

The delivery of a Bachelor of Engineering Technology degree apprenticeship in asset management

1. What is a degree apprenticeship?

A degree apprenticeship is an in-work degree that integrates coursework with learning through industry-based projects. These projects are designed through collaboration between asset owners, contractor, and industry consultants:

Throughout the degree, there are periodic informal assessments and a rigorous end-point evaluation, where the candidate is awarded the degree by agreement between the educational institute, the employer and the relevant professional body. Included in this degree are the following:

- The standard coursework for a Bachelor of Engineering Technology, delivered to meet the needs of on the job learners.
- A new major in Asset Management
- Real industry-based projects
- Possible additional micro-credentials. (E.g. OSH certificate etc.)
- Valuable work experience that contributes towards professional accreditation.

2. How will it work?

The partnership between the asset owners, contractors and consultants is key to the way in which this degree will work. Industry partnership hubs will be set up in areas where the need for asset management personnel is the greatest and the apprentice will spend time with each partner, gaining experience and perspective. This will produce a well-rounded graduate.

In the first block of study, apprentices will complete the equivalent of the first year of the degree. Half of the eight subjects will be offered through on-line learning coupled with fortnightly tutorials and a block course and the other half will be integrated through a real-work project that will be something that the apprentice would have undertaken in the workplace anyway. Work done on this industry project will count towards the outcomes of the degree and will be monitored by the tutorial staff, the industry mentors and the hub co-ordinator. In addition apprentices will need to develop an ongoing portfolio of their work.

At the end of the first block of work, apprentices will have to complete a gateway evaluation successfully in order to proceed to the second block of work. The structure of the second block of work is similar to the first, with its own gateway evaluation.

3. Facilities

The provision of facilities will be shared by the various hub partners as well as the polytechnic.

Where the courses will be delivered

On the North Island, the BEngTech is accredited for delivery through the Petone Campus of the Wellington Institute of Technology and it is through this site that the degree will be delivered. This means that students will need to attend at least one block course on site. Students based in Wellington can attend additional tutorials and workshops at the Petone campus. Arrangements will be made for those based away from Wellington to attend workshops and tutorial sessions at venues



within the hub partnership. Most coursework will be delivered online, irrespective of whether the student is in Wellington or outside the city. Laboratory sessions will take place on the Petone campus for all students.

Hub facilities

In addition to having access to meeting facilities for tutorial purposes (e.g. boardrooms etc.), each hub will be organised by a hub co-ordinator. This person will need to have some office space and access to normal office facilities provided, probably within industry. At this point, on the North Island, two hubs will be set up for the pilot. One in Wellington based on the Petone Campus and the other in Palmerston North (probably based at the Palmerston North City Council). There will be another hub based in Central Otago on the South Island

4. Time allocations

The first block of work will take place over at least three trimesters, starting from July 2019 and ending in June 2020. At the end of this block of work there will be a gateway evaluation, allowing apprentices to proceed to the next block of work.

Apprentices

Typically, apprentices are allocated one day a week on average for their studies and are expected to work the other four days a week. This would amount to 384 hours in the year. Students are expected to use some of their own time for their studies and in addition, time on the job doing relevant tasks for the industry project will be counted as notional study time. Approximately 1500 hours in the year (0.8) are allocated to work and some of these hours double as learning time on the project (432 hours). In the first block, apprentices will be expected to allocate the following time:

Time Allocation - students	In-work time allocated (hours)	Contact with Tutors	Own time (hours)
3 x Online courses taken over a whole year		120 (3 block courses x 40h) 192 (3 courses x 2h tutorials x 32weeks)	138 (3 online courses x 46 hours)
Industry project(s)	384 (Time included as part of the job)	96 (3 hours/week x 32 weeks)	256 (4 hours / week x 48 weeks + 64h in holidays)
Meetings with industry mentors	48 (1 meeting of 1 hour per week x 48 weeks)		
Approximately	432 hours	408 hours	394 hours

Industry mentors

Industry mentors will be expected to spend at least 1 hour per week meeting with teach apprentice, for 48 weeks throughout the year. They will also be expected to attend some training (one 4-hour workshop at the beginning) and one 4-hour evaluation meeting per trimester, where they will compare notes with other mentors from other organisations and produce a report on each apprentice. Total time allocation is approximately 64-80 hours in the year

Hub Co-ordinators

The hub co-ordinators role is to ensure the smooth running of the in-work part of the degree. This would include:

- Visiting each apprentice on a regular basis
- Arranging meetings between apprentices and tutorial staff
- Arranging the rotation of apprentices between organisations
- Attending workshops and facilitating the mentoring process within industry
- Dealing with any problems that might arise

The ideal person for this role could be a retired educator / engineer who is keen to help young people. They would be the point of contact between industry and the polytechnic and would probably put in 16-20 hours per week

Tutorial Staff from the provider

In the first block, tutorial staff will be responsible for the delivery of three non-integrated courses, five courses integrated into an industry project as well as mentor training. The table below summarises the time commitments that need to be made by the polytechnics in the first block of teaching. These will be pretty much the same as the time commitments for blocks 2 and 3.

Time allocation – tutorial staff	Contact time	Materials Development	Administration	Total
3 non-integrated courses	104 x 3 = 312h	104 x 3 = 312h	3 x 10h = 30h	654h
Integrated industry related project (equivalent to 5 courses)	3h x 32 weeks = 96h	3h x 32 weeks = 96h	5 x 10h = 50h	242h
Mentor training & meetings	4 x 4h = 16h	1 x 4h = 16h		32h
Total				928 hours

5. Costs to the employer

Apprentices

The table below shows the expected costs per apprentice. In this model, the company would pay the student a minimum wage based on the recommended minimum wage for apprentices (\$13.20 per hour) and also pay the study fees at the start of the apprenticeship. This payment would be stepped up to a minimum BEngTech starting salary of \$60,000 p.a., after completion of the End Point Assessment. Pay increases would be based on objective evaluations of achievement at two evaluation gateways embedded in the degree.

Stepped salary scale, based on 2019 fees and on current starting salary for the BEngTech (Civil)	Start	Successful Completion of Gateway 1	Successful Completion of Gateway 2	Successful Completion of The End Point Assessment
Salary (annual) (16.50 / h x 30h x 52 weeks OR 13.20 / h x 37.50h x 52 weeks)	25,740.00	35,000.00	45,000.00	60,000.00
Fees	6,509.00	6,509.00	6,509.00	
Total Investment for each apprentice pa.	32,249.00	41,509.00	51,509.00	60,000.00

Industry Mentors

The estimated cost in time for the employer in order to mentor students is shown in the table below

Time allocation	One apprentice	Two apprentices
Contact with the student	48 weeks x 1 hour/week= 48h	2 x 48 h = 96h
Initial Workshop	4 hours	4 h
Interim Evaluation meetings	3x 4 hours = 12hours	12h
Reporting	1 hours per trimester = 3h	2x 3h= 6 h
Total Time Commitment	67 hours p.a.	118 hours p.a.

Hub Co-ordinators

In order to ensure the smooth running of each hub, a part time (estimated 0.4 role) person should be employed to co-ordinate hub activities. It is proposed that in the first year of operation, the TEC be asked to fund this position and thereafter, the costs are carried and shared by industry. Assuming that this would be around \$40,000 p.a., a hub with four industry partners would only need to contribute \$10,000 and obviously the more partners there are the more cost-effective this would be.

6. Entry Criteria

The entry criteria for the degree are the same as those for the BEngTech; i.e.:

University Entrance – NCEA Level 3 including

- Three subjects at level 3 including:
 - Physics with a minimum of 14 credits
 - Calculus with a minimum of 14 credits, and
 - One other subject with a minimum of 14 credits from the list of approved subjects* and
- Literacy - 10 credits at Level 2 or above, made up of 5 credits in reading, 5 credits in writing and
- Numeracy - 10 credits at Level 1 or above (specified achievement standards, or unit standards 26623, 26626, 26627)
- **NZQA approved subjects:** see <http://www.nzqa.govt.nz/qualifications-standards/awards/university-entrance>
OR
Equivalent academic qualifications which may include University Bursary with 45% or more in both Physics and Calculus or Algebra; equivalent Cambridge score, equivalent International Baccalaureate

Should an applicant not fulfil these entrance criteria, pre-degree foundation modules in Mathematics and Physics are available and can be taken as intensive block courses prior to enrolment on the degree.

In addition, the applicant must be employed in the field of asset management by one of the project companies who have agreed to offer an apprenticeship.

7. Mentor Training Programme

This will consist of an initial four hour workshop in early July 2019 that will cover a general introduction to mentorship as well as some examples of project assessment.

This will be followed by an evaluative workshop at the end of each trimester to see how things went and to plan for the following trimester. It could also include some further training should the mentorship team find it necessary.

8. Benefits to the student

- In work training makes the graduate more marketable
- Earn and learn at the same time
- Work in an area where there is an international skills shortage
- Additional benefits include earning micro-credentials and fast track to full membership of a professional body

9. Benefits to the employer

- Train the next generation of work-ready graduates.
- Address the shortage of skills in Infrastructure Asset Management.
- Possibility that we can benefit from government subsidy of apprentices

10. Other Documents

- Flyer for employers
- Draft contract for apprentices