

Tangata Tū, Tangata Ora
Engaged, Empowered, Making a Difference

Sustainable Development Goals 2020 Update



SUSTAINABLE DEVELOPMENT GOALS



TANGATA TU, TANGATA ORA

Engaged,
Empowered,
Making a
Difference



Introduction from the Tumu Whakarae | Vice-Chancellor

The University of Canterbury (UC) is committed to contributing to the United Nations Sustainable Development Goals (SDGs). These Global Goals, as they are also called, are critical to ensure a better future for current and future generations, and for the planet. Universities have an important part to play in supporting and promoting these Goals within Aotearoa and beyond.

We launched our new Sustainability Policy in 2020, and it commits to four values and priorities. We will increase awareness of environmentally sustainable development and engagement; identify and implement affordable, evidence-based, sustainable business practises to reduce and manage our own ecological footprint; support teaching, learning and research in sustainability topic areas; and have meaningful partnerships with Māori under Te Tiriti o Waitangi | The Treaty of Waitangi. Partnering with Māori is recognised as crucial and we are embedding Te Ao Māori knowledge systems in our research, and our teaching and learning programmes.

Further to this commitment, our current sustainable development strategy focusses our research, education and operations towards supporting five core elements. We are continuing our attention on improving environmental sustainability at UC, and reducing our CO2 emissions. We want to increase learning opportunities for students in the SDGs, and increase our multi-stakeholder partnerships and community outreach. We will continue our efforts to contribute towards solving sustainability challenges for

New Zealanders, our Pacific Island neighbours, and the global community.

This document highlights our key priorities as mentioned and some of our successes to date in support of the SDGs. It is impossible in a short document to convey the depth and breadth of our activities on sustainable development. I would therefore like to take this opportunity to thank our staff, students and community for their ongoing efforts and hard work on local and global sustainable development. The generosity from our Alumni and multi-stakeholder Partnerships on sustainable development initiatives is also greatly appreciated, which make a real and lasting difference to students and the wider community.

We are proudly co-hosting the Aotearoa New Zealand SDG Summit Series 2020-2021, which leads up to a summit event being held on our campus on 2-3 September 2021. The summit series overall theme of 'Pathways to (Urgent) Action' aims to take Aotearoa on a journey from an individual understanding of the SDGs to achieving urgent, collective action.

This is our first SDG update. It sets the foundation for future UC updates to build on. Sustainability requires an ongoing commitment and the highest priority, and we are working hard to make every day count.

Professor Cheryl de la Rey
Tumu Whakarae | Vice-Chancellor
Te Whare Wānanga o Waitaha
University of Canterbury

1 NO POVERTY



End poverty in all its forms everywhere

Humanitarian Engineering Tackling Poverty

UC's Global Humanitarian Engineering programme combines multiple disciplines, such as history, anthropology, Māori studies, and sociology, as well as rigorous engineering basics, to address improving the lives of disadvantaged people and under-served communities. The programme's intention is to provide students with the opportunity to develop beyond their core engineering degree, to better understand the communities, cultures and societies in which engineering occurs. "If engineers can better understand the appropriate technologies they work on, the social and environmental sustainability of the engineering projects, then ideally that will improve, and sustain, the economic and educational opportunities of people and communities", says Dr Matthew Hughes, Programme Co-Director. Capstone projects for 2020 involved students focusing on a social vulnerability assessment of communities including a Marae exposed to flood waters in Wellington, and designing a micro hydro-electric generation system for isolated communities in Nepal. More than 30 students have completed the diploma since 2017.

Right: Global Humanitarian students.



UCSA Support for Students

The University of Canterbury's Student Association (UCSA) provides a number of welfare options (food, medical, travel, accommodation) to support both domestic and international students in times of financial difficulty. For students experiencing temporary financial hardship for something unforeseen or unexpected there is the Hardship Grant. The Mickle Fund Loan is for students unable to pursue their studies or seriously constrained in doing so. The Medical Prescription Grant provides financial support for unexpected medical expenses, for short-term emergency support.

Left: student speaking with Puaka-James Hight library support.

Child Well-being Research Institute

Health, well-being, development and education of children and young people are at the core of UC's Child Well-being Research Institute. The Institute advances high quality, multidisciplinary research to enhance the healthy well-being and learning success of infants, children and adolescents within the context of their whānau, family and community, particularly the needs of Māori and Pasifika communities. Its research supports the Government's aspirations, strategy and measuring of success for the children and youth of Aotearoa.

Support for Students Impacted by COVID-19

UC students affected by the pressures of COVID-19 during 2020 were offered an array of support and assistance, from welfare checks, pastoral care, IT support, scholarship/stipend extensions, to a unique fund related to COVID-19 financial hardship. Other assistance included the Foodbank and longer term Food Support Service. Advisors in Te Waka Pākākano worked with our Māori, Pacific and Rainbow students to identify the appropriate support needed. Support

Services made phone calls to 4,600 students during lockdown to personally check on their welfare, and about 150 students were offered direct pastoral care. IT provided over 90 students with access to hardware, and about 360 students were given advice/support to improve their internet connectivity. The Postgraduate Research Office provided targeted support for postgraduate research students. Over 100 Doctoral Scholarship recipients, who had their

research affected by the lockdown, were provided up to two months scholarship extensions (stipends and fees). An additional grant was available to doctoral students experiencing hardship, and bursary funds provided financial support to 54 students experiencing hardship, as a result of COVID-19. A new scholarship policy was introduced for doctoral and research masters students, who received a one month fees free extension to their thesis submission date.



Students in library discussion room.

New Fund to Support Students

UC Foundation launched a new fund in 2020 specifically to support students suffering hardship or challenges that made it difficult for them to continue or return to their studies during the COVID-19 environment. The new support fund, Kono Itoi, could be used by students in different ways, such as with transport, books, additional expenses associated with vulnerable or immune-compromised students or family, extra energy costs or other special needs caused by the extraordinary environment faced. In addition, the Chancellor and Vice-Chancellor, together with all members of UC Council, volunteered a 20% pay reduction for six months, which went towards funding to support students experiencing hardship.

2 ZERO HUNGER



End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Our Community Gardens

UC's community campus gardens form almost 30 in Christchurch. Established in 2002, Okeover Garden was named after the stream that meanders through our Ilam campus. It uses permaculture and organic growing methods. In 2018, Ngāi Tahu gifted the name Te Ngaki o Waiutuutu. On our Dovedale campus the garden was established in 2011 and is community-led. It offers private and shared allotments. Using UC land for gardening has many benefits. It allows staff and students to use their knowledge to influence campus design and policy, work together to grow fresh, organic produce, and promotes physical activity. Importantly, the gardens teach our students sustainable food gardening, and provides them with healthy and free produce.



Food Foraging Virtual Map

Our Sustainability Office and Geospatial Research Institute partnered to create a virtual story map of UC's food foraging locations, highlighting the campus's edible flora and community gardens. Everyone at UC can help themselves to various fruits available on campus, including peaches, berries, apricots, figs, feijoas, and much more.



New School Focuses on Food Sustainability

In November 2020 we announced the launch of a new postgraduate school focusing on food sustainability – Food Transitions 2050. Dedicated to supporting regional, national and international food systems, it is the result of a multilateral partnership between UC, Lincoln University, Plant & Food Research, Manaaki Whenua Landcare Research, and AgResearch. Its core purpose is to support the transition to more future-focused, sustainable food systems and preparation, and it will focus on solution-based outputs intended to complement the range of existing food innovation initiatives in Aotearoa. Foundational students are already applying to the School, attracted by the transdisciplinary and Māori research (co-designed with mana whenua) spanning food and future landscapes, food for a carbon-zero future, food consumer transitions and food governance.

Study on Australasian food banks

A study of Australasian food banks on how they are coping with growing demand in the wake of the COVID-19 pandemic is being led by UC researchers. The aim is to find out more about the economic and social impacts of the virus to determine the best policies for addressing growing food security issues in times of crisis. "Since the COVID-19 pandemic, the demand for supplies from food banks has increased exponentially," says lead researcher Dr Rosemarie Martin, who specialises in food, policy and well-being for UC's Macmillan Brown Centre for Pacific Studies. "We hope the results of this research will be used by Government agencies to contribute to more equitable and effective food policy as a matter of urgency. There is a real need to do something to address inequalities around food security in New Zealand," Dr Martin says.



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Dr Rosemarie Martin

3 GOOD HEALTH AND WELL-BEING



Ensure healthy lives and promote well-being for all at all ages



Awards for COVID-19 Response

The 2020 New Zealand Prime Minister's Science Prize was awarded to the Te Pūnaha Matatini (TPM) research centre for its COVID-19 response. TPM is a national collaborative team of academics and researchers. UC's team members are mathematical modellers Professor Michael Plank and Associate Professor Alex James, data scientist Senior Lecturer Dr Giulio Dalla Riva, and UC graduate researchers Dr Rachelle Binny, Nic Steyn, and Dr Audrey Lustig. Their work was recognised for developing a series of mathematical models, analysing data and communicating the results to inform the New Zealand Government's response to the global pandemic. Central to their work has been predicting impacts on at-risk communities, including Māori and Pasifika populations. Professor Plank was also recently awarded the Australia and New Zealand Industrial and Applied Mathematics (ANZIAM) EO Tuck Medal for 2021 for outstanding research, expertise and distinguished service in the field of Applied Mathematics.

Supporting our Pacific Island Neighbours

Our Biomedical minor programme was developed to respond to student enthusiasm and to increase diversity among students choosing to study Mechanical Engineering, such as female, Māori and Pasifika students. Its curriculum emphasises bioethics, sustainability and responsibility, specifically biomedical design for reuse and donation. Student projects focus on real world applications. In the summer of 2020, students went to Tonga to support the Ministry of Health, and created a much needed Assets Register to track consumables. Another project involved updating the Tongan nursing handbook on how to use, maintain, and repair common medical equipment. The project resulted in an increase of capabilities and independence of nursing staff who provide time-critical nursing to the Tongan people, and less workload pressure for the small number of technicians often called upon to demonstrate equipment use.

Nutrition and Mental Health

New Zealand Government reporting reveals increasing numbers of our adolescents struggle with mental health issues. In 2020, Professor Julia Rucklidge and her team commenced researching nutritional interventions that are effective in treating psychiatric/psychological illness. Professor Rucklidge is a UC Clinical Psychology academic and leader within our Child Well-being Research Institute. Professor Rucklidge explains: "There is a growing association between an individual's poor diet and poor mental health. However, it is not always realistic to manipulate diet, particularly in teenagers. Research over a decade has demonstrated efficacy in using micronutrients to treat psychiatric symptoms, but we need to explore whether coupling this approach with technology can expand reach, reduce cost and be a more acceptable way to address mental health problems."

"By 2030 UC will be known for its focus on well-being"

Our Well-being Implementation Plan

We recognise people are our greatest asset. Adopting the Te Pae Māhutonga well-being model, our Mahere Oranga | Well-being Implementation Plan (2020-2024) was introduced to enhance our capability for supporting the well-being of our students and staff. Through this structured programme, we want UC to be a place where individuals are empowered with the knowledge and resources they need to nurture their well-being. Ultimately, our goal is that the plan will lay the foundations for us to achieve our Strategic Vision objective: "By 2030 UC will be known for its focus on well-being."

School of Health Sciences

Our School of Health Sciences is making a significant contribution towards improving health outcomes and making meaningful change in people's lives. Programmes and research meet the needs of modern healthcare and society. Undergraduate degrees are the Bachelor of Health Sciences and the Bachelor of Sport Coaching, and postgraduate degrees include Health Sciences, Sport Coaching, Counselling, Child and Family Psychology and Nursing.

UC's Pilot Well-being Supporter Programme

Mental health disorders are a significant cause of health loss for all New Zealanders. In 2020 we launched our pilot Kaihāpai Oranga | Well-being Supporter programme across Engineering and Science with the aim of promoting a culture that removes the stigma associated with mental distress and helping people to help themselves. The programme has a dedicated UC

intranet site offering staff a raft of meaningful, supportive and encouraging resources. It also includes the contact details for our Kaihāpai Oranga 21 trained volunteers, comprising academic and professional staff, who offer other UC staff who reach out, the appropriate support, care and encouragement, in a safe and non-judgemental environment.



Quality, Affordable Healthcare on Campus

UC's Health Centre offers a full range of General Practitioner services, including many self-help health-related resources, to keep students and staff healthy and well. The Centre can treat acute and chronic conditions and can help with preventative measures, for example flu vaccinations, health checks/screening, injuries, minor surgery, and dietary advice/support. Highly trained counsellors are also available to help with a range of problems like grief, anxiety, depression, loneliness, and homesickness. Health services are accessible either on campus or from the comfort of your own home, 24/7.

Pictured right Health Centre on UC campus.

4 QUALITY EDUCATION



Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



Te Hurinui Karaka-Clarke at UC's Rotorua graduation ceremony for College of Education, Health and Human Development.

UC's first Doctor of Education

Te Hurinui Karaka-Clarke (Te Arawa/ Ngāi Tahu) received UC's first Doctor of Education qualification in 2020. "I chose this qualification because firstly it is a new qualification, secondly it was offered part-time, thirdly I could study a kaupapa or a topic that I was actually working in already, but the most attractive thing for me was the cohort model. I know my particular learning style is collaborating with others, because it means you are accountable to your group," says Karaka-Clarke. Along with lecturing in te reo Māori in UC's School of Education, Karaka-Clarke leads the Hōaka Pounamu Bilingual and Immersion Teaching endorsement for Māori-language immersion school teachers.



Improving Early Literacy for Pre-Schoolers

A research project launched in 2020 involves nearly 600 pre-schoolers from Canterbury and Central Otago. The project, Better Start, is aiming to improve Kiwi kids' early literacy development. Professor Gail Gillon, Director of the Child Well-being Research Institute at UC, leads the team. Developing early literacy skills makes it easier for children to learn to read. Children who enter school with these skills have an advantage that carries them throughout their school years and into success and prosperity in adult life. Professor Gillon (Ngāi Tahu) won UC's 2020 Research Medal, in recognition of a sustained record of research excellence aimed at improving children's learning success and well-being.

From top: new entrants learning to read using the Better Start Literacy Approach, Professor Gail Gillon, founding Director of the UC Child Well-being Research Institute.



Mentoring Initiative

In 2020 a new mentoring pilot initiative for high school students from low-decile schools was delivered by UC's Student Experience team. The initiative aims to widen secondary school students' understanding of tertiary opportunities, and raise representation in tertiary education of students from low-decile schools. Plans are now to offer the programme to more secondary schools and extend the programme to two terms. Deputy Vice-Chancellor Academic Professor Catherine Moran explains: "The role of the UC student Transition Mentor is to connect with secondary students to inspire them to achieve their academic potential and give them the confidence to enter tertiary study. Transition Mentors serve as positive role models providing encouragement, guidance and support to help these students address barriers and achieve educational and vocational success."

Free Global Online Short Courses

In 2020 UC joined the global online learning platform edX to offer free, short courses to the world. The UC platform, named UCx, offers short duration courses delivered online to thousands of students, with course content presented through high-quality video segments, and an emphasis on learning, rather than assessment. UC Deputy Vice-Chancellor Academic Professor Catherine Moran says, "These courses reinforce our commitment to deliver accessible, lifelong learning opportunities for all – whether that is in the form of professional and career development education or education for interest."

Understanding Every Learner

Every learner is unique. UC's School of Teacher Education increases student teachers' understanding of the variety of unique characteristics that learners bring with them into school and learning settings, and provides student teachers with frameworks for understanding each learner as a whole person. Course TEPI315 addresses intercultural understandings by challenging ideas of normality, with behaviour being viewed as a medium of communication. Inclusiveness is addressed by using an abilities-based approach and tangata whenuatanga. From a practice perspective, the course looks at what teachers can do to change and adapt their practices to meet the needs of every learner.

Excellence Award in Teacher Education

Kay-Lee Jones was recognised with a prestigious Ako Aotearoa Tertiary Teaching Excellence Award (Kaupapa Māori) in 2020. Kay-Lee has helped nurture a love for te ao Māori in over 2000 student teachers in UC's School of Teacher Education. As graduates, they are now putting their understanding into practice in schools throughout Aotearoa, normalising Māori language and culture in everyday education. "To me as an educator teaching the next generation of kaiako (teachers), excellence means preparing our teachers to empower tamariki (children) to walk confidently in both Māori and Pākehā worlds," she says.

Computer Science without a computer

The CS Unplugged programme is about capturing the learner's imagination and addressing common misconceptions about what it means to be a computer scientist. As the name suggests, the programme engages the learner in activities that don't depend on computers. CS Unplugged is the idea of UC's computer science academic Professor Tim Bell. CS Unplugged offers young students a collection of free teaching material not dependent on computers, making activities available to those who aren't able to or don't want to work with computers.



Students working on computer on lawn in front of Ernest Rutherford building.



Students being taught as part of Education Health and Human Development.

5 GENDER EQUALITY



Achieve gender equality and empower all women and girls

Women Lead UC and UCSA

For the first time in our nearly 150-year history, UC is led by women. Chancellor Sue McCormack recently reflected on what leading her alma mater has meant to her. The Chancellor is proud of the growing relationship with Ngāi Tūāhuriri and the ongoing work UC is doing to make sure our Māori and Pasifika students have the space to excel, and the work ethic and community spiritedness of UC students and staff. The Chancellor also said a highlight was the appointment of UC's first female Vice-Chancellor, Professor Cheryl de la Rey. In 2020, they were joined by the new UCSA President Tori McNoe and new Vice-President Katie Mills. Tori and Katie are the first female duo to lead the UC Students' Association since it began in 1894.



UC Chancellor Sue McCormack, UCSA President Tori McNoe, and UC Vice-Chancellor Professor Cheryl de la Rey.

“Here at UC, we are prepared to lead the world in gender equity.”

Tori McNoe
USCA President

Pacific Artist in Residence

Nina Oberg Humphries was announced as the 2020 Pacific Artist in Residence at UC's Macmillan Brown Centre for Pacific Studies. Exhibiting throughout Aotearoa, Nina's work explores her dual Pacific and Moana Oceania heritage. Using traditional Polynesian art forms such as Tivaevae, costume and dance, combined with elements of popular culture, she seeks to convey issues of gender, identity and social politics. "As the Macmillan Brown Pacific Artist in Residence I'll be researching taonga from the Pacific Collection at Canterbury Museum, conducting interviews with members of the Pacific community to find out what meaning and relevance, if any, these taonga still hold for them," she says.

Right: Nina Oberg Humphries, film still, *Matavai Bay* (2019). Image courtesy of artist.



UC Commits to Investigating Gender Pay Parity

In March 2020, on International Women's Day, UC committed to investigating gender pay parity for academic staff. The investigation follows findings by UC researchers showing that female academics in Aotearoa are likely to earn less than their male counterparts over their career, despite equivalent research performance. UC's commitment to action on investigating gender pay parity includes taking ethnicity into consideration. Further work is also planned to investigate pay parity for non-academic staff at UC.

Gender and the Law

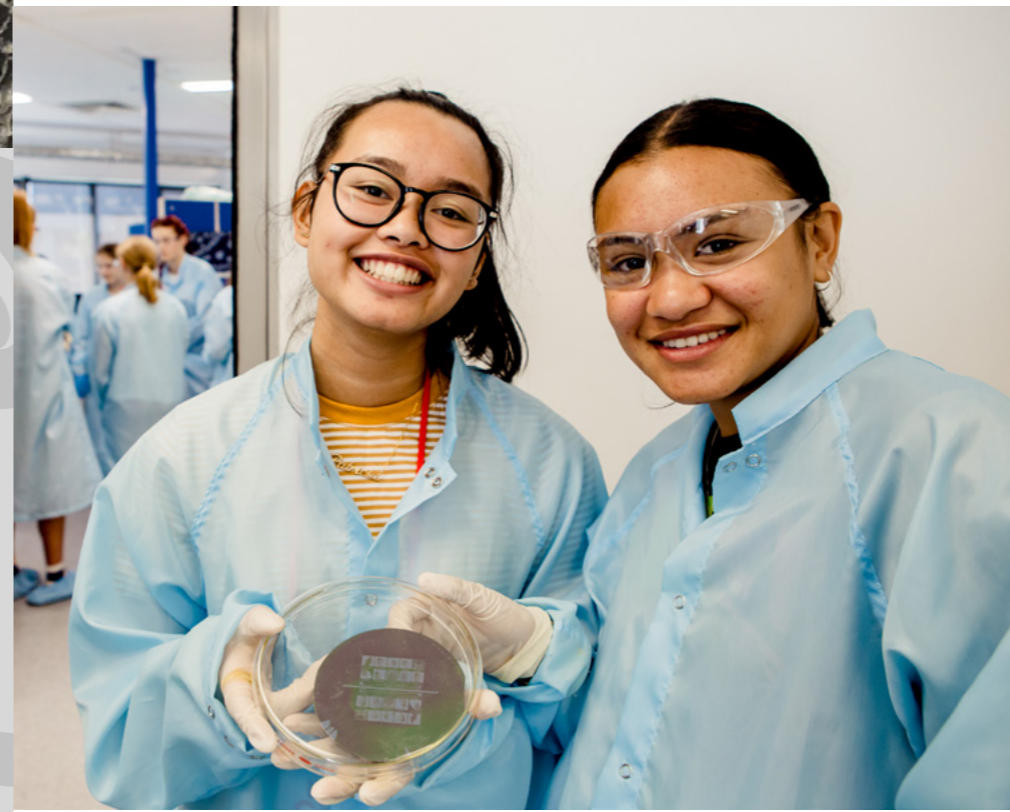
UC's Gender and the Law course examines the theoretical issues of equality, feminism and the intersection of gender and culture in areas of the law that raise gender issues in a bicultural legal context, including for Māori and Pasifika women. A range of topics are explored, such as norms on gender equality, legal responses to violence against women, and the challenge of intersexuality and changing gender. Students reflect upon the gendered nature of the law and its impact on society, on Aotearoa bi-cultural society and on the international level.

Gender Pay Gap in Academia

UC's Associate Professors Ann Brower and Alex James analysed Performance-based Research Fund (PBRF) scores and academic ranks of all academics in New Zealand for their research paper on gender pay in New Zealand Universities. Their finding of a 'gender performance pay gap' is a world-first. It was made possible by measuring the research performance scores of all New Zealand university academic staff from 2003 - 2012 - nearly 6000 individuals. Their finding shows that, when women and men perform at the same productivity level, women still earn less.

Women in Engineering Residential Programme

Our Women in Engineering Residential Programme is a free 5 day/4 night programme for female high school students in Aotearoa interested in exploring the opportunities in engineering. The programme features various interactive workshops, inspiring presentations and fun social activities for eligible high school students who identify as female, who have completed year 12. During the programme the students are immersed in and experience the range of engineering subjects on offer at UC.



Left: two Women in Engineering attendees during a workshop.

6 CLEAN WATER AND SANITATION



Ensure available and sustainable management of water and sanitation for all



Pictured above back row, left to right: Chemical and Process Engineering Associate Professor Matthew Watson, Pacific Academic Lead Ashalya Noa, BECA Consulting supervisor and UC Engineering graduate Lisa Mace, Engineering Geomechanics Laboratory Technician Siale Faitotonu. Front Row, left to right: Final year Chemical and Process Engineering students Matthew Rennie, Olivia Duplan, Jack Deeley and Craig Stocker.



Associate Professor in Ecological Engineering Dr Aisling O'Sullivan.



Dr Jonathan Tonkin, School of Biological Sciences.

Centre for EcoLogical Technology Solutions

UC's Centre for EcoLogical Technical Solutions research is mostly on Clean Water Technologies – both on pollution prevention and pollution mitigation. Research is conducted in partnership with councils, Iwi and industry. Associate Professor Aisling O'Sullivan leads the diverse research group. Apart from clean water research, which included Associate Professor O'Sullivan patenting the storm water downpipe technology called Storminator™, other research projects include water quality monitoring and modelling, life cycle assessment involving quantifying whole-of-life environmental impacts of current and future wastewater treatment systems, and engineering education to enhance engineering students' competency in sustainability.

Recognising Emerging Career Researchers

The Early and Emerging Career Researcher Award recognises outstanding contributions to research made by a UC academic in the first decade of their career. Dr Jonathan Tonkin won the award in 2020. He is leading research seeking solutions on how to prepare freshwater ecosystems for an ever more uncertain future. Globally, he is recognised for his theoretical work in this area and also for his leadership on communicating the pressing need for new approaches to managing river flows and forecasting tools. In Aotearoa, his research findings paved the way to improving access to ecosystems for native migratory fish.

Clean NZ Water

Water pollution is one of the biggest issues facing Aotearoa. UC's Associate Professor Aisling O'Sullivan is leading a multi-disciplinary, multi-institutional team of nationwide researchers on a project aiming to help reverse water pollution with innovative sustainable treatment technologies, such as 3D-printed water filters made from biomaterials. "With Māori and iwi, we are developing a valuable project which has the potential to disrupt the water treatment sector – and most importantly return Te Mana o te Wai to our ecosystems and tangata whenua," Associate Professor O'Sullivan says.

Students Tackle Tongan Water Challenges

A real-life challenge was given to a group of UC final-year students. The challenge centred on Felemea, a real remote village in Tonga, which needed clean drinking water but had limited electricity to run a processing plant. The student team had to create an economically viable plan for a small-scale plant to desalinate and sterilise drinking water for Felemea. The project idea came from UC's Geomechanics Laboratory Manager, Siale Faitotonu. A former high school teacher in Tonga, Siale visited Felemea on a UC research trip at the start of 2020. "This project is good for the students and for the community. Hopefully it will become a reality because that would be a blessing for Felemea, and there are also other islands in Tonga having similar problems with water, who might be able to use the same kind of processing plant," he says. Siale was recently made a member of the New Zealand Order of Merit in the Queen's Birthday Honours List 2021.

Campus Waterways Restoration

The Waterways Action group is responsible for the Campus Waterways project aimed at restoring the ecological health and diversity of three campus waterways. The Group and Facilities Services work together to improve UC waterways, and their focus is on improving base flow (water quantity), reducing contamination (water quality) and improving habitat. In 2020 we switched from an automatic system to a manual system in using artesian water to heat our Erskine Building. This change enabled water to flow into campus waterways throughout the entire year, thereby reducing the impact on stream life. Progress was also made with filtering out contaminants, with significant work done installing storm-water filters to downpipes in 'hotspot' campus locations.

Trials to Reduce Nitrates in Canterbury Waterways

Trials commenced in 2020 to reduce nitrates in Waitaha Canterbury waterways, backed by the Department of Conservation and Fonterra, with support from UC. A small spring-fed farm waterway near Springston was chosen as a suitable site for the installation of an innovative two-step solution involving a woodchip bioreactor and sediment trap. Professor Jon Harding, Canterbury Waterway Rehabilitation Experiment (CAREX) Science Lead from UC, says testing and proving solutions will ultimately help farmers, landowners, water management agencies and others be able to take action and make a tangible difference. Monitoring will continue for the year, with results and updates to be published.

Water Resources Education and Research

UC has a range of innovative education and research options for the sustainable management of this critical resource, including:

- Water Resource Management PhD
- Master's Theses - topic of relevance to Water Resource Management
- Water Quality and Quantity Assessment course
- Research and Communication Methods course
- Applied Hydrogeology course
- Advanced Water Resources course – jointly run by UC and Lincoln University
- Water Management, Policy and Planning course – jointly run by UC and Lincoln University

7 AFFORDABLE AND CLEAN ENERGY



Ensure access to affordable, reliable, sustainable and modern energy for all

Electric Power Engineering Centre

EPECentre and PEET are joint initiatives between the electricity industry and UC. EPECentre is a world-class clean technology research incubator that fosters collaboration and innovation. Ongoing research, with a positive impact on carbon emissions, includes new technology impact assessment (e.g. Electric Vehicle), research programmes on electricity grid transformation (e.g. defining the architecture of the future low-carbon power system) and electrification of transport (e.g. electric motor drives for large scale transport). Education and outreach activities delivered by EPECentre on behalf of PEET connect students, academia and industry to enhance the mutual experience.

Future-Proofing the NZ Electrical Grid

Professor Neville Watson, from UC's Department of Electrical & Computer Engineering, leads a major project to ensure modern renewable energy can be integrated into New Zealand's century-old electrical grid to future-proof the power supply and benefit every New Zealander. Professor Watson's programme will research how high levels of direct current from renewable electricity technologies, like solar and wind power, electric vehicles and battery storage, can be efficiently integrated into the alternating current electrical grid as well as which parts of the electrical grid would be better served by using direct current for conveyance.

Education in Renewable Energy

Global needs for renewable energy are constantly rising. In our minor in Engineering Processing Technologies programme, students gain insight into the various kinds of energy, such as hydrogen, geothermal, solar, hydropower and wind, and learn how to identify opportunities to reduce energy demand. In other UC programmes, students can learn about the variety of renewable energy resources and conversion technologies, system modelling techniques, challenges to sustainability, and practical solutions to common issues. Graduates can continue with the Master of Civil Engineering (Renewable Energy) or Master of Engineering Studies (Renewable Energy) programmes.



Water reservoir dam in Waikato.



Minor in Power Engineering

Efficient and sustainable power generation and transmission is highly important in the modern world. Systems such as generators, transformers, and motors are widely used across different industries, and therefore need graduates with the expertise to create and improve these.

UC students can investigate electric power generation, distribution, and usage through electrical devices in our Power Engineering minor programme. They learn about the different forms of power, how power is created and about specialised systems, such as renewable energy.

Pictured left Electrical and Electronic Engineering students working on their Final Year Project.

Greener Future in Solar Cell Technology

Dr Paula Brooksby, a Senior Researcher in UC's School of Physical and Chemical Science, is at the forefront of research to refine fast-advancing solar cell technology. Dr Brooksby is exploring the potential of a carbon-based material (graphene) to revolutionise photovoltaic technology and performance. With the support of a grant from the Marsden Fund, Dr Brooksby and co-researcher Dr Noel Duffy (CSIRO) plan to fully investigate graphene as a tool in solar cell design. Their goal is to be the first to engineer thin transparent graphene-organic film electrodes to evaluate their potential use in perovskite solar cells.

A Graduate's Voice on Renewable Energy

Sonam Zam completed UC's Master of Engineering Studies (Renewable Energy). Sonam works at the state-owned Druk Green Power Corporation in Bhutan, which operates and maintains hydropower assets. Bhutan is landlocked, mountainous, and highly dependent on hydropower. "My Master's project focused on pumped hydro which will be important in Bhutan because at present we don't have reservoirs for storing water. What I've studied in New Zealand is renewable energy, hydro, solar and wind and I'm hoping I can apply these back at home. In some remote areas of Bhutan, hydropower isn't viable so solar and wind-generated energy would be more practical options. I was completely new to those when I came here [to New Zealand]" says Sonam.

8 DECENT WORK AND ECONOMIC GROWTH



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Understanding Tourism

UC's Business School course MKTG314 examines contemporary marketing strategies and issues in tourism. The course directly addresses 11 UN SDGs, for example, the sustainability of tourism, and issues of gender in tourism with respect to roles and responsibilities. It provides a comprehensive framework for understanding the effects of tourism development at various scales, with examples from Aotearoa and internationally. Attention is given to the understanding of sustainable tourism, including sustainable development and consumption, "overtourism" and global environmental change.

Building a Sustainable Future in Tourism

Finding out what makes a business resilient will help owners and managers build a sustainable future in tourism. UC's marketing and tourism expert, Professor Girish Prayag says there are several key pillars businesses can use to build resilience, including access to finances, adapting product offerings, relationships within supply chains, marketing, networks and community relationships, employee engagement and diversification. Professor Prayag explains: "Our research has shown that businesses that had done this pre-work had a more positive outlook and were able to adapt more quickly during COVID-19." Professor Prayag is currently studying small to medium tourism and hospitality enterprises in Christchurch and wider New Zealand to understand what contributes to their resilience.

Roy's Peak Mountain Hike in Wanaka New Zealand, a popular tourism spot.



UC Sport Coaching student Kali Zygman at work at Crusaders HQ at Rugby Park in Christchurch.

Career Advice, Jobs and Internships

Te Rōpū Rapuara | Careers team support UC students with a range of career and employment services. Career Consultants are available to discuss options and job prospects. Seminars are regularly delivered. Topics are broad, including job applications and interviews, employment agreements and negotiating salary. The team also connect employers and students, hosting career fairs and presentations. Jobs and internships are listed on the NZUniTalent jobs board. Our strong relationship with the Crusaders Rugby Club has provided internship opportunities for students in UC's Bachelor of Sport Coaching programme, the only degree of its kind in Aotearoa. Undergraduate student, Kali Zygman worked at Crusaders HQ, and Todd Andrews worked at the Crusaders gym while studying towards his Master's degree in Sport Science.

Work/Life Balance

We are committed to helping our staff achieve a healthy balance between work and the other important aspects of their lives. Where reasonably practicable, flexible working arrangements may be offered such as part-time work, job sharing, reducing responsibilities, or changing hours of work. Several learning and development programmes focus on supporting staff when navigating change or challenging times, and include in-person workshops and online resources. Recently, we launched the Mentemia App for staff and students, which offers on the go well-being tips and tricks.

FutureU study grants

FutureU launched in mid-2020, as a targeted response to help support affected businesses and employees following the COVID-19 outbreak. Many people faced redundancy, suspension or reduction in work hours. FutureU study grants provided the opportunity for people affected by COVID-19 to upskill or change careers. Study options ranged from short-term qualifications to our revamped Master of Business Administration, including various certificates and diplomas. FutureU was a unique opportunity for students enrolling in 2020, supporting the recovery of the New Zealand economy following the COVID-19 outbreak.



Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation



Chemical and Process Engineering Senior Lecturer, Dr Matthew Cowan.



Student Entrepreneurs Pitch Their Big Ideas

Hosted by our Centre for Entrepreneurship (UCE), UC's students pitched their business ideas live on stage during a Dragons' Den-style competition held in early January 2020. UCE programmes empower students to make a real difference. The students' ventures included promoting a compostable kelp-based plastic alternative, a social enterprise that provides affordable ball dresses for high school students, a technology to recover zinc from industrial waste, and a company that provides data services for the blockchain industry. UCE former Director, Rachel Wright, explains: "This is a fantastic opportunity for UC students to develop their creative business and social enterprise ideas and make a positive difference in the world. The showcase is also a chance for people in the community to come along and discover what the next generation of entrepreneurs in our city are up to."

Above: students working together in the University of Canterbury Centre for Entrepreneurship Summer Startup Programme.

Breakthrough in Recycling Acid Waste

Zincovery is the brainchild of UC's Associate Professor Aaron Marshall and research student Jonathan Ring. Their new low-cost industrial prototype will be capable of recycling 15 per cent of the acid waste produced by Christchurch's galvanised steel industry. Until now, there have been few affordable recycling options for the galvanised steel industry as the existing technologies are expensive and recovering zinc has simply not been economic. Zincovery's ambition is to expand into international markets, which could direct significant financial returns back to New Zealand. Jonathan is working on the business side of Zincovery with UC's Centre for Entrepreneurship, to fast-track the commercial enterprise.

Below: QuakeCoRE research being undertaken inside UC's Structural Engineering Laboratory.



QuakeCoRE

Advancing earthquake disaster resilience is at the forefront of research and outreach activities of Te Hiranga Rū QuakeCoRE, a national research centre hosted at UC. Research projects include advancing understanding and modelling of individual earthquake-induced geohazards (including ground motions, liquefaction, and slope instability); the behaviour of structures and infrastructure in the built environment; law, planning and economics; understanding critical cultural and social factors of New Zealand people, and the role of Mātauranga Māori (Māori knowledge). In 2020, the Government awarded a second tranche of funding over seven years for UC to continue hosting the research centre. Deputy Vice-Chancellor Research, Professor Ian Wright says, "This next phase will provide significant advancement and application of new smart technologies to earthquake engineering, and the social and economic mitigation of future earthquake impacts."

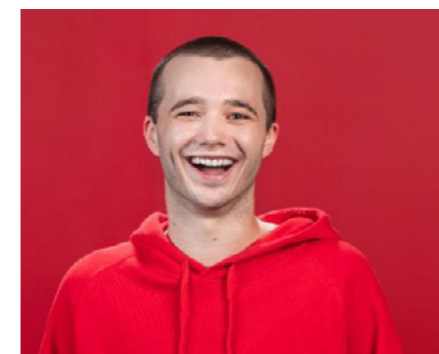
Talking 'Hidden Energy' at Parliament

As part of the Speakers Science Forum 2020, UC cutting-edge research was presented to MPs and decision-makers, to inform the issues being addressed in Parliament. UC Engineering academic Dr Matthew Cowan's presentation focused on his research, improving the methods and technologies used to purify all the building blocks of society. "The kai we eat was separated from the earth, the water we drink was purified of bacteria, and our cutlery was shaped from metal refined from ore. Amazing amounts of energy are hidden in the objects all around us," he says. Dr Cowan's goal is to reduce the amount of energy we need to use every day to slow climate change and enrich lives.

"The kai we eat was separated from the earth, the water we drink was purified of bacteria, and our cutlery was shaped from metal refined from ore. Amazing amounts of energy are hidden in the objects all around us"

Dr Matt Cowan
Chemical and Process Engineering

UC Graduate Taking on the World



UC Bachelor of Commerce Graduate Charlie Kavanagh.

Charlie Kavanagh graduated from UC in 2020 with a Bachelor of Commerce double major in Information Systems and Management and a minor in German. Charlie says the entrepreneurship scene at UC is unparalleled. "I started three businesses since coming to UC," he says. "I wouldn't have been able to achieve any of these if it wasn't for the staff and resources at UCE (UC

Centre for Entrepreneurship). I'm a business-minded person, and UC has given me access to a ton of resources. The entrepreneurship scene here is unparalleled. I would highly recommend UC to anyone who's passionate about start-ups. You'll learn heaps of great skills, meet inspiring people and maybe even graduate with your own business... or three!"

10 REDUCED INEQUALITIES



Reduce inequality within and among countries

Child Population Health

The Child Population Health Theme (CPHT), within UC's Child Well-being Research Institute, identifies particular issues evident in the community for children and young people who may not enjoy the legislative or other attentions that could positively determine and impact their lives. Its research aims to create robust, accessible evidence for policy makers to assist them in addressing inequities, and also aims to create an understanding of what may be working well in the lives of children and young people. Professor Schluter,

former CPHT Director, and his team of doctoral and post-doctoral students and colleagues focus their research on local (Canterbury region) and national populations. A recent project looked at fluoridation and its impact on oral health in our children in Aotearoa. Current research involves investigating a birth cohort study, which follows Pasifika children growing up in Aotearoa.

Right: Professor Philip Schluter, from Education Health and Human Development.



GeoHealth Laboratory

The GeoHealth Laboratory is a joint venture between UC and the Ministry of Health. Work focuses upon how the local and national contexts shape health outcomes and health inequalities, making this collaborative work a resource that is unique in the Southern Hemisphere. The team is currently considering how various characteristics of local neighbourhoods influence health outcomes and health-related behaviours. The Lab's projects include the effect of community resource access (e.g. access to parks, food stores, healthcare provision) on health inequalities; the role of deprivation and rurality in influencing suicide rates; environmental justice and air pollution; and the importance of income inequality and macro-level process on inequalities in life expectancy.

Left: Ernest Rutherford, the location of Te Taiwhenua o te Hauora | GeoHealth Laboratory.

Striving for a More Equitable World

Director of the Macmillan Brown Centre for Pacific Studies at UC, Professor Steven Ratuva, was the recipient of the Society's 2020 Metge Medal for excellence and building relationships in the social science research community. Professor Ratuva, who was born in Fiji, says his work is inspired by a desire to create an equal, sustainable and humanity-based world. Professor Ratuva led the world's largest-ever research project on ethnicity – The Palgrave Handbook of Ethnicity – which involved a global team of about 150 scholars.

Equity and Diversity at UC

UC is committed to developing a diverse, culture-rich, and cooperative environment for all. Our integrated Equity and Diversity Policy (2020-2021) supports our strategic objectives and obligations in a way that ensures inclusiveness, participation, appreciation, recognition, support, transparency, and a sense of belonging for all students and staff. We are committed to sitting at the forefront of policy practice that removes inappropriate discrimination and provides equitable opportunities. We view diversity as an asset, and actively seek ways to celebrate the diversity of all members of our community.

UCSA Equity and Diversity

UC's Student Association (UCSA) has several committees responsible for giving feedback on students' needs within the student population to ensure all student voices are heard, which includes any issues surrounding equity and diversity. For example, the UCSA's International Student Committee, Postgraduate Student Advisory Group, Equity and Well-being Advisory Group, and the Pasifika Advisory Group. UCSA committee members then hold student representation on UC committees to ensure actions and programmes create a greater sense of inclusiveness on campus.

Equity and Diversity Support

UC's Equity and Disability Service team assists students with disabilities by providing appropriate, disability-related study support services and specialist resources. Te Waka Pakākano is the UC team that includes both Māori and Pasifika support. The UC Māori team fully support and guide ākonga Māori to succeed academically, and encourage personal growth and connection to Māori community and culture. The Pacific Development team offer advice, support structures, events, and programmes for our Pasifika students, including initiatives for Canterbury's Pasifika community, such as the secondary school outreach programme UCMe XL. UC's Rainbow Advisor supports our LGBTQIA+ students and staff with assistance on and off campus. A network of staff are available called our Diversity Champions, who are knowledgeable on, and sympathetic to, diversity and equity issues. Yearly events are hosted in the city, such as the Christchurch Pride Week.



11 SUSTAINABLE CITIES AND COMMUNITIES



Make cities and human settlements inclusive, safe, resilient and sustainable



Ōtautahi, Christchurch, at night.



Oxford Terrace in Ōtautahi, Christchurch.



Emergency management students from Utah Valley University staff and students working at the Riccarton West Community Garden

Utah Emergency Management Visit

In early 2020, 24 visitors comprising police, firefighters and other emergency personnel from Utah, USA, and emergency management students from Utah Valley University, visited UC to learn about post-earthquake initiatives. UC's Associate Professor Billy O'Steen explains: "They have found the Christchurch context particularly rich with regard to how UC and other organisations have responded to the 2010 and 2011 earthquakes. This is a great example of UC sharing our unique expertise and experiences with others from around the world. This is the third time that students and staff from Utah Valley University have visited the University of Canterbury as part of their emergency management graduate programme."

Young Lives in Seven Cities

By 2050, seven out of ten young people will live in an urban area. Research teams in seven cities around the world explored how we live well in cities so young people can flourish but not stress the planet. In early 2020 the global project, Young Lives in Seven Cities, came to Ōtautahi and featured a discussion series, the launch of a city-wide online survey for young residents, and an exhibition at Tūranga Central Library. The project is led by UC's Professor Bronwyn

Hayward with Dr Kate Prendergast. "We're interested in finding out what cities can do to better support quality of life for young people in low-carbon ways. That includes understanding their aspirations and life satisfaction and their energy use across five domains: what they are eating, how they're getting around, how they live at home, and their time use – study, work and leisure activities," says Professor Hayward.

Resilient Cities

The Resilient Cities course explores contemporary and pressing issues of urban development for resource use and infrastructure, and how to manage cities sustainably. Topics cover energy use, transport networks and green development. The focus is on the need for cities to be resilient to the challenges they face. Students are taught both applied and practical elements of sustainable urban development. Each year there is a different theme, and in the previous two years students have looked at biophilic cities and at the Christchurch central city rebuild, which involved collaboration with local government officials and communities.

Master of Urban Resilience and Renewal

Our Master of Urban Resilience degree addresses broad urban issues and students engage with communities on current challenges that cities may face in Aotearoa. While many postgraduate degrees focus on local planning legislation, there are no other identifiable postgraduate study programmes in Aotearoa that focus on how communities respond to challenges that urban areas are facing now. Some of these challenges may be associated with flood risk, coastal erosion, sea level rises, and challenges of demographic growth and urban spread.

Strengthening communities

UC is the only place in the world to create the unique course, Strengthening Communities with Social Innovation, which was inspired by the actions of the Student Volunteer Army following the Christchurch earthquakes. Over 1000 students have taken the course in the past nine years. During that time, students have contributed over 25,000 hours of service to more than 50 community organisations, government agencies, and individuals in Christchurch, Japan, Vanuatu, and the U.S.

Sustainable and Connected Campus

UC's Campus Master Plan guides our built infrastructure for the next 20-30 years. The Plan focusses on an individual's use in the built environment, such as great airflow, more light, quiet study spaces, wi-fi to promote student connectedness, showers and toilet facilities for all, and accessible routes for wheelchair users.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Ensure sustainable consumption and production patterns

Ethical and Respectful Product Design

Our unique School of Product Design offers degree courses that combine Science and Engineering, Creative Design and Business. Graduates develop creative ideas and gain the practical business skills needed to commercialise new product ideas. The School's Natural Products Properties and Production course encourages students to be ethical and respectful when using resources from nature in formulated products and focusses on sustainability and cultural issues surrounding the ownership and use of native flora and fauna.

Right: a range of products created by students in the School of Product Design



UC for Fair Trade

UC is recognised by the Fair Trade Association of Australian and New Zealand as a Fair Trade University, and we were the first New Zealand entirely Fair Trade campus. We received accreditation back in July 2017, and are incredibly proud of this achievement. Being recognised as Fair Trade means we are committed to being a socially responsible institution. We demonstrate this by supporting Fair Trade growers and producers, purchasing certified products, and using these products in our kitchens and campus retail outlets.

Left: a range of Trade Aid products available at a UC market.

Management Education

UC Business School is a signatory to the Principles for Responsible Management Education, a global movement to realise the SDGs through responsible management education. Courses strongly align with the SDGs objectives. Examples include a general introduction to the changing responsibilities of business to society and the environment, an overview of sustainability theory and practice in respect to conducting business effectively, investigating current forms of social and environmental accounting and reporting by a range of entities, examining contemporary strategies and issues in tourism marketing and management, and foundational concepts for understanding sustainability from a business perspective.

Campus Master Plan

Our Campus Master Plan (guiding our built infrastructure for the next 20-30 years) incorporates design principles that celebrate the campus's natural landscape and open spaces. For example, endemic natives are to be planted both sides of all three tributary streams that flow through our campus, to improve biodiversity. Another design principle focusses on energy and activities on campus. Our dedicated, full-time, Energy Manager is responsible for actively implementing and managing a reduction in our consumption of energy, water and carbon emissions.

Campus Waste

In 2020 our Sustainability Office released new waste messaging that introduced the idea of the waste hierarchy. Having asked our UC community for ten years to think about what items go in which waste bins, we now want to urge people to consume less and produce less waste. In 2021 we plan to conduct an extensive waste audit to test whether our messaging has been successful and to help us understand if there are any particular locations on campus we need to be better prepared for.

Responsible Practices

We are an entirely Fair Trade campus. Our finance practices incorporate sustainable procurement, considering the environmental, social and economic consequences of design, materials used, manufacturing methods, logistics and disposal. Purchasing is conducted using our electronic central purchasing tool Unimarket, which directly interfaces with our primary Financial Management Information System (Oracle EBS). Comprehensive finance practices user guides are made available to staff on-line.



Pictured University of Canterbury campus

13 CLIMATE ACTION



Take urgent action to combat climate change and its impacts

Gateway Antarctica

Located at UC, Gateway Antarctica plays a leading role in national and international Antarctic research. The Centre draws on interdisciplinary collaborative research networks across UC, and has three research programmes of global significance, and strategic importance. One programme engages in research on the causes, effects and responses of the Antarctic system to global change. Another programme focuses on individual species and communities and how they respond to environmental variability and change. The third programme engages in legal, historical, socio-cultural and policy analyses within the context of international law and foreign and domestic public policy.

The Importance of Measuring Antarctic Sea Ice

In 2020, for the first time ever, a research team used a fixed wing aircraft to measure the thickness of a huge area of sea ice in Antarctica. Led by UC's Glaciologist, Associate Professor Wolfgang Rack, the team measured the ice thickness by using a Basler BT-67 plane (modified DC-3) towing specialist equipment underneath, covering a massive area of around 800 kilometres. Associate Professor Rack explains: "Sea ice is important because it reflects sunlight, insulates the warm ocean from the cold Antarctic atmosphere and its formation controls global ocean circulation. How Antarctic sea ice responds to a warming planet is a key question in climate science, and as data sets are limited, this research will help place future change in context." The team are planning another trip to Antarctica in late 2021 and the hope is, in future years, this can be done via satellite.

Emperor Penguins in Dire Straits

Emperor penguins are some of the most striking and charismatic animals on Earth. UC's Dr Michelle LaRue participated in an international group study on emperor penguins. The group found that climate change may render this breed of (emperor) penguins extinct by the end of this century. By combining two existing computer models, the researchers ran the models using several scenarios in which global temperatures increase by varying degrees Celsius. Under one particular scenario of 'business as usual' they found there would be an almost complete loss of the emperor penguin colonies. "Basically, if we don't hit the Paris Accord emissions goals, emperor penguins are in deep trouble," says Dr Michelle LaRue.

Emperor penguins.

Equipping Environmental Scientists to Make a Difference

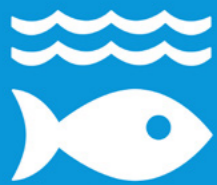
In a first for Aotearoa, UC offers a four-year degree to upskill environmental scientists during a time of rising concern about climate change. The new Bachelor of Environmental Science with Honours degree will provide students with practical skills across varied disciplines of science. UC's Professor Sally Gaw says environmental scientists are needed to step up and help address some of the urgent sustainability issues the world is facing: "Rapid environmental change and diminishing resource means the planet needs - more than ever - highly skilled environmental scientists empowered to make a difference."

Left: researchers measuring Antarctic ice.

On Carbon Net Neutrality by 2030

We have been monitoring our emissions for over 10 years now, and achieved certification in the Carbon Reduce scheme in 2011. We were the first University in the Southern Hemisphere to do both. Since 2010 our greenhouse gas emissions have reduced by almost a third. Current plans to achieve further carbon net neutrality by 2030 involve six priority actions: low carbon energy and carbon sequestration programmes; reducing air travel, fleet vehicle emissions, and building electricity intensity; and expanding our EV charging network.

14 LIFE BELOW WATER



Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Law of the Sea

This course introduces students to the law of the sea as codified by the 1982 United Nations Convention. Students examine various maritime zones and focus on issues such as sustainable fishing, marine environmental protection and maritime security. Contemporary challenges are explored, including climate change, ocean acidification and managing genetic resources in areas beyond national jurisdiction, a topic subject to on-going negotiations in the UN. The approach Aotearoa takes to managing the marine environment is provided, including Māori perspectives of ocean resources.

Education for Goal 14

The oceans cover 71% of the earth's surface. UC offers a range of course options to equip the next generation in marine and coastal ecosystems for healthy oceans. Students gain a fundamental grounding in ecology, and later study aspects of biology that are useful in applied conservation, such as how ecologists can help to preserve biodiversity. Advanced studies of marine ecology considers how marine species interact with each other and the environment, and explores current issues and processes affecting marine ecosystems within Aotearoa and worldwide.



Marine Ecology Research

The Marine Ecology Research Group is affiliated with the National Institute of Water and Atmospheric Research (NIWA). Students focus on field-based, marine ecological research in the nearshore environment. Research projects include larval fish ecology, the ecology of coastal fishes, the effects of wave exposure on settlement and recruitment of habitat-forming species, the effects of humans on intertidal platforms, and life history studies on a wide range of invertebrates, algae and seagrass.

Māori and Indigenous Knowledge

Indigenous knowledge incorporating the Māori principle of kaitiakitanga (guardianship) in an environmental context is very relevant in Aotearoa. We offer science students a course on basic understanding of Māori and indigenous peoples' knowledge in such fields as astronomy, physics, conservation biology, aquaculture, resource management and health sciences. The course is about understanding Māori knowledge, how it's used, where it comes from, and how it can be applied in a modern context in a range of scientific fields.

Left: Ngatoroirangi Mine Bay Maori Rock Carvings, carved by Matahi Whakataka-Brightwell.

Towards a Vision for Fisheries

From UC's School of Mathematics & Statistics, Professor Michael Plank's mathematical modelling work has had significant impact in industry and government in Aotearoa. Professor Plank is a member of the NZ Prime Minister's Chief Science Advisor expert panel. The expert panel considered the future of commercial fishing in Aotearoa, and their report (released February 2021) made recommendations on how to move towards a data-driven approach to fishing for generations to come. Professor Plank's research on balanced fishing is cited in reports by the Food and Agriculture Organisation of the United Nations and the International Union for the Conservation of Nature, and discussed in a forum at the European Union Parliament.

Below: fish farm near Coromandel town, Aotearoa.



15 LIFE ON LAND



Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss

Freshwater Biodiversity Box for Junior Students

It's vital the next generation of researchers understand our natural environment to maintain its resilience and productivity for the continued well-being of future New Zealanders. The Freshwater Biodiversity Box is a dedicated set of freshwater sampling gear and activities, available to Canterbury school children. Junior learners can connect with and support conservation within the Canterbury region by exploring freshwater biodiversity and learning about ecosystem health in waterways. The box has tools to sample freshwater invertebrates, including activities based on healthy freshwater habitats and food webs. The idea was developed by the Canterbury Waterway Rehabilitation Experiment (CAREX) at UC's School of Biological Sciences. CAREX focus on solutions that can be applied across waterways in Canterbury, Aotearoa and beyond, and address aquatic weed, sediment and nutrient management issues in lowland Canterbury to improve waterway health.



Right: Ōtakaro/Avon River

Forestry Achievers Recognised

Professor Bruce Manley and UC alum Adrian Loo were named as two of 2020's Aotearoa forestry high achievers. The New Zealand Institute of Forestry awarded Professor Manley the highest honour in NZ forestry – the Kirk Horn Award, which recognises outstanding contributions to the industry. Professor Manley is Head of UC's School of Forestry. Adrian Loo received the Prince of Wales Award for Sustainable Forestry, which recognises young forest professionals who are highly engaged in the principles of sustainable forest management. Mr Loo works with landowners on diversification of land use through the addition of exotic and native forests.

Right: Autumn trees on University of Canterbury campus.



Pest Control that Makes Scents

A long-term, novel solution to help New Zealand achieve its predator free ambitions is a step closer. Dr Michael Jackson and his team of postgraduate researchers from our School of Biological Sciences are working to create a multi-species lure that can be used to catch different types of introduced predators. At the heart of this new research is identification of the chemical compounds needed to attract multiple species. The success of the project is multi-layered, as Dr Jackson views the success of students' research on par with his own research outcomes. "It would be quite cool, at the end of this project, to see our Masters' students graduate and maybe go on to their PhDs or into business, knowing they've been successful with their research," he says.

Robotic Farming Looking After the Land

Robots could soon be helping farmers manage arable land in a cleaner, greener way. UC students won a Callaghan Innovation prize in 2020 for their robotic farming system, which would support planting multiple species rather than one type of crop over a large area. The students say their "approach was to completely rethink arable crop production to enable a more regenerative type of agriculture. We're hoping to mitigate the impacts of industrial agriculture on climate change by reducing carbon loss that happens during tilling of topsoil. We want to help farmers be good custodians for the soil and also run a profitable farm."

Native Tree Restoration

Our School of Forestry is leading the expansion of a Restoration Ambassadors programme, with Te Uru Rākau (Forestry New Zealand) providing funding from the One Billion Trees Fund to run the programme. It will see two restoration ambassadors cover more areas of Aotearoa, providing expert advice to farmers and landowners on how to restore native planting and manage areas of biodiversity. UC's Professor David Norton, who has been a driving force behind the ambassador project, says it will help meet demand from South Island farmers. "There's huge interest from farmers down here needing advice on how to establish native forests on their land. Having two people in the role will mean more free and independent advice can be provided to farmers, iwi and others in rural Aotearoa on how to carry out good quality, planned ecological restoration."

16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS



Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels



Whanganui River

Bicultural Lessons for Law Students

Law Lecturer Adrienne Paul (Ngāti Awa, Ngāi Tahu) commenced in January 2020 and is already changing how bicultural lessons are woven into UC's Bachelor of Laws programme. Adrienne teaches Māori Land Law as well as teaching into a number of other Level 1 and 2 Law papers. "It's really cool to see my students grapple with and understand that rivers and mountains in Aotearoa have the same rights as people in a court of law, and we see this through the Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, whereby the Whanganui River is stated as a legal person." This unique characteristic of Aotearoa law recognises the Māori belief that humans are equal with everything including land and rivers.

Bachelor of Criminal Justice

The Bachelor of Criminal Justice degree is the first of its kind in Aotearoa. Programme Director Dr Jarrod Gilbert sets the strategic direction for the degree. The degree provides the only comprehensive grounding in the New Zealand criminal justice system. It is open to all students with entry to university, and it is also possible to study towards the degree while working in this field. The degree can lead to careers in law enforcement, corrections, offender rehabilitation, working with young offenders, criminal law, security and border control. Graduates will have an edge in the crime and justice job markets, which are areas of growing national need and international specialisation.

Public Perceptions Informing Law Change

Results from a study into perceptions of surrogacy in Aotearoa is being used to inform law changes in the UK. Associate Professor Debra Wilson, from UC's School of Law, led the research project, which aimed to gain a real understanding of what the New Zealand public thinks about our surrogacy laws. The most surprising findings were that surrogates should receive some form of payment, and who the legal parents should be. When it is too hard to arrange a surrogacy in their own country, people go overseas, and differing laws mean the child essentially has no citizenship. The research findings are already being used to inform policy changes in the UK and Associate Professor Wilson also hopes to advise on a private member's bill here in Aotearoa.

Award-Winning Author Behrouz Boochani

After six years of being detained overseas, award-winning author Behrouz Boochani, an indigenous Kurd, became recognised as a refugee under the United Nations Convention on Refugee Status. This meant Boochani was now able to live in Aotearoa, and apply for permanent residence. He said the decision by Immigration New Zealand provided him with a sense of security. Boochani was appointed as a Senior Adjunct Research Fellow at UC in 2020, based at the Kā Waimaero, the Ngāi Tahu Research Centre. In 2021, Boochani was made UC Writer in Residence.

“It's really cool to see my students grapple with and understand that rivers and mountains in Aotearoa have the same rights as people in a court of law”

Lecturer Adrienne Paul
Māori Land and Law

Research Facilitates Positive Change

UC Law Professor Elisabeth McDonald's book published in 2020, *Rape Myths as Barriers to Fair Trial Process* contains findings from four years of research, and opened the court room door on rape trials. Professor McDonald explains she "was determined that it would not just amount to yet another demonstration of how the criminal justice system does not do right by rape victims. Rather, it might demonstrate how the adversarial trial

process could be different, could provide fair trial process for both complainants and defendants, and not continue to be one of the reasons for the extraordinarily high attrition rates." The book is written for a wide audience and available to sector workers, victim support agency workers, policy makers and students of law, criminology, criminal justice and sociology can benefit from the insights and recommendations.

Left: Professor Elisabeth McDonald's book *Rape Myths as Barriers to Fair Trial Process*.

Report on Foreign Bribery

Foreign bribery has huge consequences. A global research 2020 report on foreign bribery rated the performance of leading global exporters and countries who are OECD signatories. UC's Law Professor John Hopkins took part as the author of the New Zealand report. He described Aotearoa as having 'limited enforcement'. Professor Hopkins explains: "Although domestic corruption in New Zealand appears low, we really need to lift our game in the way we respond to the threat of international corruption. The combination of an excellent reputation coupled with lax enforcement of foreign bribery is an extremely dangerous one. Organised crime and corrupt entities may see New Zealand a soft target for legitimising their activities."

Law Professor John Hopkins.



17 PARTNERSHIPS FOR THE GOALS



Strengthen the means of implementation and revitalise the global partnership for sustainable development

SDG Summit Series in Ōtautahi Christchurch

The third SDG Summit Series in Aotearoa was announced in 2020. UC and Lincoln University (LU) are jointly hosting the series, of three online hui and a summit workshop. Each hui builds on the previous one, says Dr Matt Morris, UC Sustainability Advisor and SDG Summit Series Chairperson. Hui 1 See the Change starts November 2020, followed by Hui 2 Be the Change in March 2021, and Hui 3 Working Together

for Change in June. The two-day national summit Collaboration For Systemic Change is on 2 and 3 September. The summit is co-hosted by UC and LU, with mana whenua Ngāi Tuahuriri, and is in partnership with the Christchurch City Council and Ara Institute of Canterbury, supported by Tourism New Zealand, Te Pokai Tara | Universities New Zealand, ChristchurchNZ, and New Zealand National Commission for UNESCO. Mayor

of Christchurch Lianne Dalziel will officially open the participant-led summit, which will feature concurrent sessions of workshoping, activations and kōrero, and field trips to see the SDGs in action in Lincoln, Lyttelton, and around the central city. Business leaders, experts, students, community leaders and government organisations, will connect and collaborate on taking real action to achieve the SDGs.

UC and the Ara Institute of Canterbury Partner to Teach Nursing

A joint initiative between UC and Ara offers those interested in becoming a nurse to study in Ōtautahi for the Master of Health Sciences Professional Practice (Nursing) and Bachelor of Nursing. The joint initiative means students who already hold a degree relevant to health sciences can gain two further qualifications in just two years. On completing the programmes graduates can become eligible to gain employment as a beginning nurse in Aotearoa. Students can complete a UC Master of Health Sciences Professional Practice (Nursing) and a Bachelor of Nursing (BN). The option of completing the Master of Health Sciences with a research component is also available.

Right: nursing student.



SVA Service Award

Our near decade-long partnership with the largest student club in Aotearoa, the Student Volunteer Army, expanded to help spread its culture of meaningful volunteering to secondary schools with the SVA Award. The SVA Award is designed to assist high school students to understand how their service/volunteering contributes to wider society and can advance their future career. UC's Vice-Chancellor Professor Cheryl de la Rey says it's important to the UC community to make a positive impact on the well-being and social sustainability of Christchurch, Canterbury, and nationally. "Community engagement is something that UC graduates are known for. It's one of UC's future-focused objectives to deliver an education that prepares our students to be enquiring and enables them to create and contribute to a better society," says Professor Cheryl de la Rey.



UC students in the SVA working on a path on the Kaikōura Peninsula in 2017.

Connected MBA Programme

UC is the first university globally to sign as a Research and Knowledge Partner with the Smart Cities Council. Our new Connected MBA programme will give students access to the Council's leading Smart Cities Academy and Smart Cities Practitioner Certificate programme. UC's former MBA Director Associate Professor Dr Chris Vas views the partnership as a major win for students. "For a long time in MBA programmes we have focused on organisations in a macro global context, taking the city and the communities in which these organisations function for granted. The UC approach to supporting leaders to understand how their organisations can create a positive impact on cities and society is needed," says Associate Professor Vas.

Community Engagement

UC's Community Engagement Hub is situated in the heart of our campus, and is a destination for the academic study of volunteerism and disaster related community service. With innovative spaces for research and education, and social spaces that encourage collaboration, the Hub has contributed to over 30,000 hours locally. The Hub engages with international guests and groups, including Dr Jane Goodall, and recently hosted a virtual exchange between UC and the University of Puerto Rico staff about post-disaster delivery of health care following Hurricane Maria.

UC Partners with ENZ

ENZ and New Zealand's eight universities, including UC, announced in late 2020 a partnership with UK-based qualifications provider the University Consortium (NCUK) that will allow students from more than 30 countries to begin a New Zealand university qualification without leaving home. The pathways initiative enables international students to begin study in their home countries towards Bachelor's and Master's degrees at any of New Zealand's eight universities, including UC. Students commence the pathway in 2021.

Sustainability Events and Engagement

2020 was challenging for UC student engagement in sustainability, yet it opened up opportunities to connect with our students in creative and unique ways. During lockdown, our Sustainability Office ran a series of Sustainability @ Home campaigns over social media, with challenges and weekly feedback on how students were taking action on sustainability while at home. The challenges ranged from sustainable recipes and cooking, to gardening, slow fashion and low waste living tips. Students said they really enjoyed participating in the challenges, and loved learning new skills from other participants. After lockdown, there were restrictions on the types of activities that could be undertaken. However, we successfully delivered our popular Plastic Free July, Clothes Swap and Bike Breakfast events. 2,175 students and staff engaged with our sustainability events on campus, and we reached 331,644 people across social media channels.



Students on their way to the Bike Breakfast.

About this document

This is the University of Canterbury's (UC) first document produced on our commitment and engagement in support of the United Nations' (UN) Sustainability Development Goals. Our approach for this document is to identify and summarise UC's activities and outcomes that most closely align with the UN's SDGs, through our core functions of research, education, engagement, and operational activities, across the campus. Our activities and outcomes principally cover the 2020 calendar year.

The material is substantiated with metrics (quantitative) and case studies (qualitative). For quantitative data, searches related to the SDGs were conducted on the Scopus database to collate our research publications, by using the keyword search terms created by the Elsevier methodology. Due to the size of our institution and large number of varied courses taught, our own curriculum audit was conducted for the education metrics. Using a set of keywords in course descriptions, developed by Sustainable Development Solutions Network and Australasian Campuses Towards Sustainability, we then linked them to the SDGs by either direct impact (e.g. if the course allowed students to understand how to tackle the goal) or indirect impact (e.g. if the course allowed students to understand the basics and build on this knowledge to contribute to the goal). For qualitative data, case studies that most closely aligned with producing outputs for the SDGs were selected by a variety of ways, including through a consultation process, conducting a review of our website, consulting with operational directors and managers, and gathering input and feedback from a range of UC staff and students with particular expertise.



