New Zealand Diploma in Engineering (Mechanical Engineering)

Location

Dunedin

Duration

Two years full-time; four years part-time (but this can be flexible)

Delivery

On campus with a significant industry-based project to help you gain workplace experience

Credits

240

DescLevel

240

Intakes

February
July (part-time only)

Apply

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Want to know how mechanical things work and why? Forge a career in mechanical engineering.

If you've often peeked inside something and had a desire to have a go at making it yourself, then you're exactly the kind of person we're looking for to study Mechanical Engineering and mechatronics.

Embrace the chance to have a go at projects you've only been thinking about until now!

During this hands-on programme, you will undertake a small amount of maths and science and learn how to design, create 3D models and program controls (Otago Polytechnic Engineering uses RoboDK (https://robodk.com) for simulation and offline programming of industrial robots). You will gain sound knowledge, understanding and practical appreciation of mechanical engineering processes and theory by developing your ability to apply learning in a practical and innovative way. There are a variety of exciting, hands-on projects throughout this qualification such as building a full-size, two-seater airplane; battery-powered skateboard or an electric car. These skills can be applied throughout New Zealand or the world.

This industry is growing fast and the skills you gain can be applied throughout New Zealand or overseas. There is high demand for Engineering Technicians with training like this and many of our graduates secure employment before they even finish their qualifications.

Please note: Places are limited across all disciplines so early application is advisable.

Skills you'll gain

All courses within this qualification contribute towards the skills, knowledge and attributes of the New Zealand Diploma in Engineering qualification and the Engineering Technician as recognised by the International Engineering Dublin Accord.

At the completion of this Diploma, all graduates will be able to:

Differentiating characteristic	Dublin Accord - New Zealand Diploma in Engineering Graduate
Engineering knowledge	Apply knowledge of mathematics, natural science, engineering fundamentals, within specialist discipline to wide practical procedures and practices
Problem analysis	Identify and analyse well-defined problems reaching substantiated conclusions using codified methods of analysis specific to specialist field
Design development of solutions	Design solutions for well-defined technical problems and assist with design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural and societal and environmental considerations

Investigation	Conduct investigations of well-defined problems, locate and search relevant codes and catalogues, conduct standard tests and measurements
Modern tool usage	Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems with an awareness of the limitations
Engineer and society	Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well defined engineering problems
Environment and sustainability	Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts
Ethics	Understand and commit to professional ethics and responsibilities and norms of technical practice
Individual and team work	Function effectively as an individual, and as a team member in diverse technical teams
Communication	Communicate effectively on well-defined engineering activities with the engineering community and society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions
Project management and finance	Demonstrate knowledge and understanding of engineering management principles, apply these to ones' own work, as a member or leaders in a technical team and to manage projects in a multidisciplinary environment
Lifelong learning	Recognise the need for, and have the ability to engage in independent updating in the context of specialised technical knowledge

Entry requirements

- 48 NCEA credits at Level 2 in four subjects including 12 in mathematics* OR equivalent qualifications/skills/experience.
- 8 NCEA literacy credits at Level 1 or higher, including 4 credits in reading and 4 credits in writing.
- International students will be individually assessed to ensure they meet diploma-level entry requirements.

*Please note: Statistics and probability credits are not categorised under "Mathematics credits" within the NCEA framework and therefore cannot count towards 12 required Mathematics credits.

- If English is not your first language, you must provide:
  - New Zealand University Entrance OR
  - Overall Academic IELTS 6.0 with no individual band score lower than 5.5 (achieved in one test completed in the last two years), OR
  - Acceptable alternative evidence of the required IELTS (see here for NZQA proficiency table and here for list of recognised proficiency tests).

If you need to improve your English Language skills, we offer a wide range of English programmes.

Don't meet the entry criteria? Don't worry!

If you don't meet any of the entry requirements for this qualification, or have been out of learning for awhile, enrol in our great New Zealand Diploma in Engineering preparation programme. Successful completion will give you a New Zealand Certificate in Study and Career Preparation and direct entry into this Diploma.

If you don't meet the maths entry requirement for this qualification but meet all of the other criteria, enrol in our great Engineering Maths summer school and upskill so you can apply.

Selection procedure

Applicants are accepted using the entry criteria on a first-come, first-in basis with places limited to 32 per year. Should the number of applicants exceed the available places, applicants will be placed on a waiting list in order of the date they applied. All applicants will be interviewed.

Programme structure

Course Title	Level	Credit
YEAR ONE COMPULSORY		
DE4101 Engineering Fundamentals	4	15
DE4102 Engineering Mathematics 1	4	15
DE4103 Technical Literacy	4	15
DE3301 Engineering Practice	3	15
DE4301 Engineering CAD	4	15
DE4302 Mechanics	4	15
DE4303 Material Properties	4	15
DE5304 Electrical Fundamentals	5	15
YEAR TWO COMPULSORY		
DE6301 Fluid Mechanics	6	15
DE6101 Engineering Management	6	15
DE6102 Engineering Project (Mechanical)	6	15
DE5301 Thermodynamics and Heat Transfer	5	15
DE5302 Strength of Materials 1	5	15

DE5303 Manufacturing Processes	5	15
ELECTIVES (select 2)		
DE6302 Mechanics of Machines	6	15
DE6308 Strength of Materials 2	6	15
DE6309 Advanced Thermodynamics	6	15
DE6419 Engineering Maintenance Management	6	15
DE5418 Engineering Mathematics 2	5	15
PROGRAMME TOTAL		240

Please note: Alternatives to those listed above may be available following consultation with the Programme Manager. Subjects offered subject to minimum class numbers.

Your workload

Your workload will be significant as assessment is continuous throughout the year with assignments issued regularly and end of semester exams. If you are studying full-time, you will be expected to undertake approximately 40 hours per week of mechanical engineering classes which consist of formal lectures, laboratory sessions, tutorials and your own study time.

Further study options

Upon successful completion of this qualification, there are opportunities for you to move in to the Bachelor of Engineering Technology at Otago Polytechnic or engineering degree programmes at either Canterbury or Auckland Universities. Completion of the New Zealand Diploma in Engineering can reduce the length of these degrees by a year and a half, or with appropriate experience, two years on application.

Additional costs

Hand tools are included in the programme fee but these tools will remain the property of Otago Polytechnic. You are required to provide the following:

Personal stationery and basic drawing instruments:

- Scientific calculator - Casio FX-82 is preferred
- Pad of A4 lined writing paper
- Pen
- 2 GB Data Stick.

Compulsory safety items:

- Overalls
- Steel capped boots or approved pair of safety shoes.
- Safety Glasses
- General work gloves (Cut 5 Flexidyn) - $14*
- Earmuffs (Grade 5) (Howard Leight LON Earmuff) - $35*

* Prices are approx & don't include GST

Safety items can be purchased from:

Road Materials
4-6 Forth Street
Dunedin
03 477 6390

Optional textbooks:

- Basic Technical Mathematics with Calculus (Allyn J Washington) - approximately $100
- Engineering Mechanics (Val Ivanoff) - approximately $100.

Student loans/allowances

Student loans and allowances are for domestic students only. For information about student loans and allowances please visit the Studylink website. It is important to apply for your student loan/allowance at the same time as you apply for this programme, due to the length of time Studylink take to process. Loan/allowance applications can be cancelled at any time if you decide to withdraw your programme application or if it is unsuccessful.

Intakes:

Course	Description	Dates
25-DUN-Y1M	Dunedin	17 February 2025

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Corner Erris & Ray Streets
PO Box 16, Cromwell
New Zealand 9342

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