What can I do with a degree in **Physics?**

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Physics.

Career planning: what do I need to know?

Knowledge of yourself is important for career decision making. Start by looking at your personal goals, abilities, values and interests to explore study and career options that are relevant to you. Some of these may change over time, so it is important to self-reflect and evaluate your career on an ongoing basis.

What do employers look for?

Many employers look for generic skills such as communication, customer-focus, cultural awareness and teamwork. With technology and globalisation changing the nature of society, skills such as resilience, problem solving and adaptability are valuable at work as well as in life.

How can I develop these skills?

- Some skills are developed through your degree
- Extra-curricular activities can help, for example getting involved in clubs, mentoring, cultural groups, part-time work or volunteering
- Be open to professional and personal development opportunities. Whether it is undertaking an internship, overseas exchange, skills seminar, or joining an industry group — these activities will enhance your employability.

What else should I know?

The career options in this brochure are examples only and the list is not exhaustive. Some careers may require further study beyond a first degree or additional work experience. Some pathways and degrees have a recommended school background. Find more subject details at
💻 www.canterbury.ac.nz/subjects/phys

If this brochure does not answer your questions, talking to an expert such as a career consultant can help you to identify the next steps in your career decision making journey.
💻 www.canterbury.ac.nz/careers

What is Physics?

What type of student might consider a Physics degree? As a child, famous UC alumnus Ernest Rutherford was intrigued by seeing a stick apparently bend when dipped into a farm bucket of water; Albert Einstein asked how his face would appear in a hand-held mirror if he ran at some significant fraction of the speed of light. A budding physicist may share this fascination with and curiosity about the natural world.

Physics aims to understand the behaviour of matter and energy from the scale of subatomic particles to that of the Universe itself. From computers to communication systems, architecture to agriculture; modern life is overwhelmingly built using the understanding of nature that physics provides. Modern physics provides a framework for understanding – and contributing to – major advances in technology now and in the future.

AT A GLANCE

MORE medical physicists are needed in Aotearoa New Zealand^

43% of UC Physics graduates conducted a research placement during their studies*

$10-30k+ scholarships of course fees plus $10–30,000 available for high school science teacher trainees#

^ *Immigration New Zealand's 2017 long-term skill shortage list www.skillshortages.immigration.govt.nz*

* *2013 and 2015 Graduate Destinations Surveys combined*

\# *2018 TeachNZ scholarships www.teachnz.govt.nz/scholarships*

What skills have UC graduates gained?

Through their Physics degree, graduates gain a valuable set of transferable skills that includes:

- Problem solving
- Ability to communicate orally and in writing
- Mathematical and computer skills
- Capacity to think creatively, logically and quantitatively
- Cooperation, teamwork and leadership
- Innovation and imagination
- Planning and organisation skills.

Applied learning opportunities are available such as laboratory sessions, fieldtrips and internships. These experiences deepen your skillset, awareness of others, working knowledge and employability.

Where have UC graduates been employed?

Many Physics graduates are employed at:

- Crown Research Institutes
- The National Radiation Laboratory
- Hospitals and District Health Boards
- Universities
- Meteorological Service.

Some are not employed as specific scientists — their Physics skills are valued in industries such as:

- IT, computer and electronics
- Banking and finance
- The armed services and police
- Aerospace and aeronautics (including airlines)
- School teaching
- Geotechnical
- Telecommunications
- Agribusiness
- Energy
- Journalism and publishing.

Some recent UC alumni have done postgraduate study or postdoctoral research at universities around the world including China, Germany, Malaysia, the Netherlands, Pakistan, and the USA.

For examples of UC graduate employers go to
💻 www.canterbury.ac.nz/recruitingemployers

What jobs and activities do UC graduates do?

Graduates with this degree are employed in a range of jobs — see some examples below.

Note: Some of the jobs listed may require postgraduate study. See the 'Further study' section.

Field / laboratory technician

- Plans and carries out research experiments
- Maintains and calibrates equipment
- Liaises with scientists and industry personnel
- Collects and collates data, and drafts reports

Research scientist, postdoctoral researcher

- Organises and conducts research
- Tests theories and operates instruments
- Analyses data and scientific phenomena to develop explanatory theories
- Writes reports and publishes articles
- Consults with and advises industry

Medical physics registrar

- Operates and improves diagnostic and therapeutic equipment
- Uses knowledge and skills to help prevent, diagnose and treat different diseases/conditions
- Ensures radiology, nuclear medicine and radiation treatments are safe and effective

Telecommunications / software engineer

- Analyses customer needs, evaluates computer software and researches new technologies
- Develops software programs for new products
- Manages software development projects

Programmer, software developer

- Determines specifications and writes code
- Builds prototypes of software programs
- Tests and fixes computer programs and systems
- Maintains and upgrades programs and systems
- May develop and integrate technical aspects of websites/mobile apps along with other workers

Secondary school teacher

- Plans and delivers instructional lessons
- Evaluates performance and provides feedback
- Sets and marks assignments and tests

Patent advisor

- Researches technical or scientific documents, to assess if a product is new and innovative
- Maintains knowledge of laws and regulations
- Advises businesses, government and industry

Meteorologist

- Monitors weather systems and atmospheric patterns
- Analyses data and uses forecasting models to predict weather conditions and climate trends
- Prepares weather maps, forecasts and alerts
- Designs tests to measure air quality, ozone etc

Librarian, library assistant

- Categorises and catalogues library materials
- Selects materials for library use
- Helps customers find and use materials

Entrepreneur and CEO

- Develops an idea to form their own business
- Gets involved in a start-up
- Offers their services as a consultant

Get started at 💻 www.canterbury.ac.nz/careers/Entrepreneurship/getting_started.shtml

UC Careerhub

UC students and alumni can find details of internships, job vacancies and employability tips at 💻 www.careerhub.canterbury.ac.nz

What professional bodies can people link to?

As they progress, students and graduates often join professional bodies relevant to their area of interest. These organisations can provide regular communications and offer the chance to network.

- New Zealand Institute of Physics 💻 www.nzip.org.nz
- Royal Society of New Zealand 💻 www.royalsociety.org.nz
- Institute of Physics 💻 www.iop.org
- Science Communicators Association of New Zealand 💻 www.scanz.co.nz

Social media networks such as LinkedIn, Facebook and Twitter can provide avenues to keep up with the latest industry knowledge, events and jobs.

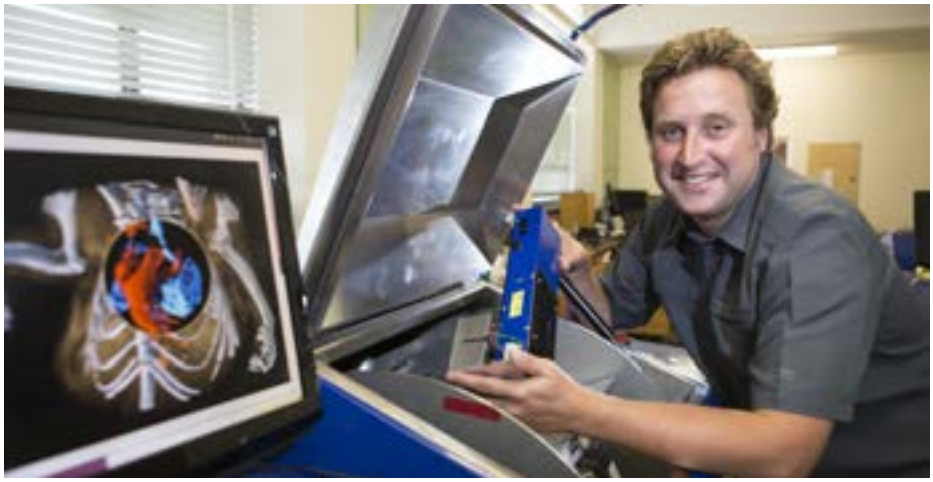
Why do further study and what are my options?

Postgraduate study can facilitate career benefits such as specialist skills, entry into a specific occupation, higher starting salary, and advanced research capability. It is important to determine which, if any, further study will help you.

Physics graduates can progress into a number of programmes from honours to master's and PhD level. These degrees provide advanced research and writing skills. Advanced study can lead to an academic career in teaching and research.

Qualifications in Medical Physics are offered at UC — a postgraduate diploma, honours, master's and PhD. The extensive range reflects the demand for skilled graduates.

UC also has a range of conversion degrees eg, in Teaching and Learning, Journalism, Applied Data Science, and Business Management. For listings visit 💻 www.canterbury.ac.nz/courses



Useful links

UC Careers, Internships & Employment
💻 www.canterbury.ac.nz/careers

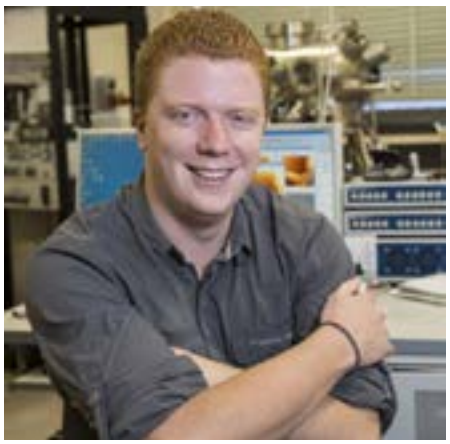
Careers New Zealand
💻 www.careers.govt.nz

Association for Women in the Sciences NZ
💻 www.awis.org.nz

Crown Research Institute careers
💻 www.careers.sciencenewzealand.org

Future in Tech
💻 www.futureintech.org.nz

Wills Dobson



Bachelor of Science in Physics
Postgraduate Certificate in Antarctic Studies
Atmospheric Technician, National Institute of Water and Atmospheric Research, Lauder

Why Physics?

I have always had a fascination with space and wanted to know more about our solar system and beyond. I wanted to know more about how the world works.

Why did you choose UC?

UC has great connections with Antarctica so if you want to go down there, going through UC is one of the best ways. The Physics department is fantastic and provides great support to anyone regardless of whether you are struggling in your studies, or just have a great idea you would like some backing for.

Any highlights of your time?

I would highly recommend the Postgraduate Certificate in Antarctic Studies to anyone with even a small desire to experience and understand the frozen continent. The pinnacle of this course was the trip to Antarctica, of which one week is spent camping out on the Ross Ice Shelf. This was one of the best experiences of my life.

Can you tell us a little about your current job?

I am heavily involved in the ozone and climate research programs at Lauder. Chiefly, my job is to launch weekly balloon-borne ozonesondes, operate the high-powered ozone LIDAR, and work on the grandfather of ozone instruments, the Dobson spectrophotometer.

What are the highlights of your career with NIWA to date?

My job has taken me back down to Antarctica twice in order to perform upgrades and maintenance to the instruments down there. In 2016, I also visited the National Oceanic and Atmospheric Administration (NOAA) research facility located in Boulder, Colorado, and the NASA Goddard space centre in Washington DC for some training.

What tips would you give to Physics students?

Physics is hard but interesting. Don't be afraid to ask for help. Chances are if you don't understand, over half the class will be in the same situation as you.

Read more online

Read Wills' full story about his university experience on our profiles website. UC alumni like Wills make a difference in varied ways around the globe. Find out where Physics graduates are now at
💻 www.canterbury.ac.nz/profiles

The information in this brochure was correct at the time of print but is subject to change.

More information

UC students seeking study advice.

School of Physical and Chemical Sciences
Te Kura Matū

The school has a large staff and offers two programmes that are unique within Aotearoa New Zealand: a Bachelor of Science in Astronomy and a variety of postgraduate qualifications in Medical Physics.

Our teaching and research areas are diverse and we boast many international links, offering research students, in particular, an extensive network and career opportunities.

T: +64 3 364 2523
E: hod-secretary@canterbury.ac.nz

💻 www.phys.canterbury.ac.nz

Anyone seeking careers advice.

Careers, Internships & Employment
Te Rōpū Rapuara

CIE offers intending and current students and recent graduates a wide range of services, including individual career guidance, seminars, career resources and student and graduate employment opportunities.

T: +64 3 364 3310
E: careers@canterbury.ac.nz

💻 www.canterbury.ac.nz/careers

UCCareersEmployment

Prospective students seeking study advice.

Student Liaison
Te Rōpū Takawaenga

Student Liaison provides intending students with information about the university system in general and the courses, qualifications, support and facilities available at UC.

Ōtautahi | Christchurch
T: 0800 VARSITY (0800 827 748)
E: liaison@canterbury.ac.nz

Tāmaki-makaurau | Auckland
T: 0800 UCAUCK
E: auckland@canterbury.ac.nz

Te Whanganui-a-Tara | Wellington
T: 0800 VARSITY (0800 827 748) ext 93231
E: wellington@canterbury.ac.nz

💻 www.canterbury.ac.nz/liaison

Te Rāngai Pūtaiao
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