credits	20	*Student-managed learning hours*	
Prerequisites		*Total Learning Hours*	200
NQF Unit standards assessed in this course:			
This course approved in another Programme: No			

Aim

The aim of this course is to enable learners to diagnose, analyse and repair uncommon and complex electric vehicle drive system faults to meet industry standards.

Learning Outcomes

At the successful completion of this course, students will be able to:

1. Analyse uncommon and complex electric vehicle or machine drive system faults to determine what restorative action is required.
2. Restore and service electric vehicle or machine drive systems to meet industry, legislative requirements, taking into account manufacturer recommendations.

Indicative Content

May include the following topics:

Diagnosis electric or Hybrid drive systems

- diagnostic and investigative procedures on Electric systems
- diagnostic and investigative procedures to determine best restorative measure

Repair electric or hybrid drive systems

- Restorative and service procedures on Electric Drive systems
- Test and verify that the restorative actions on Electric and hybrid Drive systems meet current legislative and industry standard

Assessment

Assessment Activity	Weighting	Learning Outcomes	Assessment Grading Scheme	Completion Requirements
Portfolio Assessment Drive System Diagnosis		LO1	Competency	Must pass
Portfolio Assessment Drive System Repair		LO2	Competency	Must pass

Energy Supply Systems

SMS Code	EV503002	*Teacher-directed learning hours*	200
Level	5	*Authentic work experience learning hours*	
Credits	20	*Student-managed learning hours*	
Prerequisites		*Total Learning Hours*	200
NQF Unit standards assessed in this course:			
This course approved in another Programme: No			

Aim

Course aim: The aim of this course is to enable learners to diagnose, analyse and repair uncommon and complex electric vehicle energy supply system faults to meet industry standards.

Learning Outcomes

At the successful completion of this course, students will be able to:

1. Analyse uncommon and complex electric vehicle or machine energy supply system faults and to determine what restorative action is required.
2. Restore and service electric vehicle or machine energy supply systems to meet industry, legislative requirements, taking into account manufacturer recommendations.

Indicative Content

May include the following topics

Diagnosis electric or Hybrid energy supply systems

- Diagnostic and investigative procedures on Electric energy supply-systems
- Diagnostic and investigative procedures to determine best restorative measure

Repair electric or hybrid energy supply systems

- Restorative and service procedures on Electric energy supply systems
- Test and verify that the restorative actions on Electric battery systems meet current legislative and industry standard

Assessment

Assessment Activity	Weighting	Learning Outcomes	Assessment Grading Scheme	Completion Requirements
Portfolio Assessment Battery System Diagnosis		LO1	Competency	Must pass
Portfolio Assessment Battery System Repair		LO2	Competency	Must pass

High Voltage Auxiliary Systems

SMS Code	EV504001	*Teacher-directed learning hours*	200
Level	5	*Authentic work experience learning hours*	
Credits	20	*Student-managed learning hours*	
Prerequisites		*Total Learning Hours*	200
NQF Unit standards assessed in this course:			
This course approved in another Programme: No			

Aim

The aim of this course is to enable learners to diagnose, analyse and repair uncommon and complex electric vehicle sub-system faults to meet industry standards.

Learning Outcomes

At the successful completion of this course, students will be able to:

1. Analyse uncommon and complex electric vehicle or machine auxiliary faults to determine restorative action required.
2. Restore and service electric vehicle or machine sub-systems to meet industry, legislative requirements, taking into account manufacturer recommendations.

Indicative Content

May include the following topics

Diagnosis electric or Hybrid drive sub-systems

- Diagnostic and investigative procedures on Electric Auxiliary systems
- Diagnostic and investigative procedures to determine best restorative measure

Repair electric or hybrid drive sub-systems

- Restorative and service procedures on Electric and hybrid sub-systems
- Test and verify that the restorative actions on Electric Auxiliary systems meet current legislative and industry standard

Assessment

Assessment Activity	Weighting	Learning Outcomes	Assessment Grading Scheme	Completion Requirements
Portfolio Assessment Auxiliary System Diagnosis		LO1	Competency	Must pass
Portfolio Assessment Auxiliary System Repair		LO2	Competency	Must pass

Student Recommended Resources for Block Courses:

- HV multi-meter
- Safety Glasses
- Specialist Insulation gloves

Please talk to your tutor for advice on purchasing the above recommended resources