

# Advanced Manufacturing and Engineering

Industry Capability Development



## Overview

The Gordon Institute of TAFE (The Gordon) has a long standing and proud history as the largest regional TAFE in Victoria. For more than 130 years, The Gordon has supported people in gaining the skills and qualifications needed for employment, delivering a large range of TAFE courses including short courses and nationally accredited training across apprenticeships, traineeships, certificates, diplomas and advanced diplomas.

Training packages are under continuous review to ensure they are Australian Skills Quality Authority (ASQA) compliant and reflect current industry practices.

Celebrating 100 years of international training, The Gordon is well placed to continue delivering quality training to students from across the globe.

Every year The Gordon trains over 14,000 students and delivers more than 350 nationally accredited courses. The extensive infrastructure and facilities provide a reliable platform and depth of capability to deliver high quality training and skill development solutions to meet the needs of students, business, industry, and economic development. The Gordon delivers to a range of companies, primarily those in the West and South-West of Victoria in industries including building, civil construction, plumbing and electrical.

The Gordon was one of the first in Victoria to deliver training to international students, with the first Japanese students starting in 1920, growing during the 1930s and 1940s to include India and China, then in the 1950s Nauru, and later into Malaysia, Singapore, Hong Kong, the Pacific Nations, the Middle East, Africa and the USA. The Gordon now has agents working in 46 countries.

On an international scale The Gordon is actively expanding its training delivery and has enjoyed a number of partnerships with various TAFEs and Colleges, most recently a number of Chinese collaborations. This includes current discussions with a Chinese Vocational Training Institute in Hangzhou Province to deliver a dynamic one-year engineering program.

The Gordon has two major campuses in Geelong, a port city located on Corio Bay and the Barwon River, in the state of Victoria. Located 75 km southwest of Melbourne, it is the second largest Victorian city, with an estimated urban population of 274,647 (as at October 2022) and is Australia's second fastest growing city. The Gordon has also expanded into the growing Wyndham region (two campuses in Werribee), which presents a set of specific needs, including rapid population growth, increasing education attainment, a socially diverse population, and a changing economy and industries.

Capabilities Statement - Manufacturing and Engineering  
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The Gordon was officially founded in 1887 at our City campus location, operating as a Mechanics Institute and night trades' school as a result of the region's manufacturing growth and need for skills training.

It features a unique blend of historic architecture and modern training facilities, conveniently located in Geelong's CBD and opposite Geelong Train Station.



## Established Partnerships and Connections with Industry

### Geelong Manufacturing Council

A key foundation of The Gordon is in partnering with peak bodies, key stake holder groups and advocacy organisations in the endeavour to increase educational outcomes and to ensure a basis of skills available for industry to grow and advance.

The Geelong Manufacturing Council (GMC) is a non-political, not-for-profit organisation funded by industry partners who wish to promote the Geelong region as a dynamic and innovative manufacturing center of the future.

The Gordon has partnered with GMC for almost two decades. The long term collaboration is underpinned by the shared vision to ensuring the changing needs of manufacturing in the region can be met.

The Gordon and GMC also work at a grass roots level supporting socio-disadvantaged community members to undertake foundations skills training that has direct connect to employment opportunities. The partnership of The Gordon, the GMC and Northern Futures has facilitated many young people into meaningful long term employment through delivery of foundational engineering skills and the collaborations deep relationships with industry.

The Gordon has a history of supporting, attracting and advancing women in non-traditional roles and this year became the major sponsor of GMC Women In Manufacturing Network (WIMN) for 2020.

### Developing a world-class workforce

#### Advanced Fibre Cluster Geelong: Towards 2025

The Gordon also plays a key role in the Advanced Fibre Cluster Geelong (AFCG), a group formed in 2018 by highly innovative Geelong companies with the goal of establishing the region as a global centre of excellence for advanced fibre and composites innovation. The Gordon is supporting the AFCG with developing a deeper understanding of the current skills and training needs and future requirements of the industry in order to further build capability in the region. Significant opportunities exist to develop materials and products which are lightweight, highly durable and adaptable, and more environmentally sustainable.

#### Hanwha Defence Australia

The Gordon is a key training provider to Hanwha Defence Australia and is tasked with creating and sustaining an advanced manufacturing workforce that can produce armoured vehicles at Hanwha's Armoured Vehicle Centre of Excellence in Geelong.

**4**

campuses. The Gordon is one of Victoria's largest vocational education and training (VET) institutes.

**650+**

full-time staff members.

**14,000+**

students studying amongst The Gordon's four campuses.

**75+**

international students from 75+ countries.

**1887**

The Gordon has been a leading Industry Training Provider Since 1887.

**60%**

of students reside in the wider Geelong catchment region.

The Gordon has established relationships with manufacturing employers across the Geelong region and has a demonstrated capacity to leverage relationships across the education, community, government and business sectors.

#### Key stakeholders

- Advanced Fibre Cluster Geelong
- Andritz (AFCG member)
- Austeng (AFCG member)
- Backwell IXL
- Carbon Nexus
- Carbon Revolution
- CSIRO
- Confidence Company
- Downer EDI Engineering
- Elite Team Dynamics
- Ford Australia
- Geelong Manufacturing Council
- Kempe
- LyondellBasell
- Quickstep Holdings Limited
- Sykes Racing
- Tasweld Engineering
- Thornton Engineering
- Viva Energy.

#### Engineering and Community Connections

The Gordon is a key training provider for Northern Futures, a not-for-profit organisation addressing disadvantage in Geelong's northern suburbs by delivering tailored education and employment opportunities in collaboration with industry, community and government.

This suburb is an area of significant educational disengagement and has the highest unemployment rates in regional Victoria. Since 2011 the Gordon has matched the skills and aspirations of job seekers with employers' requirements by creating tailored pathways into employment for each participant.

This includes the delivery of Certificate II in Engineering. Student employment outcomes for graduating students include apprenticeships and employment with large organisations in northern Geelong including Air Radiators, Thornton Engineering, Shell Refinery (VIVA) and Andersons Engineering. The program has run successfully for more than two years with employers keen to connect and employ graduating students.

<p><b>50 year partnership</b></p>		<p>The Gordon delivered Boiler Making and Welding Fabrication courses to Alcoa for 50 years until it closed in December 2014.</p> <p>Main training partner since operations commenced at the Point Henry aluminium smelter in 1963.</p>
<p><b>5 year partnership</b></p>		<p>Training of student self-paced learning creating engaged and aspiring apprentices. Supporter of communication methods. Pilot organisation when implementing new communications system.</p>
<p><b>60 year partnership</b></p>		<p>The Gordon delivered fitter and turning training, engineering and fabrication programs and post apprentice programs in diploma studies. At the peak demand The Gordon had intakes of 90 students per year. Ford closed its Geelong operations in October 2016.</p>
<p><b>60 Trained and re-trained</b></p>		<p>Agricultural equipment manufacturer International Harvester was a major American company which opened its largest Australian plant in Geelong in 1939. The Gordon delivered training to apprentices until it closed in 1982. Many of its unemployed workers were then re-trained and re-skilled by The Gordon, some becoming engineering and manufacturing teachers at The Gordon.</p>
<p><b>25 year partnership</b></p>		<p>The Gordon has provided fabrication training to apprentices for the past 25 years. Currently our largest employer of Gordon fabrication apprentices.</p> <p>Supporter of the Northern Futures engineering program. Employer of non-traditional person in trade from our engineering program.</p>

## Transitioning to a Clean Economy

Working with manufacturing and engineering stakeholders, The Gordon is leading the skills development of the Victorian workforce to support the state's transition to a clean economy. The institute is focused on building the foundations needed for training pathways and the growing demand for skills as the state moves towards net-zero emissions by 2045.

The Gordon is supporting the Victorian Government and in its ambitious goals to reduce the impacts of climate change through investment in innovative technologies and creating new training and development systems that expand as organisational operations in the industry grow, including the development of new training solutions, skilling, re-skilling and up-skilling pathways for new and developing workforce entrants.



2023 Automotive students.

### Clean Economy projects

Transitioning the advanced manufacturing industry to a clean economy demands a skilled and adaptable workforce equipped with the knowledge and expertise to identify and implement changes to current practices. This requires continual adaptation skills and change management. The Gordon is at the forefront of this skills transformation with several government funded clean economy projects currently being delivered including *Identifying Clean Economy Training Needs for Advanced Manufacturing*, *Hybrid Vehicle Training*, *Creating flexibility within Electrotechnology*, *Agricultural Technology (AgTech) Skills Builders* and *Simulated Industry 4.0 Engineering*.

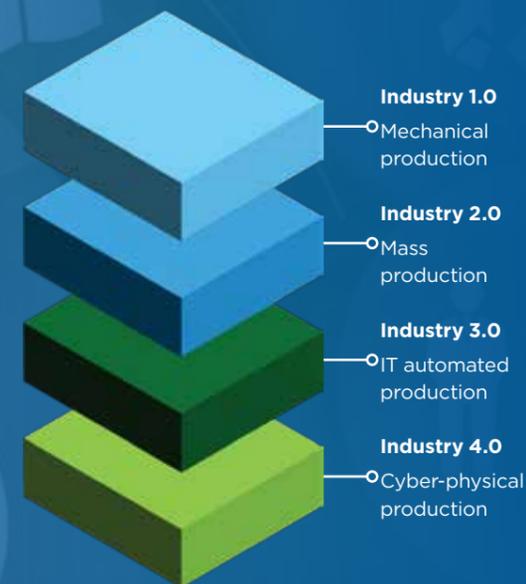


2023 Automotive student and teacher electric vehical training.

## Industry 4.0 Skilling the Future Workforce

The fourth industrial revolution encompasses the combination of traditional manufacturing and industrial platforms and practices with the latest smart technology.

The Geelong manufacturing sector has embraced the complexity of the industrial revolution, focusing on innovation, research and high-technology with a strong focus on Industry 4.0 - the fourth industrial revolution.



## Case Study Electric Vehicle Training

### Advancing skills of auto mechanics

Rapid adoption of hybrid, electric and hydrogen/fuel cell vehicles in Australia is placing enormous strain on the skills capacity of the automotive workforce. Servicing and repairing zero emission vehicles (ZEVs) require new formal and informal diagnostic, coding and electrical skills.

In February 2022, The Gordon was approached by industry to upskill employees in electrical vehicle training to provide a suitable level of hybrid electric and battery electric vehicle training. A month later, The Gordon commenced delivery of the Certificate IV in Automotive Mechanical Diagnosis (accredited training AUR40216), in addition to the Certificate III automotive qualification.

Training is delivered at the East Campus where the automotive department is located. The Gordon has worked with industry to offer a range of elective units that ensure participants receive the training needed by their employer within the accredited program.

On completion of training, automotive technicians have the skills and knowledge needed for this specialist field. Better skilled technicians provide greater confidence to current and future customers considering ZEVs. The training provided is transferrable across all ZEV systems now and into the future, which improves workforce capability and skills needs.

### Key capabilities

- Advanced Manufacturing and Composites Centre (AMACC) for delivery of Australia's first course dedicated to using carbon fibre in composite manufacturing
- Advance Manufacturing Program Area (AMTECH) featuring state-of-the-art facilities
- Close connections with major industries in Australia and Asia
- Continuous review of programs to ensure they are Australian Skills Quality Authority (ASQA) compliant and reflect current industry practices
- Highly experienced and professional teaching staff
- Modern and engaging e-learning delivery to support practical training
- Nationally recognised programs with pathways to higher education
- Specialist facilities, equipment and resources
- Supporting advanced skills and the transition to a clean economy.

### Innovation priorities

- Advanced cognitive skills will be important in an Industry 4.0-enabled environment
- Attracting, supporting and advancing women in non-traditional roles
- Australia's first course dedicated to carbon fibre in composite manufacturing
- Committed to emerging industry of composite manufacturing and new materials
- Creating industry-led training
- Creating pathways into the manufacturing sector for new entrants
- Digital literacy – preparing workers for technology-rich environments
- Intelligent data analytics skills – Industry 4.0 technologies
- Ongoing support and advice to Advanced Fibre Cluster Geelong (AFCG)
- Upskilling – complementing existing skills base through pathways into advanced manufacturing industries, and shorter training such as micro-credentials.

### Key focus areas



Real skills.

Real experience.

Real outcomes.

#### The Gordon

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