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Front cover photo: *Metrosideros perforata* (Okarito), (David Norton)

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**Forestry Students: where do they
come from?**

In a word, everywhere! In any given year, we have students who have come to the School from Invercargill to Northland, and we have Coasters and Cantabrians. Our international

How did you come across UC's Forestry degree?

Pure chance – my best friend told me about the degree and sold it to me by saying we would spend more time in the forest and be able to build our own mountain bike tracks. I found the more I learnt through the degree, the more interesting study became, and the passion for forests developed rapidly.

What was it that kept you going?

The more you learn the more interesting it gets, and the passion for forests will grow from those roots! Our class did plenty of field trips and working experience through UC. These were some of the most memorable times of my early twenties.

What kind of things are involved with studying a Forestry degree?

The degree was more challenging than expected as foresters are required to have such a diverse array of understandings (Sciences, Mapping, Economics, Management, Marketing, Biosecurity, Silviculture, Harvest planning, Environmental planning, Carbon sequestration, Business, Health and Safety, and the list goes on...). But this has given me such an awesome base for my career.

Even if you don't stick to forestry in the long run, the skillsets are so diverse you will get opportunities to try jobs you may have never contemplated.

You've landed a couple of different roles since graduating, including being a Park Ranger. What does your work involve now as a Forester?

I am responsible for the management of Environment Canterbury's 2,700 hectares of forests, and work within the Parks and Forests Team based in Kainga, Christchurch. Our forests were primarily established for flood protection and soil conservation surrounding the volatile braided rivers across the Canterbury Plains. The regional parks have developed because of the forest establishment which house many community recreational values, plus host a range of biodiversity projects which are accelerating rapidly.

Since I am the only Forester I am involved with everything associated with the forest management, 2.1 oe/ Caicalues, piveationciatworkiatity projects whrse

Inter-faculty cooperation

The forestry program collaborates with the other academic departments in the Faculty of Engineering as well as other departments throughout the university including science and business, utilising the expertise from throughout the university to enhance teaching and innovation.

Graduate profile

The Forestry programme is designed to provide students with the academic base and practical work experience to succeed in the forestry sector. These skills include;

- Independent thought,
- aware of and responsive to society's needs,
- effective communication
- excellent technical background relevant to forestry practice
- aware of the environmental, social and ethical context in which they will work.

International students

The School has a strong international student body at both undergraduate and postgraduate level from nearly 40 countries. If you are interested in applying for admission to any Forestry programme, you can get details on the application process, closing dates and scholarships at: www.canterbury.ac.nz/international

Forestry Students Society (FORSOC)

Forestry Society (FORSOC) is one of the oldest clubs at UC. It was established in 1924 with the aim of bringing forestry students, their mates and like-minded people together. This year we have a variety of events for everyone to enjoy combining the academic, environmental, and social aspects of the club. In conjunction with Adrenalin Forest we'll be hosting an event so that our members can experience the bush first-hand. We'll also be doing various tree plantings throughout the year. We haven't forgotten the classics though. The BBQ's, Bus Party, Quiz Night and Ball will be back and better than ever!

Scholarships

Not all awards fund the full four years of

It may not be everyone's first thought when it comes to careers in forestry, but for Amy it is the people that make the industry special.

'One of the best things about my job is that I get to meet and work with a wide range of people,' she says. 'I visit our crews, do health and safety and environmental audits, plus office work and meetings. It makes it very dynamic as I'm doing something different every day of the week.'

It was also what Amy enjoyed most about her experience at university.

'The School of Forestry at UC itself became almost like a second family, especially with the amount of time you end up spending there in the latter years,' she says. 'The lecturers and the students themselves are what really make it worthwhile. Lifelong mates are created between times of studying and having a good time!'

Amy says that she chose to study Forestry 'on a whim', but soon became sure it was the right decision.

'I had some input from my grandmother who took me out to visit a farm forester she knew. It wasn't until I was in the thick of it that I knew this is what I wanted to do.'

After completing her degree at UC, Amy landed her first job as a graduate with Rayonier New Zealand/Matariki Forests as a Log Production Coordinator, and is now currently a Harvest Planning Manager.

'The major part of my role involves supervising harvesting crews in terms of harvest planning, log quality, health and safety and the environment. I determine the weekly log grades to be cut based on customer orders and estimated grade outturn in the bush.'



Amy feels that her studies set her up well for this role and that in general there are many advantages to studying Forestry Science at UC.

'The degree provides a holistic understanding of the basics required to understand the day-to-day things that occur in the real world of forestry,' she says.

'I would say to others, definitely give it a go. You learn a vast range of skills such as management, economics, soils, wood science, harvesting, environmental forestry, biosecurity... the list goes on. The career paths are endless! Not only that but you get to meet a really awesome bunch of people!'

'It's very dynamic as I'm doing something different every day..'

Amy Robinson

Bachelor of Forestry Science with Honours
Harvest Planning Manager, Ernslaw One

Financial support may be available through Ministry of Māori Development | Te Puni Kōkiri or private forestry companies. In any given year there will be scholarships you may be eligible for. Some you must apply for, others you will automatically be considered for. Some scholarships will be awarded based on high school grades. For further information on the awards go to:

Other course requirements

Structure of the degree

The degree is structured as follows:

Year 1

If taken at UC, the subjects will normally be as follows:

BIOL112	Ecology, Evolution and Conservation
FORE111	Trees, Forests and Environment
FORE131	Trees in the Landscape
FORE141	Forest Growth and Measurement
FORE151	Commercial Aspects of Forestry
STAT101	Statistics 101
plus	two 15 point electives at 100 level from any degree schedule

Students interested in enrolling for concurrent degrees should refer to the last section on this page.

Year 2

All students take:

FORE205	Introduction to Forest Engineering
FORE215	Introduction to Forest Economics
FORE218	Forest Biology
FORE219	Introduction to Silviculture
FORE222	Biometry 1A
FORE224	Biometry 1B
SOIL203	Soil Fertility

Year 3

FORE307	Plantation Silviculture
FORE316	Forest Management
FORE327	Wood Science
FORE342	Geospatial Science in Forest Monitoring and Management
and	one further subject from the Option Schedule

Year 4

FORE419	Management Case Study
FORE422	Forest Harvest Planning
FORE447	Environmental Forestry
and	four further subjects from the Option Schedule

Option Schedule

FORE423	Forest Transportation and Road Design
FORE426	Forest Products Marketing and International Trade
FORE435	Forest Finance
FORE436	Forest Tree Breeding
FORE437	Advanced Wood Products Processing
FORE443	Biosecurity Risk Management
FORE448	Advanced Remote Sensing in Forestry and Natural Resource Management
or	15 points from another Faculty (available in Years 3 and 4). In Year 3, the points must be taken at 200 or 300-level, in Year 4 the points must be taken at 300-level or higher in consultation with the Head of the School.

A maximum of 30 points from other degrees can be taken across Years 3 and 4.

Students who are invited to do Honours must enrol in FORE414 Dissertation in addition to the seven Year 4 courses.

Spending his childhood in rural Te Araroa, Reihana has spent most of his life pursuing activities in the great outdoors and developing an interest in the land.

'The outdoors soon became a passion of mine and with the promising career opportunities that the Forestry degree posed, it was obvious that forestry was a suitable career option,' he says. 'Previous graduates of the School of Forestry had suggested that the degree at UC was not only enjoyable but also a worthwhile degree to pursue.'

Enrolling with an Emerging Leaders Scholarship, Reihana found UC to be the ideal place to develop towards a career in forest resource management.

'Coming from the North Island, UC has been a refreshing change. It has a positive atmosphere and has been an awesome environment to have been a part of.'

'I have been involved in FORSOC since I began at UC. It's been an awesome way of networking with others in the Forestry degree, but also a great way of meeting others from outside the degree. FORSOC provides fun events throughout the year which are a great way to let off some study stress.'

A bonus to being at UC is being able to keep up his hobbies with the range of outdoor locations close by.

'Outside of study I spend most of my time either hunting, fishing, diving, or exploring what the South Island has to offer,' he says.



Reihana's studies also involve multiple field trips to see real-world examples of the theory taught in lectures, which he says is an important part of building enthusiasm for Forestry Science. He received a UC School of Forestry High Achievers Award for his results in the first year.

'I enjoy its ability to cover a range of topics, giving students a broad understanding of what "Forestry" is all about, and the opportunity to get outside and see real life operations as well as providing summer work opportunities. It also attracts likeminded people with similar interests.'

'Come to UC with an open mind and be willing to take any opportunity that comes your way,' he says. 'Balance your time in the books with your social life and your time at UC will be more enjoyable.'

'It was obvious that forestry was a suitable career option...'

Reihana Fisher

(Ngāti Porou)

Bachelor of Forestry Science (Honours)

Bachelor of Engineering with Honours in Forest Engineering *B*



Forest Engineering is a hybrid of engineering, forestry and management. Forest engineers are unique people who can combine skills in those different areas to care for forests. They are adept at “juggling” – solving problems that arise in competing requirements. It takes people with a deep understanding of the situation and strong technical skills to ensure that sensible decisions are made.

Forest engineers have the technical capabilities to develop and implement harvest plans and trucking and roading systems. They use global position systems (GPS) and geographic information systems (GIS) routinely. They design and manage equipment. They develop new wood products and efficient ways of making them. They do these things economically, and so that the environment is respected.

Forest engineers deal with people: they work with the public, government agencies, contractors, and consultants. They guide their own employees. They steer projects through the requirements for resource consent.

Graduates in Forest Engineering go on to exciting careers in private companies and government. Some work for forest operations, others for contractors or consultants. Some set themselves up in their own consulting or contracting businesses.

Forest engineers have rewarding careers with significant responsibility and exciting challenges. They earn respect in industry through their professionalism, and have the same eligibility for membership in Engineering New Zealand (formerly IPENZ) that their Civil, Mechanical, Electrical, Chemical and Natural Resources Engineering colleagues enjoy. Forest engineers can also become members of the New Zealand Institute of Forestry.

To prepare students, the Forest Engineering degree programme is organised with a common First Year, followed by three years specialising in forest engineering. The programme content is approximately 40% Forestry, 50% Civil Engineering and 10% Math.

Entry

Students usually enter the BE(Hons) degree programme in the First Year after achieving University Entrance with their NCEA/Scholarship grades. All students are expected to have at least 14 credits in NCEA Level 3 Maths or Calculus, 14 credits in NCEA Level 3 Physics and 14 credits in NCEA Level 3 Chemistry. 18 credits are strongly recommended in all subjects.

Structure of the degree

Year 1

The degree follows the pattern set for all Engineering degrees, with a common Engineering first year followed by three years specialising in the Forest Engineering discipline. These subjects may change, visit canterbury.ac.nz for the most up to date subject information.

First Year

All students take:

ENGR100	Engineering Academic Skills
ENGR101	Foundations of Engineering
EMTH118	Engineering Mathematics 1A
EMTH119	Engineering Mathematics 1B
PHYS101	Engineering Physics A: Mechanics, Waves and Thermal Physics

Students who wish to go on to Forest Engineering in subsequent years, must also take:

CHEM111	Chemical Principles and Processes
ENGR102	Engineering Mechanics
COSC131	Introduction to Programming for Engineers and at least one 15 point elective course to ensure a workload of not less than 120 points

Second Year

All students take:

FORE199	Workshop Training Course
EMTH210	Engineering Mathematics 2
ENCN213	Design Studio
ENCN221	Engineering Materials
ENCN231	Solid Mechanics
ENCN253	Soil Mechanics
ENFO204	Forest Measurement
FORE205	Introduction to Forest Engineering
FORE215	Introduction to Forest Economics

Third Year

ENCN353	Geotechnical Engineering
ENCN371	Project and Infrastructure Management
ENFO327	Wood Science
FORE316	Forest Management
FORE342	Geospatial Science in Forest Monitoring and Management
FORE422	Forest Harvest Planning
And	one 15 point elective course

Fourth Year

ENFO410	Forest Engineering Research
ENFO499	Industry Field Programme
FORE423	Forest Transportation and Road Design
FORE448	Advanced Remote Sensing in Forestry and Natural Resource Management
plus	sufficient courses from the following elective list for full-time study

FORE426	Forest Products Marketing and International Trade
FORE435	Advanced Forest Economics
FORE443	Biosecurity Risk Management
FORE449	Environmental Forestry
ENGR403	Fire Engineering
ENCN452	Advanced Geotechnical Engineering
ENGE412	Traffic Engineering
any	15 point 400-level option approved by the Director of Studies

Other course requirements

In addition to the academic requirements discussed above, there are certain other formal requirements for the bachelor's degree in Forest

'Forest Engineering combines my interests perfectly: I love physics, maths, and trees!

I really like the idea of working with nature rather than against it – forests provide so many products and services that managing them well means huge benefits for us and future generations. I decided a degree in Forest Engineering will give me the skills to do just that, especially in New Zealand with our unique and important forestry sector.

UC is the only university that offers Forest Engineering in Australasia, but I would say that UC is a good choice for almost any degree. Christchurch is full of new opportunities for me, and I wanted the new experience of moving away from home. I also liked that UC has a massive range of clubs to get involved in outside of courses.

I got quite enthusiastic at Clubs Day and signed up for lots of clubs, but the ones I have enjoyed most are UCM (University of Canterbury Motorsport, where we build an electric racing car) and CUTC (the Canterbury University Tramping Club).

I'm really enjoying my courses. Since Forest Engineering matches my interests so well, most of what I'm learning has been exciting and thought-provoking. And my lecturers are great;

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Postgraduate study

Thinking beyond bachelor's studies? We offer postgraduate studies at a number of levels, including:

- Postgraduate Diploma in Forestry (PGDipFor)
- Master of Forestry Science (MForSc)
- Doctor of Philosophy (PhD)

Programmes of study are very flexible, designed to cater to students' individual needs. Much of the postgraduate study is tied to the research being pursued in the School.

Postgraduate Diploma in Forestry

Enrolment in the one-year full time or two-years part-time Postgraduate Diploma in Forestry is appropriate for graduates with the following backgrounds:

- Aotearoa New Zealand graduates whose degrees are not in forestry, but who seek employment in the forestry sector
- Graduates in forestry of some years standing who seek updating and retraining
- Recent forestry graduates who wish to develop advanced knowledge but not in the area of research
- Forestry graduates from countries where the forestry degree is less quantitative than in Aotearoa New Zealand but does include suitable science, statistics and commerce papers.

The Postgraduate Diploma consists of courses taken from the Master of Forestry Science schedule, excluding research report and thesis. Candidates enrolled in the Postgraduate Diploma in Forestry may, with suitable grades, apply to transfer to the second year of a two-year Master of Forestry Science degree without taking up the Diploma.

Master of Forestry Science

Graduates with a Bachelor's degree in forestry science or in another suitable subject area may apply to register for masterate studies. The relevance and standard of undergraduate studies is taken into account when considering the particular course of study to be followed.

Candidates can complete the degree either by passing courses and presenting a report; passing courses and undertaking a thesis; or by submitting a thesis. The first is geared more to management of resources, the last two to research. The courses and report and thesis topics can be taken in all of the broad areas of forestry. Provided that progress is satisfactory, some thesis candidates may transfer to the doctoral programme after a minimum of six months full-time study, subject to the approval of the Dean of Postgraduate Research | Amo Rangahau.

The courses may be general or highly specialised, according to each student's interests, but will in any case pre-suppose a basic knowledge equivalent to a BForSc(Hons). Two courses can be taken from departments outside the School and might consist for example of a course in Environmental Science from the School of Earth and Environment | Te Kura Aronukurangi or one in business administration from the UC Business School | Te Kura Umanga.

Titles and contents of courses vary from year to year to suit students' needs and interests. For full course information go to www.canterbury.ac.nz/courses.

Examples of courses offered at Diploma and Masters level are:

- Forest Transport
- Forest Harvesting
- Advanced Forest Finance
- Research Methods
- Biosecurity Risk Management
- Strategic Marketing of Forest Products
- Plantation Silviculture
- Forest Management
- Advanced IT Applications in Forestry and Natural Resource Management
- Wood Quality
- Wood Processing
- Advanced Wood Products Processing
- Modelling for Management (a web-based forestry course)
- Environmental Forestry

Doctor of Philosophy

Doctoral studies are open to graduates with a masters degree, or a bachelor's degree with 1st class honours in suitable subjects.

The minimum period of enrolment for a full-time thesis is 36 months, but it typically takes 3-6 months longer to complete and submit a thesis for examination.

Although the degree is awarded on the basis of the thesis, taking course work related to the thesis topic is encouraged. All candidates are expected to follow a course on research methods, which will be given within the School, normally during the first term after enrolment.

It is possible to enrol in a part-time PhD. Students can be given permission to be away from the School for significant periods to use specialised equipment not available on campus, or for field work.

Staff of the School

Professor and Head

B R Manley, BForSc(Hons), BBS
(Accounting), PhD(Wash), FNZIF

Professors

E G Mason, BSc(For), PhD(Cant),
FNZIF

J M (Rien) Visser, BE(Hons), ME,
Dr nat tech(Bodenkultur)

Associate Professors

C Altaner, Diplom Hol wirtsch.
(Hons), PhD(Hamburg)

L A Apiolaza, BForSc(Hons),
ForEng(Chile), PhD(Masse)

D C Evison, BA, BForSc(Hons),
PhD(Wash)

J A Morgenroth, BSc, MFC(Toronto),
PhD(Cant)

S M Pawson, BSc, MAppSc(Hons),
PhD(Cant)

Senior Lecturers

Wide TRUST Senior Lecturer in
Timber Engineering and
Engineered Wood Products:

H T Lim, BScW, MEng, PhD(UBC)

S V Wyse, BSc(Biol), BSc(Hons),
PhD(Auckland)

Lecturer

C Xu,
BForSc(Hons), PhD(Cant)

Director of Studies (Forest Engineering)

J M (Rien) Visser, BE(Hons), ME,
Dr nat tech(Bodenkultur)

Technicians

D K Clark, NZCS(Stats), BSc(Masse)

G Hendriks, CertHortPractice

M Holzenkämpfer, Dr rer nat
(Naturstoffchemie) (Georg-August
Universität)

M Sharma, MSc(Chem)(HP
Universit), PhD(Cant)

V A Wilton, BSc, DipSc

Senior School Coordinator

J C Allen

Clemens Altaner, *Biplom*

Wirtschaftswissenschaften (Hons), MEd (Hamburg)

Ökonometrie (Hons), Diplom Betriebswirtschaftslehre (Hons)

Management (Hons), Dr nat tech (Hons)

Wirtschaftsinformatik (Hons)

Statistik (Hons), Diplom Wirtschaftsinformatik (Hons)

Management (Hons), Diplom Betriebswirtschaftslehre (Hons)

Wirtschaftsinformatik (Hons)

Management (Hons), Diplom Betriebswirtschaftslehre (Hons)

Wirtschaftsinformatik (Hons)

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Management (Hons), Diplom Betriebswirtschaftslehre (Hons)

Wirtschaftsinformatik (Hons)

Management (Hons), Diplom Betriebswirtschaftslehre (Hons)

Taking the next step

If you've decided that studying at the University of Canterbury | Te Whare Wānanga o Waitaha is an option for you, here is what you need to do. Remember, it's never too early to start thinking about what degree to take and what subjects to study.

If you're at school – work hard to make sure you meet UC's entry criteria which makes getting into university so much easier. If you're in Year 11 or Year 12, make good subject choices to give yourself the best opportunities. If you have left school, check that you meet UC's entry criteria.

Māori students at UC Pacific students at UC Postgraduate and graduate study Regulations Headstart preparatory

