

What can I do with a degree in Astronomy?

Astronomy.



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/astr

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 Astronomy?

Astronomy and astrophysics are concerned with the study of the nature and distribution of matter and radiation throughout all time and space in the Universe. Astronomers have always been keen to harness the latest technological advances in their quest for ever more precise and revealing observations. As a consequence, astronomy in recent years has been one of the most rapidly expanding of all physical sciences and many exciting and unexpected discoveries continue to be made.



AT A GLANCE

4367
km²

Aoraki
Mackenzie
International
Dark Sky
Reserve is the
world's largest
such reserve

\$329b

in 2016 the
total global
space economy
was worth
\$329 billion
worldwide*

3

the three
brightest stars
and three
galaxies can be
seen from the
southern sky

What skills have UC graduates gained?

Through their Astronomy degree, graduates gain a broad set of valuable transferable skills such as:

- Mathematical competencies
- Computer competencies
- Critical, logical and quantitative thinking
- Problem solving
- Ability to use technology such as spectroscopic and photometric detector systems
- Data analysis and modelling
- Innovation and imagination
- Oral and written communication
- Cooperation, teamwork and leadership.

Te Waipounamu, the South Island as your lab

Applied learning happens in laboratory sessions and on fieldtrips, using facilities that include:

- An internationally important astronomical observatory at Mt John, Tekapo, with computer-controlled instruments and cryogenic detectors
- UC-constructed Hercules, a high resolution spectrograph to search for planets and conduct improved stellar astrophysics.

Where have UC graduates been employed?

Astronomy graduates may follow traditional paths and work at a:

- Tertiary institution
- Research institute
- Astro-tourism destination or agency
- Observatory, planetarium or star-gazing facility
- Scientific publishing house
- Aerospace company.

Astronomy is a relatively small field; because of its size, astronomers get to collaborate with many colleagues and conduct research around the world.

Related fields

Astronomy graduates move into related fields like:

- Computing and information technology
- Education
- Data analysis
- Defence forces
- Science communication.

With additional study graduates can get into meteorological services, geophysical consultancy, optics, and even medical physics.

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

* *The Space Report 2017: The Authoritative Guide to Global Space Activity*, The Space Foundation

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.

Astronomer

- Studies objects found in space
- Records findings and analyses images and data
- Communicates learnings and engages with different groups eg, enthusiasts, media, schools
- Maintains technical specialised equipment
- Collaborates with other research scientists or organisations, and applies for funding

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, publishes articles and makes recommendations
- Consults with and advises industry

Tour guide

- Uses technology to showcase the night sky
- Helps guests discover new knowledge
- Ensures visitors have a memorable, enjoyable experience

Science writer / editor

- Researches specialist or technical stories
- Interviews scientists, medical personnel
- Writes and edits scientific articles/publications

Observatory manager

- Develops and implements plans for connecting the general public with professional astronomy
- Manages organisational operations eg, staff, building, equipment maintenance, budgets
- Ensures the centre attracts visitors and funding

Tertiary lecturer

- Prepares and gives lectures, tutorials
- Sets and marks assignments and exams
- Conducts research, writes and publishes articles

Science communicator, communications advisor

- Presents science topics to various audiences eg, publicising research findings
- Manages educational programmes eg, exhibitions, outreach events, seminars
- Produces content eg, media releases, videos

Secondary school teacher

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

Sales manager, account manager

- Creates and implements sales strategies
- Identifies and develops new markets or business eg, in complex technical instruments
- Manages client relationships
- Provides product information and technical support

Patent advisor

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

Optical assistant

- Serves optical retail customers and works with optometrists
- Uses devices and product knowledge to assist
- Keeps customer details up-to-date and schedules aftercare

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



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.

- Royal Astronomical Society of New Zealand
www.rasnz.org.nz
- New Zealand Institute of Physics
www.nzip.org.nz
- Royal Society of New Zealand
www.royalsociety.org.nz
- New Zealand Association of Scientists
<http://scientists.org.nz>
- 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 entry into a specific occupation, specialist skills, and advanced research capability. It can lead to an academic job. It is important to work out which, if any, further study will help you.

Graduates can continue their study of Astronomy and astrophysics at UC. Students with good honours or master's degrees can proceed to a PhD. Research students have access to state-of-the-art technology and benefit from international collaborations. UC has research programmes in fields such as planet searching, gravitational lensing, stellar astrophysics, variable stars, the cosmic microwave background and neutrino astronomy.

www.canterbury.ac.nz/courses

Useful links

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

Careerhub — internships, jobs and tips
www.careerhub.canterbury.ac.nz

Careers New Zealand
www.careers.govt.nz

Earth & Sky
www.earthandsky.co.nz

New Zealand Astronomy Directory
www.nzastronomy.co.nz

Canterbury Astronomical Society
www.cas.org.nz

Andrew Ridden-Harper



Bachelor of Science with Honours in Astronomy
PhD student, Leiden University, Netherlands

Have you had any work experience? What's cool about your research?

As a result of my studies, I was able to work as an astronomy tour guide at the Mt John University Observatory and I got to work on astronomical research projects by being awarded a summer research scholarship at UC and two at the Australian National University.

I also had the opportunity to be an assistant in the 2013 Starlight Festival which took place at Lake Tekapo to mark the anniversary of the establishment of the Aoraki Mackenzie Dark Sky Reserve. It was a great experience to be involved in an event which communicated the importance of astronomy, space and the environment to the general public.

I get to spend my time doing really interesting research on the very contemporary topic of exoplanet characterisation so it's very dynamic. I also get to go to interesting conferences and schools in amazing places like La Palma in the Canary Islands, where I went for a school on exoplanets with other PhD students from all over the world.

Do you have a career goal?

I would like to be a professional astronomer working at a university or observatory.

How did your degree prepare you for a PhD?

My previous study has prepared me very well for this. The Honours programme in Physics and Astronomy at UC is intended to be a PhD preparation programme. UC graduates in Physics and Astronomy do PhDs in some of the best universities in the world.

What you learn in Physics and Astronomy at UC is at a level to prepare you very well for many career paths and be competitive on a global scale.

Read more online

Read Andrew's full story about his university experience on our profiles website. UC alumni like Andrew make a difference in varied ways around the globe. Find out where Astronomy 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

UC is the only university in Aotearoa New Zealand to offer the study of Astronomy at all levels. The department has an exciting programme of teaching and research often using state-of-the-art facilities as part of its core work. It also collaborates nationally and internationally.

Adding an Astronomy course to your degree is a great way to nurture your interests and answer some of those questions you have. Staff are happy to field any enquiries.

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

[UC Careers Employment](#)

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