



Energy Pūngao

"I knew I wanted to work with numbers and people, to help solve problems relating to climate change and to have a flexible career. The Energy programme allowed all of the above and I'm really happy I chose it."

Summer Campbell
BSc (Energy Science and Technology)
Energy and Carbon Advisor, Downer

Be part of the sustainable energy transition

New technologies are driving dramatic transitions in energy systems for heat, electricity and transport. These future energy systems will have much lower carbon emissions; be more renewable, efficient, flexible and intelligent; and more geographically distributed. Our unique programme aims to create energy professionals with the scientific knowledge, real-world skills, and flexible problem-solving capability to reduce carbon and drive this transition in New Zealand and globally.

Otago offers a unique energy and carbon-focused undergraduate programme – the only one of its kind in the Southern Hemisphere. This programme equips students with the technical knowledge and problem-solving skills to pursue successful careers driving the energy transition and reducing carbon emissions.

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Why study Energy?

- Learn the science behind renewable energy, energy efficiency and carbon reduction.
- Develop the technical expertise and problem-solving ability critical to helping industry and government reduce energy-related carbon emissions.

Background required

A typical Energy student is passionate about the environment and climate change, interested in the application of science to real-world problems, and has a solid grounding in maths and physics.

Career opportunities

Our graduates are in high demand! They get exciting, high-paying, meaningful and future-proof jobs. They have the skills and knowledge to reduce carbon emissions and save companies money. Our graduates find successful and fulfilling careers in a diverse range of energy and carbon areas, including:

- Designing and implementing renewable energy technologies.
- Identifying and implementing energy efficiency and carbon reduction measures at industrial sites or in commercial buildings.
- Developing energy and sustainability plans for national or local government.

What will I study?

Core first-year papers are MATH 140/150 and PHSI 131/132. This provides a flexible foundation year for a range of possible courses.

From second year onwards, you'll study engineering thermodynamics and applied science papers covering climate change, renewable energy resources and technologies, and energy efficiency.

The programme is very flexible and can cater for a range of student interests, including combining an Energy major or minor with Science, Finance or Environmental Management.

How will I study?

The high lecturer to student ratio provides a rich and effective learning environment. In addition to learning theory in lectures and tutorials, you'll gain hands-on experience in practical classes, enabling you to work with energy conversion equipment and directly experience how the principles you have learned work in the real world. Class discussions and assignments will explore energy and carbon problems and opportunities facing New Zealand and the world.

Degree options

There are two degree options:

Bachelor of Science (BSc) in Energy Science and Technology

The three-year BSc is a flexible science degree for students wanting to develop an understanding of the science and technology behind energy efficiency and renewable energy.

Bachelor of Applied Science (BAppSc) in Energy Management

The three-year BAppSc degree is appropriate for students aiming for a career as an energy professional and encourages real-world business awareness.

Transitions between the two degrees are possible in second and third years. An industry-focused honours year is possible at the end of the undergraduate degree.

For more information, email michael.jack@otago.ac.nz (Director of the Energy Programme).

For questions about
Energy
otago.ac.nz/physics/energy-studies



PROFILE

Summer Campbell BSc (major: Energy Science and Technology, minors: Mathematics, Physics) | Energy and Carbon Advisor, Downer

"I think like most people I came to university unsure about what I wanted to study. In first year, I took papers from Physics, History, Math, Philosophy (briefly), Chemistry and Computer Science.

"After one particularly bad existential crisis, I sat down in front of the Leith steps and asked myself what I wanted my career to look like. I knew that I wanted to work in the environmental space, I wanted to work with numbers and people, I wanted to help solve problems relating to climate change, and I wanted to have a flexible career. I thought the

Energy programme allowed all of the above and I'm really happy that I chose it.

"At the moment I'm working for Downer as an energy and carbon advisor. My job is basically to help the company reduce its emissions which matches exactly what I was imagining on those Leith steps. The Energy course definitely helped prepare for the job and get my foot in the door, but I think like most degrees the corporate/working world is a whole different beast to the academic world and skills like communication and networking are really useful."



Rafferty Parker BAppSc (major: Energy Management, minor: Mathematics), PGDipSci (Energy Studies), MSc (Energy Science and Technology) | Data Scientist, Vector

"I decided to study Energy as I was concerned about climate change and wanted a career where I could be making a difference in the transition to a low-carbon economy. I actually left secondary school early and trained as a carpenter. After doing this for a few years I felt like a career change, so I came to Otago as a mature student.

"I enjoyed the majority of my studies; however I particularly got a kick out of developing a mathematical understanding of the Earth/sun system, its energy balance, and how this is affected by greenhouse gases in PHSI 243 (Environmental Physics).

"The Energy programme is the only one of its kind in Australasia – it is well-positioned to set up graduates for a rewarding career. I am now working as a data scientist for energy distribution and metering company Vector. My undergraduate study provided me with a fundamental understanding of energy concepts that I now rely on as second nature. My postgraduate energy research gave me more technical industry-related knowledge and tools that were essential for landing the position I'm now in."

