



energy management

Intelligent uses of today's energy for tomorrow



Energy Management is about making the best use of our present and future energy sources in order to avoid crises, both economic and environmental. In a modern economy we take energy services, such as transport, lighting, heating, and electrical appliances for granted. Yet behind these services lies a complex network of energy technologies to ensure that fuels, hydro-power, geothermal energy, and other primary sources are converted into the services we want.

As energy and environmental problems intensify, there is urgent demand worldwide for energy managers who can initiate practical solutions. Energy Management is not just concerned with saving energy, but also with increasing productivity, improving standards of living and saving money.



Applied Science

www.otago.ac.nz/sciences

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Otago

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Why Choose Energy Management

- ~ You'll gain the scientific and technical expertise, problem-solving ability, business awareness, and expertise required to work in a wide variety of areas, helping industry, government and individuals make the best energy choices.
- ~ You'll study in an area which will be used for the betterment of society, helping to ensure the sustainability of the environment and energy supply for future generations.

Background required

Students from a range of backgrounds are welcome to study for Otago's BAppSc in Energy Management. A clear pass in Year 13 mathematics is recommended for entry to MATH 160, and a good pass in physics is needed for PHSI 131.

Career opportunities

There are opportunities within New Zealand and around the world for qualified people to help resolve a range of energy issues.

Some different career paths include:

- ~ Becoming a consultant, either privately or employed by a consultancy firm. This might involve performing energy audits and implementing energy efficiency measures for different organisations, like those owning office buildings or production facilities. Consultancy work is project-based, with plenty of variety and opportunities to travel.
- ~ Working in an energy services company (or ESCO) – a company that is contracted by an organisation (for example, a hospital) to provide and manage energy services like light, heat, and hot water for them.
- ~ Being employed directly by industry, working as an Energy Management specialist. Energy-intensive industries that are constantly developing new processes and products – like dairy processing, pulp and paper and manufacturing – use the skills of an energy manager in production decisions, development and design.
- ~ Working for government, developing policy and promoting improved energy efficiency and conservation, advising on town planning.

What will I learn?

You'll gain a sound grounding in the underlying science of Energy Management – the properties of fluids and gases and the physical laws that govern the conversion of energy between different forms. You'll also explore the entire length and breadth of the energy industry.

You'll learn the skills that you'll need in the workforce, like using simulation and analysis computer packages, conducting energy audits, and reporting effectively to help your client make the best decision.

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What is the Bachelor of Applied Science?

The strength of the Applied Science programme is its outward focus – developing market-ready graduates with management skills and practical experience in the workplace. Work placements are a credit-bearing component of the degree, being strongly recommended or compulsory in all majors.

The Applied Science programme is a four-year undergraduate degree, with open entry at 100-level. An Honours stream is offered to those students who achieve an appropriate academic standard in their second year.

The programme offers a unique collaboration between the four Divisions of the University of Otago: Sciences, Health Sciences, Commerce and Humanities.

Every Applied Science degree has a commerce component, with business papers making up 15% of the required total.

What will I study?

To major in Energy Management you must complete 120 points (seven papers) in your first year, including:

MATH 160 Mathematics 1

MATH 170 Mathematics 2

One 100-level physics paper (PHSI 131 Physical Law and Its Applications is recommended)

From second year onwards, you'll study a variety of Energy Management papers covering the theory underpinning the conversion of energy and industry practice.

NB: Check the latest paper details in the *Guide to Enrolment* published with enrolment material each year.

How will I study?

As well as learning theory in lectures, you'll gain hands-on experience in practical classes, enabling you to work with energy conversion equipment, and directly see how the principles you've learned work in the real world.

Work experience is a requirement for this degree and you'll carry out 6-20 weeks of work over the summer at the end of your second and/or third year. This means you get the chance to make connections between the material you study and what happens in the real world; it also helps you start building a network of contacts in industry.

Can I combine my Energy Management study with other subjects?

Yes! Your first year course is very flexible and you can select papers that keep your options open for second year – for example you can tailor a course that will also cover the prerequisites for most of the other BAppSc subject majors, including Design for Technology, Electronics, Environmental Management or Telecommunications; or you could carry on with a BSc in Energy Studies, Mathematics or Physics.

Throughout your degree you also have the opportunity to take papers from other disciplines. This allows you to gain specialist skills in particular areas, and give your degree an extra dimension.

For questions about Energy Management
Tel **0800 80 80 98**
Email university@otago.ac.nz

www.otago.ac.nz/energymanagement

profile

JAKE ROOS

Otago – the only option

Jake Roos grew up in Dunedin, so Otago was right on his doorstep. More importantly, Otago was (and still is) the only university in the country offering an undergraduate degree in Energy Management.

The degree made the most of Jake's strengths in maths and physics, and he liked the variety of papers, applied focus, and work experience component.

"The job placement at the end of my second year turned into a long and profitable association between myself and the company in question – I ended up working for them throughout the rest of my degree, and based my honours project on one of their facilities."

After completing his Master of Applied Science in Energy Management, Jake moved to the United Kingdom and went to work for Uttlesford District Council, a local authority on the frontline of energy problems, having high carbon emissions, a major airport and the pressure of a major housebuilding programme.

Jake developed a planning requirement to improve energy efficiency when extending a house, the first of its kind in the UK. This initiative has earned the Council recognition in national awards and praise in the UK Parliament. This and other work led by Jake is earning the council a reputation for being a leader in local authority action on energy and climate change.

"The skills I gained studying energy management at Otago were a real advantage in finding a job. I couldn't have been better equipped to take on this challenging and exciting role. Now I get to work on everything from nuts and bolts energy saving projects to policy development to community action and advising the public. I always wanted to make a difference and my training at Otago has really helped me to achieve that here."

