UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND
SAPERE AUDE

Forensic Analytical Science

Solving mysteries, serving society

"I got interested in forensics like most people by watching CSI on television but the FORS programme showed me that forensics is far more fascinating in real life."

Hannah Kim BAppSc
Korean Crime Scene Investigator,
Korean Police Agency

Your uniqueness isn't limited to your DNA or your fingerprints. Forensic chemistry can pinpoint where you've lived, what you've eaten and even where that food once lived. That unarguable proof of origin is increasingly useful for food producers and biosecurity officers as well as crime fighters.

Analytical science is applied forensically in business for compliance with legislation, marketing, and the protection of products and brands from fraud.

This degree focuses on the vital analytical techniques of forensic biology (including DNA) and forensic chemistry (spectroscopy, traceability). These analytical skills are highly sought-after in industry, government agencies and among regulatory bodies tasked with managing natural resources.

0800 80 80 98 | otago.ac.nz | txt 866 | university@otago.ac.nz

Why study Forensic Analytical Science?

The New Zealand kiwifruit is one of the most counterfeited items in the world. New Zealand's produce is often at the top end of the market, and well worth counterfeiting – if you can get away with it! The techniques you'll learn in this course can demonstrate the exact point of origin for foodstuffs. This protects our products abroad, and protects our growers at home as well by identifying the source of biosecurity risks when they hit our shores. The techniques are applicable to criminal forensic work as well, and the analytical skills you will learn will have much broader applications across a wide range of scientific fields.

Career opportunities

Anyone involved with Resource Management Act needs staff who can understand analytical science. For example, in the management and custody of natural resources, the analytical techniques you'll learn in Forensic Analytical Science will help track down sources of contamination.

Traceability gives the edge in niche marketing for top-end products – now we can prove exactly where a product has come from, protecting it from counterfeiting and giving a market advantage.

Government agencies increasingly require people with this kind of analytical training. For example, Department of Conservation workers coming across questionable logging would be able to demonstrate whether timber had come from illegal sites.

Applicants should be aware that the job market in New Zealand for criminal forensic scientists is small and that this course is not a qualification for such a career without further study or employment experience.

Background required

While entry into the Applied Science programme in Forensic Analytical Science is open to anyone, we strongly recommend you have NCEA Level 3 Chemistry, Biology and Maths (Stats). Strong skills in English would also be beneficial.

What is the BAppSc?

The strength of the Applied Science programme is its outward focus – developing market-ready graduates with wide-ranging skills and practical experience in the workplace.

The Applied Science programme is a three-year undergraduate degree with open entry at 100-level. A postgraduate honours year is offered to those students who achieve an appropriate academic standard. This will be offered at the end of the undergraduate degree.

Every Applied Science degree has a compulsory minor, or second major, in a subject area that's directly relevant and will deliver complementary skills.

The programme encourages real-world business awareness, enabling you to apply what you have learnt to any organisation you work for.

What will I learn?

This degree will focus on the vital analytical techniques of Forensic Biology (including DNA) and Forensic Chemistry (spectroscopy, traceability). The key strength will be the analytical skills acquired.

How will I learn?

The programme is delivered using lectures and practical labs. There may be some fieldwork component in the optional areas of study.

What will I study?

First year: papers worth at least 126 points, to include BIOC 192, CELS 191, CHEM 191, HUBS 191, STAT 110 or 115. At least one of BIOL 123, CHEM 111, HUBS 192, MATH 160 or PHSI 191 is recommended.

Second year: papers worth at least 120 points, to include CHEM 206, FORS 201, GENE 222. And at least two of BIOA 201, BIOC 221, CHEM 201 or 205, FOSC 201, GENE 221, MICR 221, 222, PHAL 211, 212, STAT 242, 261.

In your second year, as well as the required papers in Chemistry, Forensics and Genetics, there is a wide range of options including Biological Anthropology, Genetics and Biochemistry, Microbiology and Pharmacology as well as Statistics.

Third year: papers worth at least 120 points, to include FORS 301, CHEM 306. And at least two of BIOA 301, BIOC 352, CHEM 304, FOSC 301, GENE 312, 315, PHAL 306, PYSC 325, and 300-level MICR and STAT papers.

Third year extends the range even further with Food Science and Psychology.

Combining Forensic Analytical Science with other subjects

All Applied Science majors require either a minor or second major. For Forensic Analytical Science there are loads of possible pairings, depending on the kind of emphasis you want in your career: Environmental Management or Applied Geology; Food Science; Marketing or International Business; Psychology, Biochemistry, Microbiology, Anatomy or Computer Science.

PROFILE

Rachel Kulakofsky

Exchange student, COP (Forensic Analytical Science)

"Forensic Analytic Science is a very exciting field that is constantly presenting puzzles to solve.

"I used to watch the TV show *Bones* a lot when I was younger, and I liked the idea of looking at criminal investigation from a more science-backed perspective. And I have always known that I want to help people and don't want to be stuck in a cubicle.

"I am studying Biochemistry and Product Design at Lehigh University in Pennsylvania, and I chose to come to Otago on exchange because it is one of the only university's in the world to offer forensic studies to undergraduate students.

"I've also always wanted to travel to New Zealand, and the surrounding area of the Otago peninsula appeared to be a wonderful place to stay.

"I really appreciated the breadth of information that was taught in my forensic papers. I learned everything from anthropology to pathology to forensic chemistry, and the accompanying lab experiences helped me gain really cool hands-on experience on the subject.

"All my classmates were very nice and quick to answer any questions I had about class or life at Otago. The teaching staff were also a huge help and made the transition very easy for me – they were quick to respond to emails and always happy to provide a deeper understanding on their subjects.

"My forensic studies at Otago were my first exposure to the forensics field, and I definitely want to continue to pursue a career in forensic technology – I'd love to combine my passion for chemistry and design, which leads me towards the biotech side of forensics."

For questions about
Forensic Analytical Science
otago.ac.nz/forensic

March 2021