What can I do with a degree in
Forest Engineering?

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Forest Engineering.

What is Forest Engineering?

Forest engineering is a hybrid of engineering, forestry and management. It requires people who have the skills to solve engineering problems in the natural environment, while balancing economic, societal and environmental requirements.

Forest engineers construct and evaluate the operational systems that make the forest industry 'work'. This can include:

- Designing and building new roads
- Planning harvest operations and logistics
- Integrating new technologies
- Supervising employees and contractors
- Ensuring safety standards are maintained.

Forest engineers look after the environment and may steer projects through the resource consent process. They know the forest environment, products and processes, and are the essential link between growing forests and using forest resources.

Learn more

It is important to do some research when planning a future career. Speak with, ask questions of, and follow relevant professional bodies, organisations, companies, thought leaders and industry professionals to learn more about:

- Career opportunities, work environments and salary information
- Education and training requirements.

Examples of professional bodies

- Te Pūtahi Ngāherehere o Aotearoa Inc New Zealand Institute of Forestry 💻 www.nzif.org.nz
- Forest Industry Engineering Association 💻 www.fiea.org.nz
- Engineering New Zealand 💻 www.engineeringnz.org
- The Association of Consulting Engineers New Zealand Inc. 💻 www.acenz.org.nz
- New Zealand Forest Owners Association 💻 www.nzfoa.org.nz

Career and study information

Some study pathways and degrees have a recommended school background, and some careers may require further study beyond a first degree or additional experience.

Gather helpful information from:

- Subject-specific content at 💻 www.canterbury.ac.nz/beng-honours
- Job profiles on career websites like 💻 www.careers.govt.nz
- Job adverts/vacancy descriptions
- Industry professional bodies.

This resource is part of a set of brochures focused on subject majors; many can also be studied as minors.

What skills can graduates gain?

Through studying a degree in Forest Engineering, graduates develop a valuable set of skills that can include:

- Constructing and evaluating operational systems relating to roads, transport logistics, forestry equipment and technology, harvest operations, supervising and safety standards
- Practical application of engineering technology and science
- Knowledge of forest environment and forest products and processes
- Balancing ecological and environmental needs with economic and societal requirements
- Logical and quantitative thinking
- Analytical and critical thinking
- Problem-solving, planning and organisation
- Management of people and business
- Bicultural competence.

Applied learning

Students undertake 800 hours of work experience as part of this engineering degree, providing them with a good understanding of the industry and the confidence to apply their skills in a workplace setting. This experience can deepen students' skillset, awareness of others, working knowledge and employability.

What do employers look for?

Many employers look for generic skills such as communication, client/customer-focus, bicultural competence, cultural awareness, teamwork and initiative.

With technology, globalisation, and other drivers changing society, skills such as resilience, problem solving, and adaptability are important.

Skills that are likely to grow in importance include analytical and creative thinking, systems thinking and technological literacy.*

**World Economic Forum: www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills*

How can these skills be developed?

- Some skills are gained through studying
- Extra-curricular activities can help, such as getting involved in clubs, mentoring, cultural groups, part-time work or volunteering
- Be open to professional and personal development opportunities, whether it is undertaking work experience, overseas exchange, skills seminar, or joining an industry group.

Where have graduates been employed?

Forest engineers have a wide skillset that provides work opportunities both at home and abroad. Forest engineers work with public and governmental agencies. Many may work for:

- Forest companies
- Forest management consultancies
- Industry contractors.

Due to the multidisciplinary nature of Forest Engineering, job opportunities are also available in areas including:

- General engineering consultancies
- Local and regional councils
- Government agencies
- Resource management sector
- Research institutions.

What jobs and activities might graduates do?

UC graduates have been employed as forest engineers, forest consultants, project engineers, civil engineers, infrastructure engineers, site managers and more.

Note: This list is not exhaustive, and some jobs may require further study, training or experience. It is recommended to start with the section 'How can I gain a sense of career direction?'

As forest engineers have a broad knowledge and solid technical ability, they are able to work in diverse areas and on a variety of activities such as:

Harvest planning

- Using terrain, stand and soil maps to create cost effective harvest plans
- Walking forest stands and laying out the plans to ensure they are feasible, as well as safe for the workers and the environment

Forest roading

- Finding options for new road locations
- Surveying and laying out these roads for construction
- Designing road standards, including culverts and bridges
- Managing road construction teams

Forestry equipment

- Designing new equipment to make harvesting safer and more cost-effective
- Integrating new technologies so that machines are smarter
- Choosing machinery that can best work together as a system

Optimising logistics

- Scheduling forest transportation to get the logs from the forest to the markets
- Ensuring customers receive the right quantities and qualities of products

Supervising contractors

- Setting up contractors to ensure planned work is carried out
- Ensuring safety and environmental standards are maintained
- Working with contractors to improve their operations

Developing new forest products

- Working together with structural engineers or sawmills to create new wood-based products for the building industry

Improving the environment

- Integrating wood based renewable bio-energy Programmes for heat or electricity
- Expanding and maintaining forest areas for capturing carbon
- Maintaining or improving water quality
- Stabilising soil erosion prone catchments

Geospatial work

- Using global positioning systems (GPS) and geographic information systems (GIS)
- Assisting the design of geospatial systems and managing equipment.

Examples of other job titles and careers include:

- Forester
- Harvest supervisor
- Engineering and planning forester
- Regional compliance and enforcement officer.

Further study options

UC offers a Doctor of Philosophy (PhD) in Forest Engineering, which involves independent research in a specialised topic. It is also common for Engineering graduates to do postgraduate study in Engineering Management.

Further study may facilitate career benefits such as specialist skills, entry into a specific occupation, higher starting salary, faster progression rate, and advanced research capability.

It is important to determine which, if any, further study options align with future career aspirations.

For further UC study options visit:
💻 www.canterbury.ac.nz/study/academic-study

How can I gain a sense of career direction?

Understanding yourself and others is important to gain a sense of direction. This grows with experience; therefore, trying new things and reflecting on an ongoing basis is important.

Career planning checklist

❑ **Discover and reflect on:**

- Your values, interests, strengths, abilities, and aspirations
- Your connection to whānau, people, and places
- Lifestyle preferences and location
- The skills you want to gain, use, or enhance

❑ **Engage in a variety of experiences to learn about:**

- How you want to contribute to society, the environment, and global challenges
- The tasks, responsibilities and work environments you prefer
- Your work values, priorities and interests

❑ **Learn more and gather career and study information**
(refer to page one of this resource)

- Speak with people working in careers that interest you; check the realities of a job/career
- Gather information from various sources

❑ **Identify your next steps**

- Talking to a career consultant can help you to identify your next steps. Visit:
  💻 www.canterbury.ac.nz/life/jobs-and-careers

What have other students and graduates done?

Explore career stories of students' university experiences and UC alumni who make a difference globally in varied ways.

Visit: 💻 www.canterbury.ac.nz/about-uc/why-uc/our-students/student-stories

Abby

Operations Coordinator, PF Olsen

Bachelor of Engineering (Honours) in Forest Engineering

How did study at UC prepare you for your career?

The courses in my degree were industry-specific and gave me a wide range of information that continues to be relevant today. I started off as a graduate which meant spending time in different parts of the business, so having the range of courses offered was really helpful. From the economics papers that help with Consulting work, to the planning and roading papers that are key parts of Harvesting you get a full picture of what forestry is all about.

What is the biggest learning you've had so far in your career?

Some of the friends and connections you'll make in the School of Forestry will continue throughout your career so it's important to foster and develop these in your time there. Forestry is such a tight-knit industry so it's really cool to see people you studied with again once you're in the workforce. Also, don't ever be afraid to ask questions!

What are your career goals?

To potentially get into higher management after some more operational experience.

What do you enjoy most about Forest Engineering?

Forestry is such a broad industry, many people think it's just about cutting down trees but there is so much more going on in reality. You can specialise into lots of different areas depending on what interests you, and there are great people involved in every part. Silviculture, forest establishment, harvesting, roading, exports and logistics, consulting, and government policy are all things I've been exposed to 2 years out of UC so there are heaps of paths you can go down.

What advice would you give to others looking to get into the field?

Absolutely do it, you'll have great support and an awesome time at UC that will give you strong credentials in the industry.

Career guidance

Career services are available for future and current students, and recent graduates. To learn more, contact:

Te Rōpū Rapuara | Careers
T: +64 3 369 0303
E: careers@canterbury.ac.nz
💻 www.canterbury.ac.nz/life/jobs-and-careers

Helpful career insights

- Speaking with employers is key to finding opportunities; not all jobs are advertised
- Developing an online presence is useful as employers can search for future employees online
- Learning about recruitment patterns and where to find opportunities is important.

Study advice

Student Advisors at UC help with questions focused on starting, planning and changing studies. To connect with Student Advisors, visit:

💻 www.canterbury.ac.nz/study/study-support-info/study-support

Future students – contact:

The Future Students team
T: 0800 VARSITY (0800 827 748)
E: futurestudents@canterbury.ac.nz

First year students – contact:

Kaitoko | First Year Student Advisors
T: +64 3 369 0409
E: firstyearadvice@canterbury.ac.nz

Continuing students – contact:

School of Forestry | Kura Ngahere

T: +64 3 369 3500
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💻 www.canterbury.ac.nz/study/academic-study/engineering

UC UNIVERSITY OF CANTERBURY | Te Rōpū Rapuara Careers

Career profiles and the information in this brochure were correct at the time of creation but are subject to change.