

NATIONAL CERTIFICATE IN BOATBUILDING COMPOSITE (Level 4)

338 CREDITS Version 5

An apprentice completing this NZQA registered qualification will gain the knowledge and skills required to be Marine Industry recognized and qualified as a competent **Composite Boatbuilder**.

In this qualification, apprentices gain a comprehensive and detailed understanding of all aspects of composite (fibreglass) boat construction.

In this qualification, apprentices gain a general knowledge of the boatbuilding sector of the Marine Industry, health and safety, boats drawings, lofting techniques, pattern making calculations, correct use of all boatbuilding tools and the composite (fibreglass) construction of interior and exterior components, frames, hulls, decks and superstructures.

The majority of boats built in New Zealand these days are made of composite materials. Composite boatbuilders need to be able to interpret plans and patterns in order to produce plugs (which are the shape of the component to be built). Hulls, superstructures and components are then built directly on the plugs from composite materials. This is a booming sector of the boatbuilding industry and composite boatbuilders are at its core.

This qualification takes on average 3 to 5 years to complete.



Shaun Alexander

Shaun Alexander completed his National Certificate in Boatbuilding (Composite) level 4 in April 2010. A keen sailor who had studied technical drawing and graphic design, Shaun developed a strong interest in boat design.

He started spending time with the design team and this developed into a full time role. Combining his designing and boatbuilding skills he designed the forepeak on the superyacht 'Bristolian' and then worked with the team building it.

In future Shaun would like to get deeper into boat design and gain more experience in this area.

'It's great seeing a project finished, a show piece that you worked on, and then later friends ring you up and say "I saw your boat in a magazine"' – Shaun Alexander

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Unit Standard Content

Unit Number	Unit Title	Level	Credit Value
414	Demonstrate knowledge of the distribution environment	2	4
3160	Produce a laminated polyester resin item to a product specification for composites	3	5
3161	Produce an epoxy resin item to a product specification for composites	3	5
3162	Produce a vinylester resin item to a product specification for composites	3	5
3165	Produce a laminated item using resins that cure at elevated temperatures for composites	4	6
3166	Produce an item using resin pre-impregnated reinforcement for composites	4	5
3170	Produce a laminate by vacuum bagging for composites	4	2
3171	Produce a cored laminate for composites	3	3
3179	Produce a laminate using a pre-wet machine for composites	3	2
3181	Produce a plug or pattern for composites	4	12
3182	Produce a mould or tool from a plug or pattern for composites	4	5
3183	Prepare pre-form materials for lamination for composites	3	4
3185	Demould laminated items for composites	3	6
3186	Finish product to specification for composites	3	5
3190	Repair damaged or faulty composites	4	5
3192	Provide for and attach fixings and fastenings in composites	4	4
3193	Apply quantity surveying to composite production	3	2
3198	Alter resin rheology with fillers, extenders and additives for composites	5	3
5433	Demonstrate knowledge of electrical and electronic applications for marine use	4	8
9913	Demonstrate knowledge of the New Zealand marine industry	2	3
9917	Demonstrate knowledge of boatbuilding methods	2	4
9922	Produce templates and patterns used in boatbuilding	3	4
9923	Install internal and external boat hardware fittings	4	4
9932	Install interior boat cabinetry	4	10
9933	Install exterior boat joinery, modules and components	4	10
9942	Construct internal and external boat joinery in fibre-reinforced composites	4	15
10836	Produce scale drawings of boat surfaces from corrected offsets	2	6
10841	Produce a half model of a small craft to scale	4	10
11788	Prepare fibre-reinforced composite substrates for marine surface coatings	4	5
12942	Build boat framework under supervision	3	15
18158	Select, use and care for hand tools used in boatbuilding	2	5
18159	Select, use and care for portable power tools used in boatbuilding	2	5
18160	Operate mechanical plant used in boatbuilding	2	12
18161	Perform measurements and calculations used in boatbuilding	2	5
18162	Calculate quantities and costs for boatbuilding projects	3	4
18163	Demonstrate a knowledge of boatbuilding construction drawings and produce related freehand sketches	3	2
18164	Demonstrate knowledge of insulation and install insulation in boats	3	2
18165	Demonstrate knowledge of computer technology used in the boating industry	3	6
18166	Participate in a project team in the boating industry	2	4
18170	Contribute to a project team in the boating industry	3	3

Continued on next page

Unit Number	Unit Title	Level	Credit Value
23035	Describe and install boat tankage systems	3	6
23036	Describe infusion and resin transfer moulding processes used in boatbuilding	4	4
23049	Demonstrate knowledge of composite technology for boatbuilding	4	6
23241	Loft a boat hull	4	10
23242	Loft full sized decks and superstructures	4	6
23243	Identify and explain the causes and prevention of material deterioration in the marine environment	4	8
23244	Identify and apply health and safety procedures for the boatbuilding industry	3	4
25113	Describe filling and fairing technology used in boatbuilding	3	4
25115	Describe, install and test plumbing systems in boats	3	6
25116	Lift, support and move boats and components	3	8
25117	Demonstrate knowledge of timber used in boatbuilding	3	4
25118	Demonstrate knowledge of adhesives used in boatbuilding	3	3
25343	Identify boat fittings and fastenings	2	4
25344	Demonstrate knowledge of marine trades and expectations of employees	2	3
25345	Demonstrate knowledge of terminology used in the marine industry	2	6
26542	Demonstrate basic knowledge of the operation of recreational craft by day	2	6

Elective Unit Standard Content Plus at least **25** credits from the following list:

Unit Number	Unit Title	Level	Credit Value
3167	Deposit composite matrix with depositor or chopper gun	3	6
3168	Deposit a polyester gel coat by hand for composites	3	4
3169	Deposit a polyester gel coat by spray methods for composites	3	6
9931	Overlay boat deck with teak	4	15
9934	Construct interior wooden support structures for boats	4	15
9935	Construct interior boat cabinetry in timber	4	20
9937	Install interior and exterior boat systems	4	10
9940	Plank and glass sheathe a mould or boat	4	15
9941	Carry out the repair, restoration, and structural alteration of fibre-reinforced composite boats	4	20
10843	Mark out full sized boat components from loftings and computer generated mylars	3	2
11777	Install production inboard engine packages in boats	3	6
11778	Install and test custom power plants and power trains	4	20
18169	Laminate and join timber materials used in boat building	3	4
18171	Demonstrate knowledge of spars and rigging	3	5
25152	Apply 2D CAD/CAM in boatbuilding	4	5