

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, bicultural competence, 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
largest of it's
kind in the world

2025

is the year
by which
Christchurch
aims to be
New Zealand's
aerospace hub

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 Ōtehiwai, Mount John in Tekapo, with computer-controlled instruments and cryogenic detectors
- UC-constructed Hercules, a high resolution spectograph 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.

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

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

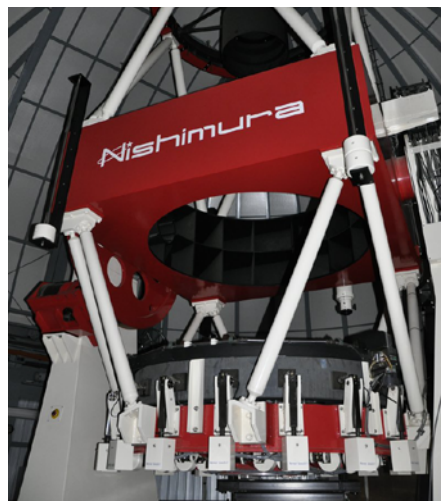
- Serves optical retail customers and works with optometrists
- Uses devices and product knowledge to assist
- Keeps customer details up-to-date and schedules aftercare

Entrepreneur & self-employment

Entrepreneurship and innovation are an increasing part of the working landscape. Through generating a business idea, or getting involved in a start-up/business venture, you have the potential to create a work opportunity that aligns with your knowledge, skills, values and risk profile. To get started on how to establish, run and grow a new business, go to Te Pokapū Rakahinonga, Centre for Entrepreneurship at the University of Canterbury www.canterbury.ac.nz/uce

What professional organisations can I engage with?

Connecting with professional bodies and organisations can help you to establish professional networks and learn more about



different career options in your area of interest.

- Royal Astronomical Society of New Zealand www.rasnz.org.nz
- New Zealand Institute of Physics www.nzip.org.nz
- Te Apārangi 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

Having a professional presence on social media networks such as www.linkedin.com and Facebook can help you to keep up to date with important industry developments and trends, networking opportunities, events and job vacancies.

Why do further study and what are my options?

Postgraduate study can facilitate career benefits such as entry into a specific 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, and neutrino astronomy. Students can also take a conversion masters in a range of areas including Teaching and learning, Business management and Antarctica Studies.. www.canterbury.ac.nz/courses

Useful links

- Te Rōpū Rapuara UC Careers www.canterbury.ac.nz/careers
- 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

Rosemary



Bachelor of Science in Astronomy and Physics
Master of Science in Astronomy
Studying towards a PhD in Astronomy

Why did you choose to study astronomy?

My family has always been involved in science and I originally thought that I would pursue Chemistry and become a teacher. I just happened to attend a seminar that was about the engineering challenges of landing the Rover on Mars and was fascinated by the amount of complex problems that the project

involved. I read a book that we had at home called 'The Planets' by Dava Sobel and found the subject captivating. When my Physics teacher mentioned UC's Elaine P. Snowden Astronomy School [an annual camp for year 12 and 13 students], I took the opportunity and was hooked from then on! I've followed it on from a Bachelor's Degree to a Masters and now my PhD. I find it amazing that we can only take images of a star and learn so much about it; and yet we can't visit it and work with more physical data. That's what makes Astronomy unique to other sciences.

What are your career goals?

Alongside my PhD, I am currently working at UC as a Senior Teaching Assistant and part of that position involves tutoring classes of students. I enjoy inspiring others to appreciate the logic of physics and hope I can find a way to incorporate both research and teaching in my future career!

What experiences at UC did you find valuable?

My visits to Ōtehiwai Mount John Observatory were valuable learning experiences that helped me gain practical observation skills. In the third year of my Bachelor's, I went to Mount John to observe two stars and gather data for my project. It was also an opportunity to glimpse into the lifestyle of an astronomer and the routine of being awake throughout the night. Completing this project, along with my Masters

has prepared me for completing larger, more complex research projects, such as my PhD. As a PhD student, I now get to network more and connect with other scientists in the field I am working in. It's great to see what others in the industry are doing and how they think.

What advice would you have for others interested in studying a science?

My degree was an enjoyable change from high school and I developed some great processes to understand the information, as well as figuring out how I wanted to study. It required dedication, but I made good habits. I tried to answer every question even when I didn't know the answer. I believe you should study what you're interested in; that way you'll do the work required to succeed, and if you have a clear goal then any hard work is worth it.

Read more online

Read more stories about our students' university experiences online. UC alumni make a difference in varied ways around the globe. To find out where graduates are now visit www.canterbury.ac.nz/getstarted/whyuc/student-profile

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

More information

UC students seeking study advice.

Te Kura Matū | School of Physical and Chemical Sciences

The School is made up of over 80 staff and runs an exciting programme of teaching and research using state-of-the-art facilities. Our areas of scholarship are diverse and we collaborate nationally and internationally.

Our teaching staff are all active researchers and very passionate. Dynamic teams are leading research in a wide range of disciplines, from molecular cloning to stellar astrophysics, from the design of new pharmaceuticals to nanotechnology devices.

T: +64 3 369 4141

E: scienceugadvice@canterbury.ac.nz

www.canterbury.ac.nz/science

Anyone seeking careers advice.

Te Rōpū Rapuara | UC Careers

UC 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 3 369 0303

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/careers

Prospective students seeking study advice.

Te Rōpū Takawaenga | Student Liaison

The liaison team provide advice to future students who are starting their degree for the first time. They can assist with information on degrees, scholarships, accommodation, and other aspects of university life. We have offices in Christchurch, Auckland and Wellington.

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)

E: wellington@canterbury.ac.nz

www.canterbury.ac.nz/liaison

