Who would have thought leaving school and deciding what to do next would be so mind-boggling? Whether you’ve got no idea, or you’ve been totally focused on a specific career since you were seven years old, this Subject Guide section gives you an insight into the options available at the University of Otago.
Subjects are listed alphabetically to make it as easy as possible to find your areas of interest. Each entry explains exactly what the subject is, then lists potential career opportunities. There is also information about which papers you need to study in your first year, and brief paper descriptions to help you decide if the subject sounds like you. There is more detailed information in the Guide to Enrolment, which comes out in August.

You can also request information sheets on each subject at www.otago.ac.nz/choice

Don’t forget: if you are unsure about anything, just phone or take a look at the website.
Accounting

Accounting is the language of business. Accounting concepts come into play when you’re checking your bank balance online or filling out IRD tax forms. While studying for a BCom in Accounting, you’ll learn all about the recording and reporting of financial activity. Businesses, the government, city councils, schools and boards of trustees all use accounting to help control their resources and measure their success. In fact, everyone needs to know about accounting to meet the challenges of our society.

CAREER OPPORTUNITIES

Many graduates join the accounting profession as auditors, tax advisers, financial managers, investment advisers, financial consultants, valuation experts, company directors and controllers of financial information systems.

Other graduates work in a variety of occupations such as financial executives, company secretaries, management accountants and office managers or accountants in manufacturing or trading firms; others become teachers or research workers in educational institutions or executive officers, treasurers and accountants in central and local government.

100-LEVEL PAPERS

If you intend to major in Accounting (BCom), you must take the following 100-level papers:

ACCT 102 Introduction to Accounting
BSNS 102 Quantitative Analysis for Business
BSNS 107 Understanding Accounting
BSNS 108 Business Finance

You must also meet BCom degree requirements, including the completion of all BCom core BSNS papers – see the Business and Commerce entries for details.

200-LEVEL AND BEYOND

The Department of Accountancy and Finance teaches financial accounting, management accounting, financial management, business law, taxation and auditing. All levels of study cover financial accounting and management accounting.

To practise as a chartered accountant you must seek admission through a professional body and complete professional papers in business law, tax and audit as part of your BCom degree. The department provides academic requirements for these professional memberships:

THE NEW ZEALAND INSTITUTE OF CHARTERED ACCOUNTANTS (NZICA)

A three-year University degree, plus three years of practical experience (which includes four required NZICA technical modules). The programme concludes with professional competency examinations to obtain full membership. For further information visit: www.nzica.com

CPA AUSTRALIA AND ACCA

A three-year degree, plus completion of the CPA Programme and three years of supervised experience, meets the requirements for use of the CPA distinction. The three-year degree also provides exemptions from nine of the 14 modules required for membership with ACCA (UK). For further information visit: www.cpaaustralia.com.au and www.accaglobal.com

Anatomy

See profile on page 78.

The study of anatomy concerns biological structures from gross anatomy (structures visible to the naked eye) to cell biology (internal structure and function of the cells which compose the tissues) and beyond. The University of Otago is the only New Zealand university offering an Anatomy major for BSc and BSc(Hons) degrees.

Anatomy encompasses modern molecular and microscopic approaches as well as more traditional methods, using the latest techniques and ideas. It is fundamental to all biomedical science programmes and an integral part of the biological disciplines, as it is closely related to physiology, biochemistry and biological anthropology.

CAREER OPPORTUNITIES

Recent and past graduate appointments include: national health promotion adviser for the Cancer Society’s Sunsmart Schools Programme; respiratory technician helping to diagnose conditions such as sleep apnoea and asthma; St John Ambulance Officer; admissions co-ordinator for a DHB; exercise prescription instructor; research position in a hospital analysing cells and diagnosing chromosomal conditions; technicians and research assistants supporting teaching and research; account manager and sales representative for a medical supply company; medical writer evaluating clinical trial evidence from journals; lab assistant in a cytogenetics laboratory; trainee funeral director; and sales representatives for various pharmaceutical companies. Many graduates proceed to professional (e.g. medicine, physiotherapy, dentistry) and higher degrees, including Master of Science and PhD.

100-LEVEL PAPERS

100-LEVEL PAPERS

There are no 100-level papers with an ANAT code as part of a major in Anatomy:

If you intend to major in Anatomy (BSc), you must take the following 100-level papers:

CELS 191 Cell and Molecular Biology
and
HUBS 191 Human Body Systems 1
and
HUBS 192 Human Body Systems 2
and
CHEM 191 The Chemical Basis of Biology and Human Health

200-LEVEL AND BEYOND

200-level topics include the structural and functional organisation of:

• the human body at cellular, tissue, system and regional levels;
• the nervous system at the cellular, tissue, system and integrative levels;
• the male and female reproductive systems including consideration of fertilisation, implantation, pregnancy, lactation and an introduction to development.

300-level explores aspects of functional anatomy, cell biology, neurobiology, reproductive biology, developmental biology, biological anthropology, delving into the research literature and addressing/formulating research questions.

All 200- and 300-level papers can also be taken as single papers to complement other biomedical and/or science majors.

Anthropology and Archaeology

There are two broad areas of Anthropology studied at Otago: Social Anthropology and Archaeology. Students may take a combination of papers from both these areas.

Social Anthropology focuses on the cultural basis of social life and diversity and similarities within cultures. It examines the dynamics of cultural change at every level of human life, from the local to the global, in the past as well as the present.
Social Anthropology specialisations at Otago include the Pacific, history and anthropology, medical anthropology, religion and ritual, ethnicity, development, political anthropology, legal anthropology, economic anthropology, globalisation, migration, new media, and anthropological theory and methods. Our social anthropology staff are the recipients of multiple teaching awards and conduct dynamic national and international research programmes.

Archaeology is the study of material remains related to the human past. These range from monumental structures like the pyramids of Egypt to microscopic plant fragments retrieved from ancient soils. Archaeological research is undertaken on historical remains to add to existing records, as well as on the physical remains of human culture when no other record exists.

Otago has a world-renowned Archaeology programme. Staff specialise in the archaeological records of New Zealand (including the offshore Chatham Islands), the tropical Pacific and South-East and East Asia. They study the initial colonisation of, and subsequent adaptations to, these regions through fieldwork and laboratory analysis. Otago archaeologists also study evidence of ancient crops, animals and artefacts, as well as archaeological structures and landscapes. The past is interpreted from the study of material remains and evidence recovered through surveys and excavations.

CAREER OPPORTUNITIES
Many graduates become professional anthropologists, museum staff, social scientists and teachers, researchers, writers, policy analysts and advisers with government ministries and departments. Anthropology graduates are sought by non-governmental and private organisations.

Graduates who have specialised in archaeology may become professional archaeologists working variously in universities, consultancies and industries with heritage management interests (e.g. mining), public heritage or conservation agencies, and in specialist laboratories and museums.

100-LEVEL PAPERS
A major in Anthropology requires two 100-level papers from:

ANTH 103 Anthropology, Culture and Society
ANTH 105 Global and Local Cultures
ARCH 101 Human Origins and Civilisations

ANTH 103 Anthropology, Culture and Society
Introduces fundamental concepts and branches of Anthropology and the development of fieldwork methods and theoretical frameworks in Archaeology and Ethnography.

ANTH 105 Global and Local Cultures
Explores contemporary issues drawing on case studies – from cyberspace to island village communities. Reflects upon the latest anthropological thinking about culture and society with critical insights into contemporary cultures.

ARCH 101 Human Origins and Civilisations
A review of the archaeological evidence for the origins and cultural development of the human species from its earliest appearance up to and including the rise of early civilisations.

200-LEVEL AND BEYOND
200-level papers in Social Anthropology cover contemporary Pacific cultures, visual culture, ethnography and globalisation. At an advanced undergraduate level students may take papers that address ethnographic research, health and reproduction, ritual and death, labour and work, human development, money and transnationalism. These papers are coded ANTH.

200 and 300-level papers in Archaeology (all coded ARCH) cover New Zealand, Oceanic and Asian archaeologies, as well as the study of animals, landscapes, methods, practice and theory in archaeology. Specialist lab and field training begins at 300-level (ARCH 301, ARCH 302). At 400-level, ARCH papers and a dissertation research project (ARCH 490) can provide opportunities for advanced study, as well as supervised lab research and survey and excavation fieldwork.

Applied Science
The Bachelor of Applied Science is an interdisciplinary three-year degree that is structured to deliver a lifelong set of employer valued skills in problem solving, learning and communication. These skills provide graduates with flexibility and adaptability in an increasingly competitive global work environment.


Diverse interdisciplinary capability is highly desired by employers and is mandated through a second subject that may be taken as a minor or second major and could come from Commerce, Humanities or Sciences.

The degree programme provides substantial flexibility of choice, career focus and strong linkages with employers. See the entries for each of the majors for more details.

Aquaculture and Fisheries
Aquaculture and Fisheries is a major in the Bachelor of Applied Science programme.

This is a three-year degree which includes a compulsory second subject in a related area – either as a minor or as a double major.

From salmon and mussel farming to wild fish management, there is substantial industry demand for skilled and innovative individuals with a passion for marine science.

Aquaculture and fisheries scientists are essential as the global market for marine products is rapidly expanding but increasingly affected by human activities including overfishing and global climate change. Fisheries science is the study of managing and understanding fisheries, while aquaculture is the production of aquatic species in land- or
sea-based “farms”. Fisheries and aquaculture scientists will develop a good understanding of biology, ecology, oceanography, chemistry, statistics and business management. You will learn fundamental aspects of these subjects at first and second year.

As you progress through the course, more specialist subjects such as fisheries, aquaculture, food science and entrepreneurship will be introduced.

If you are interested in a career in aquaculture and fisheries, contact the Marine Science department: aqfi@otago.ac.nz

First-year papers could include:

MARI 112 Global Marine Systems
BIOI 112 Animal Biology
CHEM 191 The Chemical Basis of Biology and Human Health
EAOS 111 Earth and Ocean Science
STAT 110 Statistical Methods
ECOL 111 Ecology and Conservation of Diversity

Note: The course must include either a minor or a second major in a strongly related subject area. This supporting subject can be from Commerce, Humanities or Sciences.

Archaeology
See Anthropology and Archaeology.

Art History and Theory and Visual Culture

Art is an essential part of the human experience. It is seen and made everywhere. Developing our historical and theoretical knowledge of visual art and culture helps us better understand the world in which we live. Art History and Theory students learn to appreciate the fundamental and varied roles the visual arts play in the lives of human beings. Both Art History and Visual Culture students learn how works of art embody, condition and control cultural, economic, social, religious, political, racial and gender dynamics.

CAREER OPPORTUNITIES
A degree in Art History and Theory provides a foundation for careers in education, arts administration, museums, galleries, conservation, historic preservation, libraries, archives, publishing, art criticism, journalism, advertising, international tourism and art investment.

As the world becomes increasingly flooded with images, critical visual "reading" skills as taught by Visual Culture become more and more important for a wide variety of careers in both the private and public sectors.

100-LEVEL PAPERS

If you intend to major in Art History and Theory (BA), you must take two 100-level ARTH or VISC papers (any 100-level HIST paper may be substituted for one ARTH or VISC paper).

ARTH 114 Interpreting Artworks
The close analysis of ways in which historically major individual artworks can have meaning, and a demonstration of a variety of theoretical, cultural, historical and aesthetic approaches to interpretation in art.

ARTH 116 Modern Art: Theory and Object
This paper examines both what artists created (the objects) and why they created them (the theory). The historical range is from the late nineteenth century to the late twentieth.

VISC 101 Introduction to Visual Culture
A critical survey of contemporary visual culture. Topics include fashion, advertising, photography, celebrity studies and reality television.

200-LEVEL AND BEYOND

Topics include early medieval and Italian Renaissance art, New Zealand art, twentieth-century painting and theory, contemporary art, photography, perspective, surrealism, gender issues in art and totalitarian art.

Asian Studies

Both from the economic and the cultural points of view, Asia has become a vital part of New Zealand life. Asian Studies is an interdisciplinary programme which includes Asian history, literature, film, religion, politics, music, anthropology and economics. Papers in Asian Studies help students gain a greater awareness of what multiculturalism really entails, beyond the rhetoric of inclusiveness, by exploring the heterogeneous nature of Asianness, beginning to understand its complexity and pointing to its relevance in the global context.

CAREER OPPORTUNITIES
Graduates work in private and public sectors, in industry and government.

CORE PAPERS

ASIA 101 Introducing Asia
A multidisciplinary introduction to the culture and society of Asian countries and regions, with an emphasis on East Asia.

ASIA 201 Asian Popular Culture
An exploration of contemporary Asia through the analysis of popular culture, with a focus on the media’s role in constructing transnational Asian modernities.

BIBlical Studies

Biblical Studies is devoted to the study of the Jewish and Christian Scriptures. It looks at the origins and interpretation of biblical writings and the history of their interpretation. Biblical Studies papers are divided between the Old Testament (the Hebrew Bible) and the New Testament. Students can also study the biblical languages – classical Hebrew and New Testament Greek – to an advanced level. The department welcomes all students, irrespective of religious background.

CORE PAPERS AT 100-LEVEL ARE:

BIBS 112 Interpreting the Old Testament
The interpretation of the Old Testament in its historical context, including an introduction to methods of study, the interpretation of the Pentateuch (Genesis – Deuteronomy) and the historical Books (Joshua – 2 Kings), and an in-depth discussion of selected texts.

BIBS 121 Interpreting the New Testament
The interpretation of the New Testament in its historical context, including an introduction to critical methods and to the study of the Gospels and the Epistles, with an in-depth discussion of selected texts.

Both papers are required for a BTheol degree (regardless of your major) and for a BA in Biblical Studies.

PAPERS IN NEW TESTAMENT GREEK ARE:

BIBS 131 Introductory New Testament Greek Language 1
A reading-based beginners' paper covering the basic elements of New Testament Greek grammar and vocabulary, designed to develop reading skills in New Testament Greek.

BIBS 132 Introductory New Testament Greek Language 2
A continuation of BIBS 131, including the exegesis of passages from the Greek New Testament.
PAPERS IN CLASSICAL HEBREW ARE:

HEBR 131 Introductory Biblical Hebrew 1
A paper for beginners covering the basics of Biblical Hebrew grammar and vocabulary, to enable students to read the Hebrew Bible in the original.

HEBR 132 Introductory Biblical Hebrew 2
A continuation of HEBR 131, including the exegesis of selected passages from the Hebrew Bible.

CAREER OPPORTUNITIES
Graduates work in a wide range of roles. Many of these are church-related, but our students are also found in teaching, social work, journalism, librarianship and administration.

100-LEVEL PAPERS
To major in Biochemistry (BSc), you need to take these 100-level papers:

- BIOC 192 Foundations of Biochemistry
- CELS 191 Cell and Molecular Biology
- CHEM 191 The Chemical Basis of Biology and Human Health

and at least one of

- BIOL 112 Animal Biology
- BIOL 113 Biology of Plants
- HUBS 191 Human Body Systems 1
- HUBS 192 Human Body Systems 2

Note: CHEM 111 Chemistry: Molecular Architecture is also strongly recommended.

Biochemistry
Biochemistry is a science where you delve into the building blocks of life and see how they are put together to make up the diverse organisms seen throughout biology. The Māori name for Biochemistry — Te Tari Matu Koiora — translates as “the quintessence of life”. This definition beautifully captures what biochemists do: explain the function of living things at the molecular level. Biochemistry explores how cells are constructed, how they function and communicate with each other, how genetic information is stored, expressed and passed on to the next generation, and how all of the cell’s chemistry is co-ordinated and controlled. Because biochemistry underpins all the biological and health sciences, papers in Biochemistry will complement any life science degree. Biochemistry is also a valuable major in its own right.

CAREER OPPORTUNITIES
A degree in Biochemistry equips you with the skills for many varied careers, including opportunities in biotechnology, bioinformatics, industry and the whole range of entrepreneurial activities. Recent Biochemistry graduate occupations are quite diverse and include: wine maker, medical writer, publishing manager, business consultant, information analyst for information technologies and databases, scientific adviser, portfolio manager, policy analyst, forensic scientist, rocket scientist, diplomat at Foreign Affairs and Trade and even aerospace company CEO!

Other graduates hold key research positions at universities, Crown Research Institutes and with major private companies both in New Zealand and overseas. Some are secondary and tertiary teachers, while others have become patent lawyers.

PAPERS AT 200-LEVEL AND BEYOND
We offer three undergraduate papers in bioethics: BITC 201 Bioethics and the Life Sciences; BITC 211 Bioethics and Film (Summer School); BITC 301 Bioethics. BITC 301 is included in the schedule of papers within the History and Philosophy of Science minor subject.

Biology
Biology studies living organisms and is the basis of all studies in the life sciences. At the University of Otago, Biology is used as a name for courses at 100-level only. There is no Department of Biology.

CAREER OPPORTUNITIES
There are opportunities in agriculture, forestry and horticulture, as well as conservation and resource management. Students who have studied Biology can obtain positions such as research scientist, university lecturer, school teacher, forest ecologist, science technician, ecological consultant, Ministry of Agriculture biosecurity officer, resource management co-ordinator, water quality scientist, local government environmental officer, biotechnologist, plant pathologist and marine botanist.

The foundation paper in most biological subjects is:

- CELS 191 Cell and Molecular Biology

Progression to 200-level requires one or more of the following additional first-year papers:

- BIOL 112 Animal Biology
- BIOL 123 How Plants Shape the World
- ECOL 111 Ecology and Conservation of Diversity
- HUBS 191 Human Body Systems 1
- HUBS 192 Human Body Systems 2

Requirements vary from subject to subject. Refer to the relevant subject entries.

Bioethics
The life and health sciences aim to understand and manipulate humans, animals and the environment. Both because of these aims, and the means used to pursue them, many important moral questions arise in the life and health sciences. Bioethics offers you a set of tools for thinking through these questions in a clear, rigorous and critical way, to arrive at conclusions about what is at stake, good and bad, right and wrong. Teaching encourages reflection, reasoned discussion, sharing and refining of ideas.

CAREER OPPORTUNITIES
Bioethics brings and add value to the degree of anyone considering a career in areas such as the life or health sciences, health law, health management, health education, or in health or environmental policy.

Undergraduate study begins at 200-level.

Note: Students interested in BIOL 112, BIOL 123, HUBS 191 or HUBS 192 are recommended to take CELS 191.

CELS 191 Cell and Molecular Biology
Introduces cell structure and function, molecular biology, genetics and the biology of micro-organisms.

BIOL 112 Animal Biology
Introduces animal diversity, the variation in the structure and life processes of animals and their interactions, and the threats to New Zealand’s unique animals posed by introduced animals, human activities and harvesting.
Biomedical Sciences

The Bachelor of Biomedical Sciences degree is a multidisciplinary programme of study designed to provide a foundation in the scientific basis of human health and disease. This programme is made up of combinations of papers drawn from the major subject areas within Biomedical Sciences – Anatomy, Biochemistry, Genetics, Human Nutrition, Marine Science, Microbiology, Plant Biotechnology, Physiology and Zoology.

Six different majors are offered within this degree programme:

- Drugs and Human Health
- Functional Human Biology
- Infection and Immunity
- Molecular Basis of Health and Disease
- Nutrition and Metabolism in Human Health
- Reproduction, Genetics and Development

Each major is designed to provide both a theoretical and practical coverage of one particular facet of human biology.

CAREER OPPORTUNITIES

Biomedical Sciences is a flexible and very marketable degree. Due to the broad-based training, graduates are able to quickly adapt to changing workplace demands. Our graduates are currently working in areas as diverse as developing nutritional sports powders to investigating the pathology of Hepatitis C. They are commonly found working in universities, medical research institutes, hospitals, pharmaceutical companies and biotechnology industries. Other career options include teaching, marketing and sales (particularly in pharmaceutical, biotechnology and the biomedical equipment and service industries), policy advisers in government agencies and positions in the media.

The degree also provides an excellent pathway for subsequent entry into graduate-entry health science programmes such as Audiology, Medical Laboratory Science, Medicine, Nursing, Optometry, Pharmacy, Dentistry and Physiotherapy.

Students who are interested in research can enter the BiomedSc (Hons) programme, which is a gateway to postgraduate MSc and PhD studies, leading to a professional science career.

100-LEVEL PAPERS

If you intend to enrol in Biomedical Sciences, you must take the following 100-level papers:

- BIOC 192 Foundations of Biochemistry
- CELS 191 Cell and Molecular Biology
- CHEM 191 The Chemical Basis of Biology and Human Health
- HUBS 191 Human Body Systems 1
- HUBS 192 Human Body Systems 2
- PHSI 191 Biological Physics

and one further paper at 100-level from any degree schedule.

200-LEVEL AND BEYOND

There are six interdisciplinary majors offered within the Biomedical Sciences degree programme. These are:

- Drugs and Human Health
- Functional Human Biology
- Infection and Immunity
- Molecular Basis of Health and Disease
- Nutrition and Metabolism in Human Health
- Reproduction, Genetics and Development

Each major is intended to give you an up-to-date overview of the present and future role of drugs in human health.

Biological Sciences

The Bachelor of Biological Sciences degree is a multidisciplinary programme of study designed to provide a foundation in the scientific basis of life sciences. It explores subcellular structures and genetic organisation through to the study of the gross anatomy of reproductive systems, and the processes by which a fertilised egg is transformed into a whole organism.

Botany

Botany is generally considered to be the study of plants: their structure and development, physiology, genetics and biochemistry, health and disease, relationships with other organisms and the environment (ecology), and also the impacts plants have on our daily lives.
At the University of Otago, the emphasis is on general biology, ecology and physiology of vascular plants, marine algae, cyanobacteria and fungi, although other groups (plant viruses, lichens, ferns, mosses and liverworts) are included in some papers.

**CAREER OPPORTUNITIES**

There is a wide range of employment opportunities for graduates in Botany: these jobs can cover research scientists, university lecturers, school teachers, forest ecologists, science technicians, ecological consultants, biosecurity officers, resource management co-ordinators, water quality scientists, local government environmental officers, biotechnologists, geneticists, plant pathologists and marine botanists.

100-LEVEL PAPERS

At first year you must take a number of required papers and several others are highly recommended. Please refer to the 2014 Guide to Enrolment for further details.

200-LEVEL AND BEYOND

200-level papers examine a range of subject areas including developmental physiology and biotechnology, New Zealand plant ecology and its global and Southern Hemisphere affinities; and marine primary production – particularly the biology, ecology and physiology of seaweeds and phytoplankton.

300-level papers consider a range of subject areas including community, population and evolutionary plant ecology, as well as the physiological responses of plants to terrestrial and marine environments, the biology and ecology of fungi and plant pathogens, and the diversity and evolution of plants.

**Chemistry**

An understanding of chemistry provides a foundation for biology, earth, ocean and atmospheric sciences and others as well as chemical science. It covers the properties, syntheses and transformations of substances and their applications to the way we live and modify our environment. Through chemistry, we can begin to understand and master the material and biological world.

**CAREER OPPORTUNITIES**

There continues to be strong demand for Chemistry graduates. Graduates work both in New Zealand and overseas in academic and research positions in the chemical, plastics, pharmaceutical, food, textile, timber, pulp and paper and electrical industries, and in plant and product control and management.

Chemists play leading roles in agriculture, horticulture, fisheries, water-quality control, in chemical, biochemical and medical research units, and in state-owned enterprises. There is a severe shortage of Chemistry graduates in the teaching profession and numerous opportunities for chemists in the commercial environment. For such careers additional commerce papers or double degrees in Chemistry, Law or Commerce can be a distinct advantage.

Both CHEM 111 and CHEM 191 are strongly recommended. Study of Mathematics and/or Physics at 100-level, or at least to NCEA Level 3, is also recommended if you plan to advance in Chemistry.

**CHEM 111 Chemistry: Molecular Architecture**

Emphasises interactions between atoms and molecules and includes modern methods to determine molecular structure and shape. Explores the relationships between molecular interactions and the properties of materials.

**CHEM 191 The Chemical Basis of Biology and Human Health**

An introduction to the concepts of Chemistry underlying important processes in biology and human health, including energetics, kinetics, equilibria and solubility, properties of water and solutions, acids, bases, complexation and electron transfer, reactions of organic molecules, amino acids and carbohydrates. It is a compulsory paper for Health Sciences First Year students.

Both CHEM 111 and 191 cover the theoretical, quantitative and practical aspects of Chemistry. At least 14 credits in NCEA Level 3 Chemistry Achievement Standards are strongly recommended as an appropriate background for these papers.

200-LEVEL AND BEYOND

The Department of Chemistry offers BSc courses in Chemistry. These courses are flexible and cater for wide interests such as biological, marine, environmental, physical, forensic, analytical and synthetic chemistry. Chemistry also offers or contributes to postgraduate courses specialising in chemical hazard and risk mitigation, environmental chemistry and biotechnology, marine and environmental science. Students who would like to study more advanced Chemistry, but not necessarily to major in the subject, can still do so.

**Introductory Chemistry**

Students who have not done Year 13 Chemistry (or equivalent), or feel their background in Chemistry is weak, can enrol for the Introductory Chemistry catch-up course. This is a distance-taught, non-credit course that runs throughout the year.

For further information including enrolment details for the course visit: http://neon.otago.ac.nz/chemistry/studying/IntroChem/
Marc Matsas’s passion for science saw him handing in his master’s thesis on a Wednesday and starting work the following Monday.

“There wasn’t much of a gap,” says Marc.

“I’d always had an interest in science since high school. First I wanted to be a doctor but then I decided I was more intrigued by the science of how the body works, and went for anatomy.”

Going to Knox College and attending Otago were family traditions, and introduced Christchurch-based Marc to Dunedin.

“A lot of people take Dunedin for granted, but it’s a great life here. When you’re on campus everything is easily accessible and you don’t need a car. And when you get mobile there are so many awesome places that Otago has to offer.”

After his BSc, Marc did a postgraduate diploma and a master’s.

“Working in the lab doing my own study was even more interesting, and from that point on you start to develop relationships with the staff. You get to know them as people rather than just lecturers, and really feel part of the scientific community.”

Marc helped fund his studies by working part-time as a first aid instructor for the local Red Cross.

“I’d been a St John cadet at school, and represented New Zealand in a first aid competition, so it was a natural thing to do. And I found I loved teaching.”

Marc’s combination of qualifications and experience landed him a job as New Zealand and Australia brand manager for Education Perfect, a company providing online learning tools.

“We offer help to support NCEA students, working with schools to make sure what we do matches what they are doing.

“I’m passionate about science and about teaching, and Otago gave me the life skills to be good at my work. You grow up and learn a lot about people as well as get qualifications.”

“I’M PASSIONATE ABOUT SCIENCE AND ABOUT TEACHING, AND OTAGO GAVE ME THE LIFE SKILLS TO BE GOOD AT MY WORK.”
CHEM 150 – Concepts in Chemistry (Summer School)

This bridging paper provides an introduction to the key concepts of chemistry and is designed for students who have done little previous chemistry or who feel they need a catch-up before enrolling for 100-level chemistry courses (CHEM 111 or CHEM 191) or to provide an understanding of basic chemistry concepts to complement their current studies. The content of the course is at senior high school Chemistry level (NCEA Levels 2 and 3).

The course will run for six weeks. The first four weeks will be distance taught, with students completing lessons that will be taught online. The final two weeks will be taught in the Department of Chemistry and will involve lectures/tutorials and laboratory classes.

Assessment will be by means of online tests and laboratory exit tests, as well as a final examination. The course is normally restricted to students who have attained no more than 14 credits at NCEA Level 2 Chemistry (or equivalent).

For more information see http://neon.otago.ac.nz/chemistry/studying/CHEM150 (Tel 0800 80 80 98 for a Summer School Prospectus or email Dr David McMorran (davidm@chemistry.otago.ac.nz).

Chinese

Modern Standard Chinese (also known as Mandarin, Putonghua or Guoyu) is the most widely spoken language in the world. Chinese culture is far-reaching as China shares a rich cultural heritage with other important Asian cultures such as those of Japan, Vietnam and Korea.

China is important to New Zealand’s future. Links between New Zealand and Chinese-speaking countries and regions are rapidly growing. Learning Chinese provides access not only to China’s fast-growing economy but also many newly industrialised economies in Asia, where Chinese is widely spoken. It is crucial that we know more about China and understand its culture, history, political and economic system. Learning Chinese language is an essential first step towards this understanding.

CAREER OPPORTUNITIES

Graduates work in New Zealand and overseas in business, law, tourism, information science and technology, teaching, translation and interpretation, print and electronic journalism, and government departments.

100-LEVEL PAPERS

If you intend to major in Chinese (BA), you must take the following 100-level papers:

CHIN 131 Introductory Chinese 1
CHIN 132 Introductory Chinese 2

CHIN 131 Introductory Chinese 1

Introduces reading, writing, listening and speaking Chinese. No previous knowledge is required.

CHIN 132 Introductory Chinese 2

An elementary course in reading, writing, listening and speaking for students with some basic Chinese.

200-LEVEL AND BEYOND

Papers taught at the 200- and 300-levels are offered both in Chinese and English. Introduction to Chinese Civilisation (CHIN 241), Chinese Cinema (CHIN 242/342) and Modern Chinese Literature (CHIN 243/343) are taught in English and are also open to non-majors. All other advanced language and culture courses are taught in Chinese and are designed to develop communication skills in spoken and written Mandarin, as well as increase knowledge of Chinese culture and society.

CHIN 241 Introduction to Chinese Civilisation

This paper looks at various aspects of Chinese culture, including politics, philosophy and belief systems, literature and (material and visual) arts.

CHIN 242/342 Survey of Chinese Cinema (offered in conjunction with CHIN 342)

A survey of modern Chinese cinema with emphasis on the development of the Chinese film industry, major Chinese film genres, social implications of film and Chinese culture reflected through film.

CHIN 243/343 Modern Chinese Literature (offered in conjunction with CHIN 343)

A survey of modern Chinese literature since 1949 with emphasis on writings after China’s Cultural Revolution. This paper introduces major literary trends and influential writers, analyses their major texts and the socio-political implications of the texts.

CHIN 244/344 Chinese Language and Culture (offered in conjunction with CHIN 344)

A cultural paper based in Chinese language.

Christian Thought and History

Christianity has been a hugely influential force in the development of Western civilisation, helping to shape the world in which we live today. It continues to have a very significant global presence. Christian Thought and History explores the history, beliefs and values of Christianity – their origins, development and varying contexts. It is one of the three subject areas for a major in Theology, alongside Biblical Studies and Pastoral Studies.

CAREER OPPORTUNITIES

Graduates develop valuable skills in critical thinking, research and communication. They go on to develop careers in any number of roles: teaching, social work, journalism, librarianship, administration, aid and development agencies, government department work, and church leadership and ministry.

There are three main dimensions to Christian Thought and History:

• Church History – the growth and development of the Christian faith from the first century to the present day
• Systematic Theology – a critical exposition of the content of Christian belief, both historically and in contemporary contexts. Papers explore the nature and implications of Christian understandings of God, Jesus, humanity, salvation, the natural world, community and worship
• Christian Ethics and Public Theology – link the history and ideas of Christian belief to present-day questions about life, death, relationships, suffering, violence, war, poverty and justice. Some papers pay special attention to the particular contributions Christian theology may make to issues of major political and social debate in a pluralist society.

CORE PAPERS AT 100-LEVEL ARE:

CHTH 102 The History of Christianity

A survey of the history of Christianity from around 100 AD to the present day: from early formation to recent contexts in Nazi Germany, Soviet Russia and North America.

CHTH 111 Doing Theology

What is theology? How should it be done, and why? The roles of Scripture, tradition and experience; exploring doctrines of God, creation and humankind in a pluralist world.
**Classics**

Classics is the study of the civilisations of ancient Greece and Rome. These have had immense influence on the development of Western civilisation. Our language, literature, art and architecture, drama, philosophy, political and legal systems are all derived from Greece and Rome.

Greece and Rome are fascinating subjects in themselves, and our interdisciplinary papers mean there are links with almost all other Arts subjects. The major in Classics covers Classical Studies, Greek and Latin, which can be combined in proportions to suit you.

Classical Studies covers history, literature, mythology and archaeology (taught in English translation), while Greek and Latin papers offer linguistic training and the experience of reading major works of ancient Greek and Roman literature, drama, history and philosophy in the original languages. A knowledge of ancient Greek and/or Latin is an essential skill required for postgraduate work in Classics.

**CAREER OPPORTUNITIES**

Graduates teach in schools and universities, and work in foreign affairs, trade and industry, university administration, libraries, art galleries, museums, theatre and journalism.

**100-LEVEL PAPERS**

*If you intend to major in Classics (BA), you must take at least two of the following 100-level papers:*

- **CLTH 101** Greek Mythology
- **CLTH 108** Classical Art and Archaeology: Of Heroes, Gods and Men
- **CLTH 109** Roman Social History: Slaves, Gladiators, Prostitutes
- **GREK 101** Introductory Greek 1
- **GREK 102** Introductory Greek 2
- **LATN 101** Introductory Latin 1
- **LATN 102** Introductory Latin 2

The ideal would be to take four papers, combining Classical Studies with one of the languages, or combining Greek with Latin.

- **CLTH 105** Greek Mythology
  - A study of the myths of Ancient Greece with particular reference to the origins and nature of gods and heroes.
- **CLTH 108** Classical Art and Archaeology: Of Heroes, Gods and Men
  - An introductory study of Classical art and archaeology, examining both the ancient Greek and Roman worlds.
- **CLTH 109** Roman Social History: Slaves, Gladiators, Prostitutes
  - A study of ancient Roman social life, with particular emphasis on the marginalised (or so-called "invisible") lower classes, including slaves, gladiators, prostitutes and bandits.
- **GREK 111** Introductory Greek 1
  - A reading-based beginners’ paper covering the basic elements of ancient Greek grammar and vocabulary, designed to develop reading skills in ancient Greek.
- **GREK 112** Introductory Greek 2
  - A continuation of GREK 111, incorporating more advanced grammar and syntax and designed to develop reading skills in ancient Greek.
- **LATN 111** Introductory Latin 1
  - A reading-based beginners’ paper covering the basic elements of Latin grammar and vocabulary and designed to develop reading skills in Latin.
- **LATN 112** Introductory Latin 2
  - A continuation of LATN 111, incorporating more advanced grammar and syntax and designed to develop reading skills in Latin. Students with at least 18 credits in NCEA Level 2 Latin (or equivalent) may enrol for this paper without taking LATN 111.

**200-LEVEL AND BEYOND**

Study includes learning about structural features of the fibres, yarns, fabrics, and how these affect properties and performance, contemporary technologies, and textiles as evidence of cultural change. Each topic is examined in terms of theory, principles, practices and applications.

**Clothing and Textile Sciences**

Clothing and Textile Sciences are studies from several perspectives – physical, biological, cultural. Included is the examination of fibres, yarns, fabrics and products, their uses and evidence of their uses (e.g. as forensic evidence, as evidence of cultural change and in international trade), and fits in a broader field Materials.

**CAREER OPPORTUNITIES**

Completion of Clothing and Textile Sciences courses can lead to careers in textile and apparel manufacturing, marketing and sales (e.g. technical specification, quality control, performance assessment, production management). The courses can also lead to careers in service organisations (e.g. NZ Police, NZ Defence), teaching (e.g. primary through to tertiary levels), in research (e.g. Crown Research Institutes, government departments), in cultural institutions (e.g. museums and art galleries, as managers of textile collections, as curators).

Supporting papers from Sciences in particular, but also Commerce and Humanities, can enhance career prospects. Complementary subjects for a major in Clothing and Textile Sciences include Human Physiology, Chemistry, Physics.

**100-LEVEL PAPERS**

There are no 100-level papers and no specific prerequisite courses.

36 points are required, but some papers are recommended and proposed 100-level papers ideally should be discussed with an academic adviser in Clothing and Textile Sciences.

Note: 200-level Clothing and Textile Sciences papers can be taken in Semester Two of your first year.

**200-LEVEL AND BEYOND**

Study includes learning about structural features of the fibres, yarns, fabrics, and how these affect properties and performance, contemporary technologies, and textiles as evidence of cultural change. Each topic is examined in terms of theory, principles, practices and applications.

Clothing and Textiles in Sport, for instance, includes an analysis of the physical structure of materials and various products used in sport, and the way in which they function to identify the wearer, to enhance human performance and/or to prevent or minimise injury.

Graduates with 54 points at 200-level and 72 points at 300-level in Clothing and Textile Sciences are eligible for the Licentiatehip of the Textile Institute (CText LTI) after
one year’s relevant employment. Honours graduates are eligible for the Associateship of the Textile Institute (CText ATI), both of which are internationally-recognised professional qualifications.

### Commerce

There is no single subject called Commerce. Refer to the major subjects of Accounting, Economics, Finance, Information Science, International Business, Management, Marketing Management, and Tourism. All subjects taught in the Business School can be put towards a BCom. In addition, you can undertake a minor in all of these areas except International Business. Hospitality and Entrepreneurship are offered as specialist minors only.

To complete a Bachelor of Commerce (BCom), you must complete in addition to your major’s requirements the following core papers:

- BSNS 102 Quantitative Analysis for Business
- BSNS 103 Marketing and Consumption
- BSNS 104 Principles of Economics I
- BSNS 105 Management and Organisations
- BSNS 106 Information and Communication in Organisations
- BSNS 107 Understanding Accounting
- BSNS 108 Business Finance

These papers give you an excellent general understanding of business. You should aim to complete all BSNS papers before starting 300-level BCom study. If one of the BSNS papers is a prerequisite for a 200-level paper in your study programme, you must complete and pass the paper before advancing. Advisers of Studies are available throughout the year to help you organise your study programme.

### Communication Studies

Communication Studies focuses on the social, technological, political and cultural implications of current and changing communicative practices and networks. With an emphasis on social and media-based communication, courses initiate a critical and creative understanding of digital, broadcast, print, mobile and everyday communication. Papers also develop skills in written work, data analysis, research and oral presentations.

Students can study Communication Studies as a minor to enhance their undergraduate majors. Many MFCO Film and Media papers also count towards the COMS major.

### CAREER OPPORTUNITIES

Communication Studies is a major that recognises the need for graduates who understand communication in the information age and the era of globalised media. The skills that students learn are widely applicable to a broad range of occupations and professions. Our graduates work as journalists (TV, radio, print), teachers, administrators, managers, communications and marketing co-ordinators, registrar and policy-makers and in the public service sector (Tertiary Education Commission, Ministry of Internal Affairs). Others are employed in private creative and media industries.

### 100-LEVEL PAPERS

**COMS majors must take:**

- MFCO 102 Understanding Contemporary Media
- MFCO 103 Introduction to Communication Studies

### 200-LEVEL AND BEYOND

Beyond 100-level, papers provide perspectives on media theories, communications history, technology, policy and audiences, important social, political, environmental and cultural issues involving media.

### COMBINE WITH OTHER SUBJECTS

Film and Media can be combined with the study of a wide range of other subjects, including English, Anthropology, Political Studies, Geography, History and Art History, Gender, Languages and Marketing.

### Computational Modelling

Science, technology, engineering and mathematics (STEM) skills are the backbone of a modern economy. A computational modeller bridges the gap between mathematics and the other STEM disciplines. When industrial scientists want to use mathematics and computing to solve a problem, they need computational modelling.

A computational modeller studies real-life problems and processes and then distills the key features into mathematical equations to construct a model. A well-designed model is the key to a successful outcome, while a badly designed model will make any mathematical solution worthless. It is no wonder that skilled computational modellers are in high demand. We are fortunate to have some of the top mathematical and computational modellers at the University of Otago.

The COMO programme will help you develop the skills for successful computational modelling. Many students take COMO courses as part of a degree in another discipline; others specialise in computational modelling itself.

If you are interested in Computational Modelling, contact the programme director Associate Professor David Bryant (como@maths.otago.ac.nz)

### COMO 101 Computational Mathematics

This is a general purpose paper providing a general introduction to techniques in computational modelling and applied mathematics. Applications range from estimation of tidal power output to epidemiology and genetics. It has no prerequisites, and is recommended for science and health science majors.

### COMO 204 Differential Equations

This paper provides a comprehensive introduction to the theory and practice of differential equations, one of the most fundamental tools for computational and mathematical modelling.

Prerequisite: MATH 170

### COMO 303 Numerical Methods

This paper presents key techniques and theory required to carry out mathematical and modelling calculations on a computer. It discusses methods for estimating parameters from data, approximating functions and surfaces, and develops further ideas from COMO 204 on numerical methods for working with differential equations.

Prerequisites: COMO 204, MATH 202
Computer Science

Computer Science is an exciting subject: computers are now more fundamental to our modern world than ever before, and in their various forms are essential in how we all work, play and communicate. Computer Scientists are not just programmers, although being a good programmer and mastering computing languages are part of their job. The subject also covers problem solving, manipulating data, building networks, creating computer graphics, using artificial intelligence systems, designing games and web development. In Computer Science you can learn about all of these and more. Computer Science can be taken as a major for either a Bachelor of Arts (BA) or a Bachelor of Science (BSc), as a minor for BA, BSc or BCom, or as an elective.

CAREER OPPORTUNITIES

This is a good time to think of an IT career. Over the past few years, the number of jobs has continued to increase steadily while the number of graduates has lagged behind. A career in the IT sector offers good salaries and job security. It also offers a lot of variety, since computer skills can be combined with any other interests you have. On our web pages you can see what a wide range of positions our graduates have had, including programmer, software engineer, systems analyst, system administrator, web designer, database administrator, animator, games designer, researcher, and robotics expert.

100-LEVEL PAPERS

COMP 112  Web Development and Digital Media

This popular paper builds practical skills in creating web pages and using Photoshop and Flash. There is no prerequisite, but we assume you are comfortable with using a computer, for example to send email or do word-processing.

COMP 150  Practical Programming

This paper provides a gentle and down-to-earth introduction to programming, using the increasingly popular language Python. Students who do not intend to major in Computer Science can get a taste of what computing is about, while students who do intend to major in Computer Science will find this paper very good preparation.

COMP 160  General Programming

This paper introduces the important idea of object-oriented programming, using the Java language. For students who intend to major in Computer Science, COMP 160 is the key starting point, as all 200-level COSC papers rely on it. Although this paper itself has no formal prerequisite, COMP 150 provides good preparation.

Students who major in Computer Science are required to include three 100-level papers offered by other departments:

BSNS 106  Information and Communication in Organisations

Any MATH, STAT or COMO paper

ENGL 127  Effective Writing

200-LEVEL AND BEYOND

The backbone of Computer Science is programming, and the papers COSC 241 and COSC 242 build on the programming skills of COMP 160. In COSC 243 students are introduced to the way a computer works, so that they will be able to cope with unfamiliar environments (for example, a new operating system). In COSC 244 students are introduced to computer networks, including the internet. COMP 212 focuses on more complex issues related to websites.

At 300-level, COSC 326 continues the programming theme. This is a completely practical paper with no final exam. The other papers each represent a specialised skill cluster. Students would normally discuss their selection of papers with the Adviser of Studies to ensure that the papers most relevant for their careers are included.

Computer Science combines well with many other studies including: design studies leading to careers in computer graphics, animation or computer games; biological and health sciences leading to careers in bioinformatics; it also strengthens careers in maths, physics, economics and finance. Students intending to work in business might combine Computer Science with Information Science, Marketing, Accounting or Finance as part of a BCom.

Computing

The University of Otago offers five computing-related subjects: Computational Modelling (BAppSc), Computer Science (BA, BSc), Information Science (available in BA, BCom, BSc), Software Engineering (BAppSc) and Telecommunications (BAppSc). You can read about each of these elsewhere in this Subject Guide.

You can take a first-year course that will allow you to develop majors in any of these computing subjects. You can decide at the end of your first year which one you want as your major.

Consumer Food Science

Consumer Food Science involves the study of factors that influence our food choices and food production, for example cultural and ethical issues, sensory perception (taste, appearance, smell ...), food quality, policy, consumer behaviours, diet, nutrition, lifestyle and marketing influences. This area of study provides an opportunity to combine courses in the consumer aspects of food science, with business skills through a compulsory minor (or second major). Consumer Food Science is complemented very well by a minor (or second major) in Marketing and this is a popular choice with employers. It also works well with subjects such as Management or Entrepreneurship. Combining Consumer Food Science with Nutrition Communication is another choice that opens different career options. A range of combinations is available depending on your interests.

Graduates are employed in careers as diverse as food promotion, sensory analysis, food quality management, marketing, consumer research, food regulation and policy, and new product development.

100-LEVEL PAPERS

If you intend to major in Consumer Food Science (BAppSc), you must take the following 100-level papers:

FOSC 111  Food Principles

FOSC 112  Introduction to Food Marketing

Either

STAT 110  Statistical Methods

or

STAT 115  Introduction to Biostatistics

CELS 191  Cell and Molecular Biology

is also recommended.

You will also need to select additional papers required for your chosen minor or second major subject.

200-LEVEL AND BEYOND

Three core food science papers, which build your foundation knowledge of the science of food, are taken in second year: Food Systems 1, Food Systems 2 and Sensory Science. Other papers are selected to fulfil the requirements for your chosen minor or second major and there may still be room to add extra papers relevant to Consumer Food Science, such as Psychology or Statistics.

At 300-level, a full-year paper in Food Product Development will give you valuable experience through a hands-on project, applying all
the skills learnt to date. You will also study Advanced Sensory Science and look in more depth at factors affecting consumer choice in Food and Consumers. You will also complete the requirements for your minor or second major.

D

Dance Studies
See Physical Education and Performing Arts Studies.

Dance Studies is integral to studies of human movement within the Bachelor of Physical Education as well as Performing Arts Studies. The University of Otago is the only academic institution in New Zealand at which students can study dance as a major focus within both Arts and Science degrees. Students may specialise in Dance through the BPhEd and the new Bachelor of Performing Arts; we also offer a Master of Dance Studies (MDanceSt) and PhD. Students can also take a minor in Dance Studies as part of a degree from Science, Commerce or Humanities.

Dental Technology
A dental technician makes a wide range of dental appliances. The three-year Bachelor of Dental Technology degree (BDentTech) enables you to acquire the knowledge, understanding and skills to become a competent dental technician and work independently as a member of the dental team. There is also the option to do the Bachelor of Dental Technology with Honours (BDentTech(Hons)) which involves doing additional research-based papers.

CAREER OPPORTUNITIES
Graduates can register with the Dental Council of New Zealand and work in many different areas of dental technology. There are opportunities for postgraduate study at the University of Otago, such as the Postgraduate Diploma in Dental Technology and Master of Dental Technology. Dental technicians can have direct clinical contact with patients, following completion of the Postgraduate Diploma in Clinical Dental Technology, providing a service in removable denture prosthetics. Registered clinical dental technicians in New Zealand are also entitled to register in Australia.

ADMISSION
To be admitted to the course, students should have a minimum of 14 Level 3 NCEA credits in Chemistry and a minimum of 14 Level 2 NCEA credits in Physics, or approved equivalent. Although not required, study of Biology to at least NCEA Level 2 would be an advantage.

Application is made online through the website www.otago.ac.nz/healthsciences from August and must be completed by 15 September in the year prior to beginning study. Late applications may be considered. In addition, students must complete University enrolment procedures.

100-LEVEL PAPERS
If you wish to study for the Bachelor of Dental Technology degree, you must take the following 100-level papers:

- DTEC 101 Dental Materials I
- DTEC 102 Dental Technology I
- DTEC 103 Oral Health Sciences for Dental Technology
- CHEM 193 The Chemical Basis of Biology and Human Health
- PHSI 191 Biological Physics

200-LEVEL AND BEYOND
200-level papers include dental materials such as ceramics, polymers and metal alloys and the construction of partial dentures, orthodontic appliances and conservative restorations.

300-level includes marketing, practice management, construction of complex appliances for crown and bridge restorations; implant restorations and research in materials science.

Dentistry
See profile on page B6.

Dentistry is a challenging profession that combines a high degree of manual dexterity and precision and an ability to communicate well with a thorough academic understanding of not only the mouth, but also the head and neck region. The skills of a dentist enable him or her to diagnose, formulate and carry out treatment that is planned to each patient’s oral needs.

CAREER OPPORTUNITIES
Dentistry contributes to appearance, well-being and general health. Most graduates enter general practice on their own or in association with others. Some undertake postgraduate study and research for an academic career, or complete postgraduate clinical qualifications before entering specialist practice.

The Dental Council of New Zealand requires all dentists to register to practise in New Zealand. The minimum qualification is the degree of Bachelor of Dental Surgery (BDS) from the University of Otago, which has New Zealand’s only School of Dentistry. Graduates enjoy an excellent reputation internationally.

ADMISSION
Entry is competitive and admissions regulations provide different categories of entrance (Health Sciences First Year [HSFY], Second Year of University Study, Competitive Graduate and Alternative categories). Intending dental students should read the appropriate regulations on the website www.otago.ac.nz/healthsciences, in the University Calendar and the Health Sciences First Year Handbook. There are 54 domestic places available for second-year classes each year, and the majority are admitted from the HSFY Category of Admission.

HEALTH SCIENCES FIRST YEAR CATEGORY OF ADMISSION
To be eligible for selection into Dentistry, all Health Sciences First Year papers must be passed with a B (70 per cent) grade point average (GPA) or better across all papers, with no paper less than a B- (65 per cent). Applicants who have reached the academic and UMAT thresholds will proceed to oral assessment / interview. Applicants who have met all three selection criteria will be selected based on their GPA.

SECOND YEAR OF UNIVERSITY STUDY CATEGORY OF ADMISSION
Students will be considered for entry to Dentistry in this category if they have completed two or more years of study at a university in New Zealand, as well as the equivalent of the papers prescribed for the HSFY, with a B (70 per cent) GPA (University of Otago equivalent) or better. The second-year papers should be in the broad category of biological sciences and must be approved by a Dental Adviser of Studies. Applicants who have reached the academic and UMAT thresholds will proceed to oral assessment / interview. Applicants who have met all three selection criteria will be selected based on their GPA. (Final year for applications under this category was 2013 for admission to second year classes in 2014.)

GRADUATE CATEGORY OF ADMISSION
Graduates who have completed their first degree at a New Zealand university may apply for entry. Applicants will have completed papers equivalent to the HSFY papers, with a B (70 per cent) GPA (University of Otago equivalent) or
Byron Madigan gets paid to spend time on social media.

As a digital and social marketing executive, he manages and maintains the social media channels for an Auckland university — putting into practice what he learned at Otago.

Born and bred in Dunedin, Byron chose to study at Otago. “It was convenient, but with a world-class university on your doorstep I didn’t see any need to go any further afield.”

He wasn’t sure what to do in his first year, so he took a mix of papers, and he advises new students to do the same.

“It’s good to keep your options open. Be open minded as to what the future might bring, and realise that what you study now may not be a job yet. The job I’m doing now did not exist when I was studying.”

Byron discovered Communication Studies, which he felt was really relevant to modern life. “I realised there was a growth in social media and found that the course content helped me understand the impact it had on how we communicate.

“It’s not a massive course so there’s a good ratio of students to tutors and lecturers, who are very approachable. Help was always available when I needed it.”

Byron added to his BA in Communication Studies with a BCom in Marketing for a double degree. After graduating, he spent a couple of months travelling in the USA and Asia and fell in love with big cities.

“Studying and living in Dunedin was great. It’s a great place to learn, but I loved the fast-paced lifestyle, so I went north to look for work.

“Within a few weeks I landed a job at AUT, so going from one university to another was not a massive culture shock.

“Now I make sure that communication through social media is appropriate and informative. It’s a big task but fun, and I’m always learning, because the digital world changes so fast.”
better. Applications must be made within three years of the completion of the requirements of the first degree. Applicants who have reached the academic and UMAT thresholds will proceed to oral assessment / interview. Applicants who have met all three selection criteria will be selected based on their GPA.

ALTERNATIVE CATEGORY OF ADMISSION

This category is for applicants to second-year classes in Dentistry who do not meet the requirements for entry in the preceding categories. Graduates of a university in New Zealand who completed the requirements of their first degree more than three years previously should apply in this category, as should those with a second or higher degree and New Zealand citizens or permanent residents who have completed a degree at an overseas university. All applicants to Dentistry in the Alternative category must have passed the equivalent of all papers prescribed for the HSFY programme and have achieved a minimum academic standard to be determined by the Admissions Committee in any papers undertaken at university – usually a B average (University of Otago equivalent) across all papers. Applicants who have reached the academic and UMAT thresholds will proceed to oral assessment / interview. Applicants who have met all three selection criteria will be selected based on their GPA.

Māori and Pacific Islands peoples may apply in any of the above categories and will be considered separately.

Applications for admission in all categories must be made to the Health Sciences Admissions Office, Division of Health Sciences, by 15 September in the year preceding that to which admission is sought.

INTERNATIONAL STUDENTS

The Admissions Committee is able to offer a limited number of additional places in second-year classes to applicants sponsored through the Ministry of Foreign Affairs and Trade, the governments of their country of origin or to full-fee-paying overseas students who meet academic, UMAT and interview standards determined by the Admissions Committee. International applicants should contact the International Office, University of Otago, for application details.

200-LEVEL AND BEYOND

Following on from HSFY, the second year of the five-year BDS programme has three papers: The Dentist and the Patient, Biomedical Sciences, and The Dentist and the Community. These three papers continue through the later years of the programme with increasing experience in all aspects of clinical dentistry.

In the later years there are opportunities for undertaking supervised clinical work outside of the Dunedin campus, overseas elective study and for undertaking a research project.

**Design for Technology**

The three-year Bachelor of Applied Science degree majoring in Design for Technology blends design – emphasising industrial design – and other disciplines in sciences (e.g. computer science, maths) and in business (e.g. marketing). Students can broaden their competencies with papers in a variety of other subjects. Students may anticipate working with an external client on a professional design project typically as part of a team.

The Design for Technology major is focused on four related aspects of design: technical, engineering, innovation, materials.

**100-LEVEL PAPERS**

DESN 101 Design Inquiry

This paper explores critical understanding and creative application of key design tools and processes.

Many students will also require a paper in Mathematics (e.g. COMO 101 Computational Mathematics or MATH 160 Mathematics 1 or equivalent)

**CAREER OPPORTUNITIES**

Graduates work in design environments from small new-start companies to large industrial concerns. With appropriate imagination and training, developing new businesses from start-up to maturity is possible.

Note: The Applied Science course must include either a minor or a second major selected from a prescribed list which includes subjects from Sciences, Commerce and Humanities.

**Dietetics**

Dietetics is the profession which works with people to help them improve their health through nutrition. Dietitians plan, communicate, implement and evaluate effective nutritional management strategies based on current scientific evidence. If you are interested in people, food and nutrition, then dietetics is the career for you. There are work opportunities for dietitians in New Zealand and overseas. The Dietetics course at Otago is a postgraduate course, so if you know now that you want to study dietetics, then, by planning your university course carefully, you can make sure you take the necessary papers in three years.

**CAREER OPPORTUNITIES**

Career opportunities include: clinical dietetics in hospitals, the community and private practice; food-service management in hospitals, residential institutions and the wider community; public health nutrition for public health organisations, government and non-government agencies; community nutrition for District Health Boards; the food industry, such as food manufacturers; medical nutritional reps for nutritional pharmaceutical companies; research and education within universities and polytechnics; sports and other consultancies: self-employed, government and non-government agencies.

**200-LEVEL AND BEYOND**

Although Dietetics is a postgraduate course, it is important to plan early and study subjects such as Chemistry, Biology and Statistics at high school. To become a dietitian, you are required to complete a Master of Dietetics, but first you need to complete a three-year Bachelor of Science degree in Human Nutrition.

In the first year of the degree, you must take Cellular and Human Biology, Chemistry, Biochemistry, Statistics and a Food Science paper. In the second and third years, you study papers that look at how nutrients affect the human body, and the biochemistry and physiological systems of the body. In the second and third years, you also study how to organise and manage food service by providing healthy meals to a group of people.

Those who have a Nutrition degree from another university may need to complete additional papers before applying for entry into the postgraduate Dietetics programme.

**Ecology**

Ecology is the scientific study of the distribution and abundance of living organisms and their relations with their environments. Ecology courses are taught by staff from a range of departments (e.g. Botany, Geography, Marine Science, Zoology and Information Science).

The diversity of Otago’s habitats, ecosystems, plants and animals is reflected in the teaching and research. Many papers have fieldwork components exploring these habitats and the ecological/environmental issues associated with them.
“IT'S A PRETTY INTENSE COURSE, BUT IF YOU WORK HARD YOU GET THE BENEFIT FROM IT. YOU GET BACK WHAT YOU PUT IN, AND IF YOU'RE GOING TO DO SOMETHING YOU MIGHT AS WELL DO IT RIGHT FIRST TIME.”

The day Rob Mane finished his high school exams, he started working for his father's building firm in Sydney.

He loved the work, but he knew the construction business had its ups and downs, so he decided he might be better off with a career in dentistry.

“I love working with my hands and I really enjoy talking to people, so dentistry seemed a natural choice.”

Unlike many Australian universities, Otago offers dentistry as an undergraduate programme so Rob, whose roots are Ngapuhi in Northland, chose to come here to study.

“My mum and one of my brothers had studied at Otago, and if I had to leave home, I wanted to go somewhere interesting.”

Rob downed tools with his dad and left for New Zealand. He'd already experienced living in Osaka, Japan, so he soon settled in Dunedin once he'd acclimatised to the change in temperature.

He touched base with the Māori Centre to learn more about his family, and later became head of the Māori Dental Students' Association.

Soon his consistent academic progress and A grades were winning him awards and scholarships.

“It’s a pretty intense course, but if you work hard you get the benefit from it. You get back what you put in, and if you're going to do something you might as well do it right first time.”

“You study a lot, but you work hard and play hard too. Dentistry came before student life, but we always made time for fun. And the student facilities were great. The new gym is the best I have ever been to.”

On graduation, Rob took a position as a maxillofacial house surgeon in the Faculty of Dentistry and Dunedin Hospital.

“I started work just a few weeks ago and it's great — it doesn't really feel like a job. I really love dentistry.”
CAREER OPPORTUNITIES

Interest in environmental and ecological issues, and public and governmental concern and debate has created a need for scientifically-trained ecologists. Graduates work in a range of fields, including central government institutions such as the Department of Conservation, Crown Research Institutes, local and regional councils, private consultancies, tourism operations, secondary and tertiary teaching, and non-governmental organisations.

100-LEVEL PAPERS

If you intend to major in Ecology (BSc), you must take a number of specified 100-level papers:

- BIOL 112 Animal Biology
- BIOL 123 How Plants Shape the World
- ECOL 111 Ecology and Conservation of Diversity
- GEOG 101 Physical Geography
- or
- EAO 111 Earth and Ocean Science
- STAT 110 Statistical Methods
- or
- STAT 115 Introduction to Biostatistics

Note: Please consult the Ecology Programme Director for further information: ecology@otago.ac.nz

200-LEVEL AND BEYOND

There are two required papers at 200-level and at 300-level in Ecology, including a 300-level ecology field course, a data analysis paper and a wide choice of ecologically-based papers in various departments.

With appropriate prerequisite papers, students may complete degrees with 100-, 200- and 300-level papers in science, as well as up to 90 points of non-science papers (e.g. Law, Management or Tourism).

Economics

See profile on page 96.

When you are trying to decide whether or not to blow your budget and go skiing or stay at home and study, you’re using basic principles of economics. Economics is about choice, and is at the heart of decision-making.

Economics can be applied to business, finance, administration, law, local and national government, and, in fact, to most aspects of everyday life. It is not just a subject: it is a way of thinking, and it provides a logical way of looking at a variety of issues of importance to human well-being. Some of these include unemployment, economic growth, inflation, poverty, distribution of income, and resource allocation in areas such as education, health, business and the environment. At Otago, you’ll learn how economics shapes society.

Economics at Otago can be studied as a major within the BCom, BA or BSc degrees, and complements a wide range of other majors such as Statistics and Finance.

CAREER OPPORTUNITIES

Graduates work in large industrial and commercial firms and many different branches of the public sector, including the Ministries of Foreign Affairs and Trade, Health, Business, Innovation and Employment, the Reserve Bank, Treasury, Statistics New Zealand, the Department of Internal Affairs, local government and planning authorities, and banks and financial institutions.

Some graduates work with health providers, research bureaux and management consultancies, while others have careers in universities, other tertiary institutions and secondary schools.

100-LEVEL PAPERS

If you intend to major in Economics, you must take the following 100-level papers:

- BSNS 104 Principles of Economics 1
- ECON 112 Principles of Economics 2

If you intend to major in Economics as part of a BCom, you must also meet BCom degree requirements, including the completion of all BCom core BSNS papers – see the Business and Commerce entries for details.

Note: Students intending to complete an honours degree in Economics should include 100-level papers in Mathematics and Statistics.

Education

Education can be undertaken as a subject major in a Bachelor of Arts (BA) degree, or as a minor subject contributing to other degrees. The College of Education also offers initial teacher education programmes; for information on qualifying to be a teacher see Teaching.

Studying Education involves critical analysis of educational theories, policies and practices, to promote understanding of education in its social context and enhance educational processes. Education papers investigate how learning happens, and they identify and address patterns of success and failure in education. Some Education papers focus on sociological explanations. They investigate the politics of Education and the relationship of society and group membership to achievement. Other papers focus on psychological explanations: the mental activities associated with how learning happens, while others focus on pedagogy and what makes a good teacher.

There are also more specialist papers that include Guidance and Counselling, Inclusive Education, Intercultural Perspectives on Education, and Information and Communication Technology.

The papers can link to study in related fields of History, Sociology, Psychology, Social Work and other majors.

CAREER OPPORTUNITIES

Education provides a foundation for careers that require critical thought, interactions with people, an understanding of human development and learning, policy analysis and advanced communication. This includes all teaching careers.

100-LEVEL PAPERS

If you decide to major in Education (BA), you must take the following 100-level papers:

- EDUC 101 Education and Society

An examination of the political, social and cultural dimensions of contemporary educational practice.

- EDUC 102 Human Development

Lifespan development in its social contexts. A topic-based paper which includes the study of families, cultures within New Zealand and disability.

200-LEVEL AND BEYOND

Study includes:

- Critical analysis of the theory and practice of teaching and learning in schools and other contexts
- Information technology in education, including the use of the internet for teaching and learning
- Inclusive education and issues of disability and social justice
- International issues in education
- Relationships between education, families, peers and the community
- Gender issues in education
- Guidance and counselling
- Historical analysis of the origins of current educational ideas and practices in education
- The relationship between educational practices, social structure and social change in different societies
Electronics

The three-year BSc ELEC degree is a programme that will equip you with a thorough understanding of modern electronics, and give you a solid foundation for a research or for an industrial career. The BSc ELEC is ideal if you are interested in mechatronics, instrumentation, open-source hardware or industrial electronics.

Our graduates work in a wide variety of interesting fields, ranging from the design of autonomous flying vehicles through to the development of new instruments for radio astronomy.

The following programme is recommended:

FIRST YEAR
All electronics-related degrees have a standard first-year programme. The following courses are required for those intending to complete a major or minor in Electronics:

- MATH 160 Mathematics 1 (first semester)
- PHSI 131 Physical Law and its Applications
- or
- PHSI 191 Biological Physics (first semester)
- MATH 170 Mathematics 2 (second semester)
- PHSI 132 Fundamentals of Modern Physics (second semester)

The following papers are useful additions to the standard first-year courses:

- COMP 150 Practical Programming (first semester)
- COMP 160 General Programming (second semester)
- ENGL 127 Effective Writing (Summer School, second semester)

200-LEVEL
In your second year, your papers will typically include:

- ELEC 253 Electronics: Introduction (first semester)
- MATH 203 Calculus of Several Variables (first semester)
- PHSI 232 Electromagnetism and Optics (second semester)

Energy Management / Energy Studies

Energy is vital to modern society – it underpins commerce, industry and the well-being of individual people. The Bachelor of Applied Science degree in Energy Management studies energy management as an essential requirement for economic and environmental sustainability. The BSc in Energy Studies gives students a broad introduction to energy science. Both energy courses teach principles in energy science and technology and offer an in-depth knowledge of systems for energy supply, conversion and end-use.

CAREER OPPORTUNITIES
Graduates can provide energy planning and management expertise to commercial and industrial firms, as well as to the public sector. Opportunities arise with energy supply and distribution companies and government departments, developing energy management plans, advising on green energy strategies and contributing to public energy policy.

100-LEVEL PAPERS
If you intend to major in Energy Management (BAppSc), you must take the following 100-level papers:

- Papers worth at least 120 points, including:
  - MATH 160 Mathematics 1
  - MATH 170 Mathematics 2
  - and one of PHSI 191, 131, 132 (PHSI 131 is recommended)

Note: The BAppSc course must include a compulsory minor in a related discipline.

If you intend to major in Energy Studies (BSc), you must take the following 100-level papers:

- MATH 160 Mathematics 1
- MATH 170 Mathematics 2
- and one 100-level Physics paper (PHSI 131 is recommended)

200-LEVEL AND BEYOND
From 200-level onwards, papers become more specialised. You will study thermodynamics – the underlying science of energy management – and relate this to the social and political issues of energy use and production. You will develop the professional tools energy managers require: how to conduct energy audits, design better energy systems and help people and organisations make better energy decisions.

Engineering (Intermediate)

Students can take a first year at Otago to satisfy the Intermediate Year for the University of Canterbury’s Bachelor of Engineering.

Otago students enrol for a first-year BSc (Engint) and take the following 126 point (seven paper) course:

- CHEM 191 The Chemical Basis of Biology and Human Health
- or
- CHEM 111 Molecular Architecture
- and
- PHSI 131 Physical Law and its Application
- PHSI 132 Fundamentals of Modern Physics
- MATH 160 Mathematics 1
- MATH 170 Mathematics 2
- COMO 101 Computational Mathematics
- Optional Paper Own Choice 100-level paper

VARIATIONS
Option 1: Mechanical, Civil, Natural Resources, Forestry Engineering – programme as above.
Option 2: Computer, Electrical and Electronic Engineering, Mechatronics – add COMP 160 (may drop Chemistry).
Option 3: Chemical and Process Engineering – take both CHEM 191 and CHEM 111.
Option 4: Engineering (Canterbury) or Surveying (Otago) – add ENGL 228 Writing for the Professions and SURV 101 Introductory Surveying.

Students should have a strong background in Chemistry, Mathematics with Calculus and Physics at NCEA Level 3 (or equivalent).

For further information contact:
University of Canterbury
The Dean of Engineering
Private Bag 4800
Christchurch 8140
engineeringdean@canterbury.ac.nz
or
Canterbury Engineering Course Advisers
engdegreeadvice@canterbury.ac.nz
English

Literature is the “site of a constant creative renewal of language, perception, communication, and imagination” (Zapf).

English at the University of Otago opens the vast and provocative range of literatures written in English; provides a grasp of concepts and techniques for analysing texts; and improves communication skills. Students find their perceptions sharpened, their understanding deepened and their enjoyment enhanced – for life. And they equip themselves for careers in almost any sector of society where critical and flexible thinking and imagination are required.

CAREER OPPORTUNITIES

“Good readers and writers can do anything.”

A degree or minor in English advances any professional career such as law, education, business or health. Graduates work in journalism, editorial work, publishing, library work, film, radio, theatre and television, personnel and information management, policy initiatives for government, diplomacy, arts management, teaching and educational administration and research for business and industry.

100-LEVEL PAPERS

If you intend to major in English (BA), you must take ENGL 121 and one other 100-level English paper.

ENGL 121 English Literature: a Survey
ENGL 127 Effective Writing
ENGL 128 Effective Communication
ENGL 131 Controversial Classics

ENGL 121 English Literature: a Survey

Presents major writers of English literature from the Middle Ages to the present, focusing on the transformations of one text by another. Authors studied include Chaucer, Shakespeare, Austen, Stoppard, Carter, and a range of poets writing in the sonnet tradition.

ENGL 127 Effective Writing

Hones writing skills and helps students to write effectively in any situation. Teaches key aspects of effective writing: grammar, punctuation, style and expression. Practical writing sessions provide supervised opportunities to apply these skills to your academic or professional interests.

ENGL 128 Effective Communication

Helps students speak and write with confidence and skill. The paper is designed not only for arts students, but also for students in the sciences or professional programmes who are interested in improving communication skills.

ENGL 131 Controversial Classics

A study of literary classics that have attracted controversy for reasons including political content; issues of morality/obscenity; transgressing conventions of form; polemical works; questions of authorial identity and authenticity; controversies over prizes and literary merit. Works from the historical to the contemporary, and from a wide range of national backgrounds, are covered.

200-LEVEL AND BEYOND

Courses range from early English language and culture to the present. Literature papers include contemporary American and New Zealand literature, Shakespeare, modernist and post-modernist fiction and poetry, textuality and visuality, as well as post-colonial and digital fiction.

We also offer a minor in Writing, including papers in Essay and Feature Writing, Travel Writing, Professional Writing, and Creative Non-Fiction.

English for University Purposes

100-LEVEL PAPER

ENGL 126 English for University Purposes

This paper caters for non-English majors and multilingual speakers/writers in all academic disciplines looking to improve basic spoken and written communication skills. It teaches advanced reading comprehension, academic and professional writing, and presentation skills.

Note: First-year Health Science students are required to take ENGL 126 if they do not pass the Health Science English Diagnostic Test.

Entrepreneurship

Entrepreneurs identify problems, develop innovative solutions that address them, and behave resourcefully in starting new businesses to provide the product or service solution to customers. We can help you learn to think as an entrepreneur and to identify opportunities for starting your own company or helping your employer move into new markets.

Entrepreneurship is offered as a minor subject within the BCom and many other degrees. You will need to complete:

BSNS 107 Understanding Accounting
MART 112 Marketing Management
MART 205 Marketing the Professional Practice

or

MART 307 Marketing Research Methods
or any other 200-level Commerce paper from Schedule C.
MANT 303 Entrepreneurship
MANT 301 Managing Innovation and Growth
or
MART 306 Innovation and New Product Development

Please note you cannot normally double count 200- and 300-level papers towards more than one qualification.

Environment and Society

Environment and Society investigates relationships between people, their activities and the biophysical environment, and develops an understanding of the sociocultural context of environmental problems.

ENVI 111 Environment and Society

This paper increases students’ awareness of current environmental concerns at global, national and local levels. Students research and report on global and New Zealand environmental issues, and in small groups produce a short film or presentation on an environmental topic of their choice.

ENVI 111 is an interdisciplinary paper, taught by staff from a wide range of University departments. It is designed to provide students from across the University with an awareness of current environmental concerns, their causes and implications, and possible ways to address them.

The course is compulsory for students in the Bachelor of Applied Science Environmental Management programme, but it is open to any other students who want to understand contemporary environmental issues.

Environmental Management

This Bachelor of Applied Science degree provides science-oriented training in environmental management theory and practice, based on a firm understanding of environmental systems, and the human context of environmental problems.

The course is based on a core of environmental management papers, but with the flexibility for students to develop a scientific or technical specialisation, with particular relevance to the environment and their own interests.
CAREER OPPORTUNITIES

The demand for Environmental Management graduates remains strong.

Our graduates may find employment in central, regional or local government departments which deal with the environment, resource management and/or planning, as well as environmental consultancies, private industry and non-governmental organisations.

100-LEVEL PAPERS
If you intend to major in Environmental Management (BAppSc), you must take the following 100-level papers:

Papers worth at least 126 points including:
GEOG 101 Physical Geography
GEOG 102 Human Geography
ENVI 111 Environment and Society
and 72 further points, including STATS 110 or MATH 160 or MATH 170.

Note: The course must include either a minor (or a selection of papers that equate to a minor) or a second major in a strongly related subject area taken from an approved list of subjects.

Environmental Science

Postgraduate programmes in Environmental Science are offered at master's level. A flexible structure allows for full-time or part-time study and may include work placement in outside environmental organisations. You need a Bachelor of Science degree or equivalent in any natural or physical science field to be considered for a place. You should therefore choose the science subjects that interest you most.

Papers relevant to environmental issues, and a personal interest in the environment, are of benefit but not required. It is advisable to have a basic Statistics course in your degree.

CAREER OPPORTUNITIES

Our graduates have found work at regional councils, the Ministry for the Environment and postgraduate study opportunities at the National Centre for Research on Europe (NCRE) at the University of Canterbury.

100-LEVEL PAPERS

A core paper provides an overview of the history, languages and culture of Europe. It grounds the study of Europe as a distinct discipline. A range of optional papers allows students to deepen their interest in the history, politics and cultures of European countries.

200-LEVEL AND BEYOND

Core and optional papers are available at 200- and 300-level. They review the emergence of the idea of Europe and illustrate how this idea has led to European integration, evaluating the prominent role played by rational understanding in underpinning the project of Europe. Other papers compare modernist and postmodernist narratives in the context of contemporary Europe.

There is also a new 200-level paper in Politics, Politics of the European Union.

CAREER OPPORTUNITIES

The EXSS major enhances students’ technical, critical and problem-solving skills. These skills have enabled recent graduates to gain employment in: national and regional sports organisations and trusts; city councils; fitness industries; government departments (e.g., ACC, armed forces, police force and High Performance Sport New Zealand); and research. See the graduate career diagram for inspiration – http://physed.otago.ac.nz/prospective/careers.html

European Studies

European Studies covers the remarkable social, economic, political and cultural transformations that have taken place over several centuries and have now, among other changes occurring in Europe, resulted in European integration and the building of the European Union. By focusing on the long-term factors that gave rise to these developments, students will gain a substantive perspective on modern Europe and the issues emerging for an enlarged concert of European nations.

The major in European Studies provides language training in French, German or Spanish. The minor shares the basic features of the major, though language acquisition papers are optional.

CAREER OPPORTUNITIES

The EXSS major enhances students’ technical, critical and problem-solving skills. These skills have enabled recent graduates to gain employment in: national and regional sports organisations and trusts; city councils; fitness industries; government departments (e.g., ACC, armed forces, police force and High Performance Sport New Zealand); and research. See the graduate career diagram for inspiration – http://physed.otago.ac.nz/prospective/careers.html

Exercise and Sports Science

See Physical Education for details on admission into this major.

In the Exercise and Sport Science (EXSS) major students explore the mechanics, physiology and control of human movement, especially in exercise. Graduates of the EXSS major understand, and have the practical abilities in, the role of exercise in health maintenance and sport performance.

Subject areas include: Exercise Physiology and Metabolism; Human Development; Motor Control; Performance Analysis in Sport; Sport Psychology; and Sport Technology.

CAREER OPPORTUNITIES

The EXSS major enhances students’ technical, critical and problem-solving skills. These skills have enabled recent graduates to gain employment in: national and regional sports organisations and trusts; city councils; fitness industries; government departments (e.g., ACC, armed forces, police force and High Performance Sport New Zealand); and research. See the graduate career diagram for inspiration – http://physed.otago.ac.nz/prospective/careers.html

Film and Media Studies

From the emergence of cinema at the end of the 19th century to the internet revolution, the production and consumption of moving images has changed every aspect of our lives and cultures.

Film and Media Studies focuses on the aesthetic, cultural and social interconnections between cinema, television and new screen technologies. It looks at dominant and alternative examples including Hollywood cinema, global media, mass-entertainment, advertising, art cinema, the avant-garde, local and indigenous media, and documentary practice.

Students can study Film and Media Studies as a minor to enhance their undergraduate majors. Many MFCO Communication Studies papers also count towards the FIME major.

CAREER OPPORTUNITIES

Film and Media Studies equips students with skills that are widely applicable to a broad range of occupations and professions. Our graduates work as journalists, teachers, producers, production managers, assistant editors, curators and policy-makers in organisations such as Television New Zealand, The NZ Film Commission and Te Papa Museum. Others are employed in private, creative and media industries while a number have gone on to independent media careers as filmmakers, comic artists, web-authors and much more.

100-LEVEL PAPERS

FIME majors must take:

MFCO 101 Understanding Film
and
MFCO 102 Understanding Contemporary Media
MFCO 101 Understanding Film
An introduction to analytical and critical skills as applied to the study of moving images, specifically film. The paper asks: how do films make meaning and what does cinema mean to us? The paper combines micro-analysis (of editing, mise-en-scène, cinematography and sound) with macro-analysis (introducing the study of topics such as genre, authorship, stars and national cinemas).

MFCO 102 Understanding Contemporary Media
The paper introduces students to both the historical framework of media studies and the contemporary discourses that define the discipline. Students will engage with theories of representation as well as develop valuable skills for analysing media texts. These skills include semiotics, discourse analysis, ideology critique and postmodernism.

200-LEVEL AND BEYOND
Beyond 100-level our papers cover a variety of historical and contemporary issues in media. Many MFEO Communication Studies papers also count towards the FIME major.

COMBINE WITH OTHER SUBJECTS
Film and Media can be combined with the study of a wide range of other subjects, including English, Anthropology, Political Studies, Geography, History and Art History, Gender, Languages and Marketing.

Finance
Finance is a modern and fascinating discipline dealing with money, markets and valuation that is relevant to all aspects of business, personal and professional planning. There are few businesses today that are not acutely aware of the significance of markets and financial planning for their viability. Professionals in finance are involved with a myriad of issues in investments, planning and risk.

Finance is concerned with how markets value risk and the implications for investment, financial planning, shareholder wealth and corporate governance.

It is a useful addition to other disciplines, particularly Economics and Accounting, and for Mathematics and Statistics students wanting expertise in commerce.

CAREER OPPORTUNITIES
Graduates work in investment and trading banks, sharebroking firms, government departments, chartered accounting firms, professional organisations, research units, investment consultancies, international agencies and as specialists in the private sector. Overseas there are opportunities in financial centres, with a high demand in London, Asia and Sydney.

100-LEVEL PAPERS
For a Bachelor of Commerce majoring in Finance, you must take the following 100-level papers:

- BSNS 102 Quantitative Analysis for Business
- BSNS 107 Understanding Accounting
- BSNS 108 Business Finance
- FINQ 102 Business Mathematics

You must also meet BCom degree requirements, including the completion of all BCom core BSNS papers – see the Business and Commerce entries for details. It is also recommended that BSNS 104 Principles of Economics I is taken in the first year of study.

200-LEVEL AND BEYOND
200-level papers cover corporate finance, investments, financial data analysis and personal finance. 300-level includes financial management, finance theory, applied investments, financial institutions, international finance, financial modelling and quantitative methods.

Food Science
At the heart of Food Science is understanding food – its components, its quality and its consumer appeal. Food Science prepares people for creative, challenging, diverse and rewarding food industry careers.

There are two major areas of study: Food Science (BSc degree) and Consumer Food Science (BAppSc degree).

1. Food Science studies food composition and chemistry, product development, food quality and safety and sensory properties. It builds on Biology, Chemistry and Physics, and interacts with disciplines such as Microbiology, Biochemistry, Biotechnology and Nutrition.

2. Consumer Food Science studies what influences our food choices: culture, sensory properties (taste, smell, appearance and texture), food quality, diet, policy, lifestyle and marketing. It can combine with Marketing, Management, Nutrition Communication and Food Service Management.

CAREER OPPORTUNITIES
Graduates in Food Science work in product development, food quality management, food processing management, chemical/nutritional analysis, research and sensory analysis.

100-LEVEL PAPERS
If you intend to major in Food Science (BSc), you must take the following 100-level papers:

- FOSC 111 Food Principles
- FOSC 112 Introduction to Food Marketing
- BSNS 102 Quantitative Analysis for Business
- BSNS 107 Understanding Accounting
- BSNS 108 Business Finance
- FINQ 102 Business Mathematics

You must also meet BCom degree requirements, including the completion of all BCom core BSNS papers – see the Business and Commerce entries for details. It is also recommended that BSNS 104 Principles of Economics I is taken in the first year of study.

Food Technology
See Food Science (BSc), Consumer Food Science (BAppSc).

Forensic Analytical Science
Forensic investigations are becoming more and more sophisticated using the latest analytical techniques in order to keep outsmarting the criminals. To support the development and implementation of those techniques very well-trained practitioners and researchers are required.

Additionally, many other professional fields, ranging from patent law, investigative journalism to wildlife protection, are becoming increasingly dependent on forensic knowledge and techniques. In general there is an increased...
need for excellent investigative skills, which are anchored in solid analytical science training.

The Forensic Analytical Science degree at Otago focuses on modern analytical techniques of Forensic Biology (taphonomy and DNA) and Forensic Chemistry (spectroscopy, isotope geochemistry, ecology). The principal forensic researchers at Otago develop new applications and assist New Zealand and overseas law enforcement agencies with forensic casework like provenancing human remains. Postgraduate students are involved in developing new techniques and applications.

The course supports many other possible career opportunities, for example in areas of commercial interest such as primary product traceability (milk powder, meat, wine) and combatting counterfeit materials (pharmaceuticals) which are growing rapidly in number, importance and scope.

100-LEVEL
The first year includes compulsory papers in Chemistry, Cellular Biology and Statistics and either further Biology, Physics or Human Body Systems papers would be an appropriate beginning for the Forensics major in the Applied Science degree.

200-LEVEL
The summer paper FORB 201 serves as an excellent introduction for Forensic Biology and Forensic Science in general. At second year you will study Chemistry and Genetics as well as a specialist Forensic Analytical Science paper (FORS 201) that introduces modern analytical techniques and concepts of Forensic Science including chemistry, computer forensics, statistics and expert witnessing. In FORS 201 you will solve a case and defend your expert opinion in a mock court.

300-LEVEL
Forensic Analytical Biology (FORS 301), which provides everything you need to know about DNA and more. The Forensic Chemistry (CHEM 306) papers teach the advanced forensic analytical chemistry techniques such as Raman and NMR spectroscopy and different types of mass spectrometry and the statistical tools to interpret complex data. Also in CHEM 306 you will work on a case in the labs and will be cross-examined in a mock court session. You will augment your choice of papers relevant to your interest in discussion with the course director. After the third year there is the option to embark on an half-year exchange programme with the forensic programme at Florida International University in Miami, which provides excellent training in complementary forensic topics.

The Bachelor of Applied Science is a three-year degree programme that incorporates a compulsory second major or a minor. Recommended second major or minors include Biochemistry, Applied Geology, Statistics, Bio- anthropology, Law and Pharmacology.

Note: Applicants should be aware that the job market in New Zealand for practising forensic scientists is small and that this course is not a qualification for such a career without further study or employment experience. However, the course provides excellent preparation for those wishing to pursue postgraduate training in the profession of Forensic Science.

French
French is a major international language. It is spoken in Europe, Africa, Asia and the South Pacific region in a total of 47 countries around the world. The French Programme offers courses and study opportunities for all levels from beginners to postgraduate level.

French students study language, literature, art and culture, and receive tuition from native French speakers in conversation classes. Students are encouraged to use the French language whenever possible, both in and outside class.

CAREER OPPORTUNITIES
Graduates work in New Zealand and overseas in teaching, translation and interpreting, libraries, journalism, radio and television, the Ministry of Foreign Affairs and Trade and other government departments, and in law, business and administration.

100-LEVEL PAPERS
There are two routes to the major in French (BA): one for those with no prior knowledge of French, the other for those with prior knowledge. The papers required in the first year are:

BA major (for those with no prior knowledge of the French language):

<table>
<thead>
<tr>
<th>Paper</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN 131</td>
<td>Introductory French 1</td>
</tr>
<tr>
<td>FREN 132</td>
<td>Introductory French 2</td>
</tr>
<tr>
<td>FREN 141</td>
<td>France and the Francophone World (usually taken in second year by students starting with FREN 131)</td>
</tr>
</tbody>
</table>

BA major (for those with prior knowledge of the French language*):

<table>
<thead>
<tr>
<th>Paper</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN 141</td>
<td>France and the Francophone World</td>
</tr>
<tr>
<td>FREN 232</td>
<td>Intermediate French</td>
</tr>
<tr>
<td>FREN 233</td>
<td>French for Professional Purposes</td>
</tr>
</tbody>
</table>

*Students may be given a placement test to ensure they are enrolled at the appropriate level.

Gender Studies
Gender, and how we live it, has far-reaching implications for our lives. It shapes the work we do and how we spend our leisure time, our income, our family relationships and friendships, the value and meanings we attach to other people and activities, what we eat and how we dress, and even how we speak and move.
In the past few decades, theoretical and everyday notions of gender have undergone dramatic changes, influenced by changes in the organisation of society and by a rapidly expanding field of critical inquiry.

A major can be combined with subjects such as Sociology, Anthropology, English, Media, Film and Communication Studies, Politics, Law, History, Art History, Education and Social Work.

CAREER OPPORTUNITIES

Graduates work in social and cultural policy development and analysis, education, the media, professional arts, EEO, human rights, church and pastoral work, health professions, management, health and community advocacy, and social and family work.

100-LEVEL PAPERS

If you intend to major in Gender Studies (BA), you must take the following 100-level papers:

- GEND 101 Gender
- GEND 102 Bodies, Sexualities and Selves

Introduces the study of gender, with examples from contemporary New Zealand.

- GEND 102 Bodies, Sexualities and Selves

Explores bodies and sexuality in relation to pleasure, desire, subversion and social change, and as sites for forming identities.

200-LEVEL AND BEYOND

Papers cover gender and work, consumption, the media, state power, masculinity, feminist theory and subjectivity. At 200- and 300-level, you can also select from a wide range of gender-related papers taught in other departments.

Genetics

See profile on page 102.

Genetics is the study of genes and inheritance. It is a rapidly progressing science and a central theme of modern biology. Genetics is a very diverse subject – you learn about a wide variety of things ranging from the molecular basis of life to the study of whole organisms, populations and evolution.

CAREER OPPORTUNITIES

A degree in Genetics gives you a wide range of marketable skills suitable for employment in biologically-based industries, research organisations and government departments. You could be a research associate, policy analyst, biotechnologist, conservation worker, or biosecurity analyst, to name but a few! With further training, you could be a patent lawyer, genetic counsellor or forensic scientist.

100-LEVEL PAPERS

Students intending to major in Genetics must take the following 100-level papers:

- CELS 191 Cell and Molecular Biology
- CHEM 191 The Chemical Basis of Biology and Human Health
- and two of
- BIOC 192 Foundations of Biochemistry
- BIOL 112 Animal Biology
- BIOL 113 Biology of Plants
- ECOL 111 Ecology and Conservation of Diversity
- HUBS 191 Human Body Systems 1
- HUBS 192 Human Body Systems 2
- MATH 151 General Mathematics
- or
- MATH 160 Mathematics 1
- STAT 110 Statistical Methods
- or
- STAT 115 Introduction to Biostatistics

Note: There is no 100-level Genetics course. Genetics forms a considerable component of CELS 191 Cell and Molecular Biology.

200-LEVEL AND BEYOND

200-level papers introduce the concepts and techniques of genetics. 300-level papers are for students majoring in Biological Sciences and provide advanced understanding of the genetics of higher organisms.

Geographic Information Systems

The BAppSc in Geographic Information Systems will appeal to students with an interest in computers, working with maps, and applying map data to examine a wide variety of applications and problems. The degree covers all aspects of geographic information from its representation on maps and in aerial surveys (including satellite remote sensing), how different types of information are brought together, techniques of spatial data analysis and approaches to data visualisation. It includes papers from Surveying, Information Science and Geography.

Geographic information systems have become widespread in the form of Google Earth/Maps and through mobile technologies. They are commonly used for applications in business, health, ecology, planning, international development, environmental conservation and many areas of interest. Students can blend required courses with an application area that is of interest to them to get the most out of the degree.

CAREER OPPORTUNITIES

Graduates with the BAppSc in GIS work in private consultancies, local authorities, central government departments and non-government organisations in various analysis, consultancy and management roles.

100-LEVEL PAPERS

If you intend to major in Geographic Information Systems you must take the following 100-level papers:

Papers worth at least 120 points including:

- BSNS 106 Information and Communication in Organisations
- or
- COMP 150 Practical Programming
- or
- COMP 160 General Programming
- or
- COMP 111 Information and Communications Technology
- MATH 160 Mathematics 1
- or
- MATH 170 Mathematics 2

and at least one of GEOG 101, 102; STAT 110; SURV 101, 102, 103 (or an approved equivalent).

Note: Applied Science is a three-year degree that incorporates a compulsory second major or a minor, making this a very versatile programme. An Honours degree programme is also an option in Geographic Information Systems.

200-LEVEL AND BEYOND

200-level papers introduce the concepts and techniques of GIS, databases, networks, systems analysis and a geographical application.

300-level papers introduce remote sensing, photogrammetry, GIS programming, spatial databases and optionally spatial analysis and geographic visualisation.

Opportunities for postgraduate study and research include a postgraduate diploma in Applied Science, as well as the MAppSc and PhD degrees.

Geography

Geographers seek to understand the web of interactions between people and the environment. Geography can be studied for qualifications in Applied Science, Arts or Science.

Bachelor of Applied Science (BAppSc) students focus on processes of “environmental management”, taught through a series of undergraduate and postgraduate papers in Geography. They also take science papers in...
Geography, such as climatology, biogeography, hydrology and geomorphology, and other science credits. Students are encouraged to pursue associated sciences, such as Geology, Surveying (particularly GIS), Botany, Ecology, and Commerce papers, and to develop a minor in one of these subjects. The BAppSc includes research methods papers and a research project.

BA and BA(Hons) students focus on issues of uneven development, social themes like ethnicity, childhood and gender, urban and rural change, geopolitical conflict, the human use of natural resources and the process and implications of economic restructuring.

BSc and BSc(Hons) students focus on physical geography, including land-forming processes and their expression in the landscape, the earth's weather systems and climates, factors which lead to geographic variations in the distribution and growth of living things, and environmental controls on the availability and quality of water.

CAREER OPPORTUNITIES
Geography graduates work in the public and private sectors. Their skills and interdisciplinary outlook prepare them for a diverse range of careers. Central government departments, state-owned enterprises, local government and private corporations employ Geography graduates in areas such as regional and resource planning, environmental management, natural resources (especially water) analysis, social and economic research, social services and tourism. Geographers also become teachers. Many graduates have studied for higher degrees at the University of Otago or at universities in North America, Australia and the United Kingdom.

100-LEVEL PAPERS
If you intend to major in Geography (BA, BSc) or complete an Honours degree, you must take the following 100-level papers, preferably in your first year of university study:

GEOG 101 Physical Geography
GEOG 102 Human Geography

GEOG 101 Physical Geography
Introduces the geographic study of the earth's environmental systems, emphasising climate, landforms, vegetation, surficial materials and water.

GEOG 102 Human Geography
Focuses on environment and development themes, urban growth, resource and economic and community development, and global and political spaces.

200-LEVEL AND BEYOND
A core paper at the 200-level is an introduction to research methods in Geography, while another at the 300-level places greater emphasis on field studies. Optional papers include papers dealing with soils, climate, plants, people and the environment, freshwater resources, environmental management, geomorphology, hydrology, resource evaluation and planning, social, political and urban geography, transformations in developing countries, and uneven development.

Opportunities for postgraduate study and research include a two-year programme in Planning, programmes for the postgraduate diplomas in Arts and Science, as well as the BA(Hons), BSc(Hons), BAppSc(Hons), MPlan, MA, MSc, MAppSc and PhD degrees.

Geology
Geology, the science of the Earth, is concerned with understanding geological principles and processes. This understanding is increasingly essential for those concerned with natural hazards, civil engineering problems, impacts of global change, the responsible use of Earth's natural resources, pollution and waste disposal, and environmental and resource planning and monitoring.

Geology at the University of Otago highlights the exciting and dynamic geological history of New Zealand and the origin of New Zealand's fauna and flora. Geology/Earth Science combines well with Anthropology, Botany, Chemistry, Ecology, Environmental Science, Geography, Marine Science, Physics, Surveying and Zoology.

CAREER OPPORTUNITIES
Graduates work in the assessment of natural hazards (earthquakes, volcanoes, landslides, floods); site investigations for engineering projects; environmental planning and monitoring; conservation and management of soil and groundwater resources; exploration for energy and mineral resources; research into Earth processes and history; Antarctic geology; oceanography and climate change. They work in the private sector (e.g. earth science or engineering consultancies, mineral exploration or mining companies, oil companies), regional councils or government agencies (e.g. GNS Science, NIWA) and teaching.

100-LEVEL PAPERS
If you intend to major in Geology (BSc), you must take the following 100-level papers:

EAOS 111 Earth and Ocean Science
GEOL 112 Dynamic Earth, a New Zealand Perspective

Note: Students must also take papers worth at least 72 points from Biology, Statistics, Mathematics, Computer Science, Information Science, Chemistry or Physics before completing a degree.

EAOS 111 Earth and Ocean Science
Features the evolution of continents and oceans; sea-floor spreading; mountain ranges; plate tectonics; oceanic circulation and global cycles; erosion and sedimentation on land and sea; marine biological systems; evolution of life through the ages; oceans and climate; and the Solar System.

GEOL 112 Dynamic Earth, a New Zealand Perspective
Features volcanoes, earthquakes and related hazards; crystals, minerals; igneous, sedimentary and metamorphic processes; geological structures and geological maps; Earth resources; and New Zealand's geological evolution.

200-LEVEL AND BEYOND
200- and 300-level papers include field-mapping schools and excursions. Students carry out independent field-based research in their third and fourth years of Geology.

There are BSc, BSc(Hons) and BAppSc courses, as well as postgraduate qualifications (PGDipSci, MSc and PhD). Some advanced papers may be valuable to students majoring in other subjects.

German
German is one of the major European languages. German culture has contributed greatly to the development of literature, science, philosophy, music and the visual arts in the Western world, and modern Germany is a major power in the European Union. German enhances the study of many other disciplines. It involves the systematic study of a language that is a close cousin of English.

Courses are based on active use of the language, both oral and written, and include extra-curricular activities, such as German films, cultural events, camps and the production of an annual play. Study in Germany is possible through exchange arrangements with the Universities of Heidelberg and Tübingen.
CAREER OPPORTUNITIES
Graduates work in teaching, science, the media, law, government departments (e.g. Foreign Affairs and Trade), tourism and business.

100-LEVEL PAPERS
There are two routes to the major in German (BA): one for those with no prior knowledge of German, the other for those with prior knowledge. The papers required in the first year:
BA major (for students who have not previously studied German):

GERM 131 Introductory German 1
GERM 132 Introductory German 2

BA major (for students with an appropriate level of German language):

GERM 230* German Language 3
GERM 231* Intermediate German 1
GERM 141* Excursions

GERM 131 Introductory German 1
This is German language for absolute beginners. GERM 105 (Summer School) may be substituted for this course.

GERM 132 Introductory German 2
Basic German language. Continuation of GERM 131. Suitable for those with two to three years of high school German.

GERM 230* German Language 3
The development of skills in German language to an intermediate level, building on GERM 132, also designed for any incoming students not yet ready to proceed to GERM 231.

GERM 231* Intermediate German 1
The development of skills in German language to an intermediate level for those with the equivalent of four to five years of high school German.

*A placement test will decide which of GERM 230 and GERM 231 is appropriate.

Greek
See Classics.
Greek papers offer linguistic training and the experience of reading major works of ancient Greek literature, drama, history and philosophy in the original language. (For Classical Studies courses taught in English translation, see Classics.) Greek and/or Latin papers constitute an optional component of the major for the BA and are strongly recommended for the BA (Hons) in Classics (at 400-level). A knowledge of ancient Greek (and/or Latin) is an essential skill required for postgraduate work in Classics.

100-LEVEL PAPERS
GREK 111 Introductory Greek 1
A reading-based beginners’ paper covering the basic elements of ancient Greek grammar and vocabulary, designed to develop reading skills in ancient Greek.

GREK 112 Introductory Greek 2
A continuation of GREK 111, incorporating more advanced grammar and syntax and designed to develop reading skills in ancient Greek.

200-LEVEL AND BEYOND
Greek papers at these levels focus on improving language skills and reading major texts of Greek literature in the original language.

Health Sciences First Year
The Health Sciences First Year (HSFY) prepares students seeking entry into Health Sciences professional degrees: Dentistry (BDS), Medical Laboratory Science (BMLSc), Medicine (MB ChB), Pharmacy (BPharm) or Physiotherapy (BPhy). It is also a suitable academic preparation for students wishing, as an alternative, to take programmes such as Oral Health (BOH), Dental Technology (BDentTech), Radiation Therapy (BRT) or a BBiomedSc or BSc, majoring in biological sciences.

HSFY is a programme only available at Otago, to be completed in its entirety in the first year of your university study. HSFY consists of seven compulsory papers plus the option to take an eighth paper in Semester Two.

The Health Sciences First Year course should be taken in your first year of university study. If you are thinking of completing any university study prior to enrolling in the Health Sciences First Year course you are strongly advised to contact the Health Sciences Admissions Office for further information before commencing study. If you have already completed prior university study you should contact the Health Sciences Admissions Office for further information.

Enquiries should be made to:
The Manager, Health Sciences Admissions health-sciences@otago.ac.nz

The HSFY programme comprises seven compulsory papers:

BIOC 192 Foundations of Biochemistry
CELS 191 Cell and Molecular Biology
CHEM 191 The Chemical Basis of Biology and Human Health
HEAL 192 Foundations of Epidemiology
HUBS 191 Human Body Systems 1
HUBS 192 Human Body Systems 2
PHSI 191 Biological Physics

Notes:
1. You may study an additional optional paper during Semester Two from the Approved List (available on www.otago.ac.nz/healthsciences). In this instance, the result in the best seven papers will be counted for the purposes of admission to the Health Sciences professional programmes, provided the compulsory seven papers are passed at or above the required minimum standard for admission to any of the Health Sciences professional programmes.

2. All HSFY students will sit an English diagnostic test. Students not achieving an acceptable standard in the diagnostic test are required to complete ENGL 126 during their second semester.

3. CHEM 191 and PHSI 191 are challenging papers for those who have not studied chemistry or physics during their second semester. Contact the Departments of Chemistry and Physics for details.

COURSE APPROVAL
HSFY course advising occurs once each semester. The first session in February provides advice and course approval to the incoming class. The second session, usually in early July, provides advice and assistance to those considering enrolling in the optional eighth paper, and to those who are concerned with progress in their HSFY or who are considering a programme change.
“A LOT OF STUDENTS THINK ECONOMICS IS JUST CRUNCHING NUMBERS AND SOLVING EQUATIONS TO FIND PRICES AND QUANTITIES, BUT IT’S REALLY ALL ABOUT HUMAN BEHAVIOUR AND DECISIONS.”

Dr Dan Farhat studies vampires. It’s unusual research for an economist, but advances in computing and social simulation make it possible.

“Most of my work involves building synthetic economies. We can use computers to construct entire populations of artificial individuals. Each person makes decisions about resource use and interacts with others according to rules I set for them. Economies that we can study start to develop.”

The idea is to understand economic activity by creating it, a technique that combines ideas from economics, information science, biology, organisational studies, and many of the social sciences.

Dan has used this approach to study fluctuations in consumer spending, trends in unemployment, how educational achievement affects earnings, how scientists produce research, and now how a community of humans plagued by vampires would fare.

“How do people use their resources to combat vampires? How do vampires choose the best victims? What are the social consequences of these choices? Those are all economics questions.

“A lot of students think economics is just crunching numbers and solving equations to find prices and quantities. But it’s really all about human behaviour and decisions. There’ll be some maths and stats, but at the end of the day we want to understand people.”

Using computers is vital. “Otherwise I’d have to collect data from real vampires, and that’s super dangerous. You know what they’re like. It wouldn’t be easy to hire research assistants for that — or ensure they’d make it back with the data.”

But are vampires real? “Sure they are, they just don’t drink blood like in the movies. A ‘vampire’ is anyone who preys on others for their own benefit — criminals, corrupt governments, abusive employers….”

Dan’s vampires help make economics enjoyable. “It’s good to emphasise the broad range of topics economics relates to. There’s something for everyone. You can’t afford to be ordinary anymore. That’s the great thing about working and studying at Otago — everyone is encouraged to stand out and be innovative.”
ADMISSION TO SECOND YEAR

Admission to second-year classes in Dentistry requires students to pass all compulsory HSFY papers with a B (70 per cent) grade point average (GPA) or better, with no paper less than a B- (65 per cent). Students must have a current Undergraduate Medicine and Health Sciences Admission Test (UMAT) result. Having achieved the academic and UMAT thresholds students proceed to oral assessment/interview. The final determining factor for selection for an applicant who has met all three admission criteria will be grade point average (GPA).

Admission to second-year classes in Medical Laboratory Science requires students to pass all HSFY papers with a B (70 per cent) grade point average (GPA) or better, and have a sufficient UMAT result.

Admission to second-year classes in Medicine is based on the mark average achieved in the compulsory HSFY papers, with the additional requirements that all students must attain a mark of 70 per cent or better in all of the papers, and a sufficient UMAT result.

Admission into the second-year classes in Pharmacy is competitive and selection is based upon the grades achieved in the compulsory HSFY papers.

Admission to the second-year classes in Physiotherapy requires students to pass all HSFY compulsory papers with a B- (65 per cent) grade point average (GPA) or better, normally with no paper less than a C (55 per cent).

Māori or New Zealand-resident Pacific Island students can ask to have their heritage taken into consideration along with their application to second-year professional programmes. The Division of Health Sciences wishes to attract such candidates, as Māori and other Pacific Island health professionals have a special role to play in the delivery of health care to their people.

HSFY is only one of the pathways of admission to the professional programmes. For further details visit the Health Sciences website: www.otago.ac.nz/healthsciences

CULTURALLY-SENSITIVE ISSUES

In Health Sciences professional programmes some aspects of teaching require individuals to partially disrobe and take part in activities that include physical contact between students.

This training is closely supervised and all students are required to participate even though some may find the activities culturally sensitive.

In the event that you find yourself in a situation that would be sensitive to your culture or beliefs, you should contact the Associate Dean for Student Affairs of the relevant school for advice.

This information is provided on the understanding that you are a New Zealand citizen or permanent resident.

If you do not meet these residential requirements you should contact:

International Office
University of Otago
PO Box 56
Dunedin 9054

Health Studies

Health Studies papers provide the opportunity for a minor in Public Health which can be completed with a Sciences or Humanities degree, and combines usefuly with a range of majors. Public Health can be defined as the art and science of preventing disease, prolonging life and promoting health through the organised efforts of society.

The study of health and disease in human populations, known as Epidemiology, is the core of the minor in Public Health.

Other Health Studies papers that contribute to the minor cover health promotion, health policy and politics, and research methods for Public Health.

To fulfil the requirements for a minor you need to complete the five following papers:

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<tr>
<th>Paper Code</th>
<th>Paper Title</th>
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<tbody>
<tr>
<td>HEAL 192</td>
<td>Foundations of Epidemiology</td>
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<tr>
<td>HEAL 202</td>
<td>Health Promotion</td>
</tr>
<tr>
<td>HEAL 203</td>
<td>Health Policy and Politics</td>
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<tr>
<td>HEAL 211</td>
<td>Epidemiology of Major Health</td>
</tr>
<tr>
<td>HEAL 311</td>
<td>Research Methods for Public Health</td>
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Hebrew

Classical Hebrew, which is closely related – but not identical to – the modern language spoken in Israel, is the language of the Hebrew Bible or Old Testament, and is an essential tool for the study of both the Bible and ancient Judaism.

It is taught at the University of Otago to an advanced level. Papers at 100-level are taught jointly with the University of Auckland by videoconference.

100-LEVEL PAPERS

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<th>Paper Code</th>
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<tr>
<td>HEBR 131</td>
<td>Introductory Biblical Hebrew 1</td>
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A paper for beginners covering the basics of Biblical Hebrew grammar and vocabulary, to enable students to read the Hebrew Bible in the original.

HEBR 132 Introductory Biblical Hebrew 2

A continuation of HEBR 131, including the exegesis of selected passages from the Hebrew Bible.

200-LEVEL AND BEYOND

Hebrew can be studied to an advanced level by way of selected papers in Biblical Studies.

History

See profile on page 105.

Historians explore how and why change has occurred in human societies over time. Sometimes controversial, always intriguing, History is a subject for the intellectually curious, for those fascinated by the complex diversity of the human historical experience, and for those seeking deeper perspectives on the world’s contemporary predicaments.

CAREER OPPORTUNITIES

Graduates enter a wide range of professions, including teaching at all levels, journalism, broadcasting, library work, government service and industry. Graduates acquire the ability to collect and analyse data and write clear, coherent and balanced reports based on this analysis, together with the ability to think independently, flexibly and objectively. These skills are readily transferable to many occupations.

100-LEVEL PAPERS

If you intend to major in History (BA), you must take two 100-level HIST papers worth at least 36 points (any 100-level ARTH paper may be substituted for one 100-level HIST paper).

Note: It is possible to take 200-level papers after completing only one 100-level History paper or if you have completed 108 points in total in any subject.

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<th>Paper Code</th>
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<tr>
<td>HIST 102</td>
<td>The Twentieth Century World</td>
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A survey of major themes and events in contemporary world history, emphasising the intensification of global interdependence over the twentieth century.

HIST 106 East Meets West: Cross Cultural Encounters in World History

This course examines the long history of encounters between Asians and Europeans. The heart of the course is a discussion of the Silk Road and the rise and fall of the Mongol Empire, but it will also examine cross-cultural contacts in the Indian Ocean and in Japan.

HIST 107 New Zealand in the World, 1350-2000

New Zealand history from its beginnings in the Polynesian world, to a colony of the global British Empire, and to a multicultural nation that now identifies itself as part of the Asia-Pacific region.
History and Philosophy of Science

The minor in History and Philosophy of Science (HPS) can be taken alongside major subjects in Arts, Science, Commerce or Theology. Its primary aim is to understand all aspects of the nature of science and scientific knowledge. Students have the opportunity to examine topics including scientific methods, science and religion, ethics in science (such as animal testing and euthanasia), as well as many of the crucial developments in the history of science.

The HPS minor is interdisciplinary and consists of five papers. At Otago papers in the HPS minor are offered by the Departments of History and Philosophy, and the Bioethics Centre in the Dunedin School of Medicine.

Hospitality

If you are sitting in a coffee shop whilst reading this, or perhaps planning a holiday with friends and family, then you are experiencing some form of hospitality. Hospitality, together with tourism, represents one of New Zealand’s largest export industries and is so much a part of our lives that we almost forget how important it is.

This minor provides a unique introduction to the workings of tourism and hospitality with both an Aotearoa/New Zealand and a global context. It focuses not only on many of the most interesting businesses in the industry but also provides the fundamental concepts behind them.

It will challenge you to think about hospitality and what sets it apart from other business sectors by looking at areas such as: the production of experiences; the significance of human resources management; the impact of seasonality; yield (revenue) management and the unique nature of distribution for hospitality products.

This minor will appeal to BCom (Tourism) students interested in the accommodation, events, and food and beverage sectors, or in running their own hospitality businesses. It is also an ideal addition to the BCom (especially Management, Economics or Marketing), or degrees such as Design or Languages, as it will assist students in applying the skills from their major subjects to the world’s largest industry.

Possible career paths include: management and marketing functions in hotels and resorts; small business operation; logistics, marketing or management for a tour company; events and conference management and wine marketing.

100-LEVEL PAPERS

TOUR 103 Introduction to Hospitality

200-LEVEL PAPERS

TOUR 218 Tourism and Hospitality Enterprise Management
TOUR 220 Hospitality: Theory and Practice
TOUR 214 Introduction to Wine Business
TOUR 216 Sport Tourism
TOUR 217 Tourist Behaviour
TOUR 303 Tourist Accommodation Management
TOUR 304 Event and Conventions Management
Must include at least one 300-level paper

Human Nutrition

A Human Nutrition degree is the basis for careers in public health nutrition, nutrition promotion and education, dietetics, sports nutrition, teaching, independent consultancy, food service, food manufacturing and retailing, and nutrition research. It provides an excellent opportunity for those seeking graduate entry into Medicine and Pharmacy.

Human Nutrition papers are useful and interesting additions to a degree in Food Science, Physical Education, Marketing, Physiology, Microbiology, Biochemistry, Chemistry and many other disciplines. Year 13 Chemistry, Biology, Mathematics (with Statistics) are highly recommended. English is also recommended.

CAREER OPPORTUNITIES

Graduates work in science research, the food and food service industry, district health boards, public health agencies such as the Heart Foundation, the fitness industry and teaching.

100-LEVEL PAPERS

There are no 100-level papers in Human Nutrition. If you intend to major in Human Nutrition (BSc) you must take the following 100-level papers:

BIOC 192 Foundations of Biochemistry
CELS 191 Cell and Molecular Biology
CHEM 191 The Chemical Basis of Biology and Human Health
HUBS 191 Human Body Systems 1
HUBS 192 Human Body Systems 2

It is highly recommended that students take either STAT 115 Introduction to Biostatistics or STAT 110 Statistical Methods as a statistics paper is required for admission into our postgraduate programmes.

FOSC 111 is also required for entry into the Master of Dietetics programme.

200-LEVEL AND BEYOND

200-level papers cover nutrient metabolism, nutrition and health, sports nutrition and management of food service operations. Papers in Biochemistry and Physiology at 200-level are highly recommended as part of a major in Human Nutrition, and are required prerequisites for admission to the postgraduate dietetics programme.

300-level papers give a grounding in Human Nutrition as an applied scientific discipline and lead to a BSc or BSc (Hons) degree.

Other degrees that include majors in human nutrition are: Bachelor of Applied Science (BAppSc) majoring in Sport and Exercise Nutrition, and Bachelor of Biomedical Sciences (BBiomedSc) in Nutrition and Metabolism in Human Health.

Immunology

See Microbiology.

The immune system has evolved to protect us against infection and cancer. Immunology courses at Otago outline the evolution of the immune system, and explain how the immune response is organised in modern vertebrates. Major topics covered include immunity to infectious diseases and cancer, as well as autoimmunity, allergies and transplantation.

We also teach how we can “re-programme” immune responses through vaccination and immunotherapy. Otago immunology lecturers are active researchers and use direct state-of-the-art research laboratories.

CAREER OPPORTUNITIES

This is a rapidly advancing and exciting discipline with many jobs available in research and diagnostic laboratories both nationally and
Information Science

Our world is defined by how we use and create information. Every day we use mobile phones, Facebook, TradeMe, Google, etc. Information Science is the study of information and how it is used by people within organisations, often with the aid of computing systems. It is an important, exciting and rapidly changing field. An understanding of Information Science is important in order to succeed in business, and in order to develop innovative technology; creating the latest gadget is pointless if we don’t understand how it will be used by people and by organisations to meet their needs.

Information Science can be taken as a major in a Bachelor of Commerce (BCom), Bachelor of Science (BSc), or Bachelor of Arts (BA), and is a useful complement to papers from each of these disciplines.

CAREER OPPORTUNITIES

Graduates of Information Science are sought-after in a range of fields such as business, science, education, health, music and mass media, with roles from data analysis to building large-scale software systems. Careers in information and communications technology (ICT) are exciting, engaging and well-rewarded; example careers of our graduates may be found at www.infosci.otago.ac.nz/careers

100-LEVEL PAPERS

If you intend to major in Information Science, you must initiate your study by taking BSNS 106, and one of COMP 150 or COMP 160.

BSNS 106 Information and Communication in Organisations

This paper introduces the fundamental concepts in Information Science, namely the role of information in organisations and how it is structured, processed and communicated in order to support decision-making. You will also gain practical skills in designing databases.

COMP 150 Practical Programming

or

COMP 160 General Programming introduce programming.

200-LEVEL AND BEYOND

At 200-level, Information Science focuses on the techniques used to design, develop and deploy software systems, and the role these systems play in creating successful business opportunities. By the end of 200-level Information Science, you have the necessary skills to create information systems. At 300-level, the skills learnt at 200-level are augmented with advanced concepts including networking, decision support, user experience and large-scale systems. You also will hone your skills in INFO 312, where you develop information systems for clients in industry.

International Business

Business is conducted in a dynamic, global environment. Organisations in New Zealand and overseas need individuals who can incorporate skills from a range of disciplines as well as work across national borders.

The International Business major equips students to meet this need by combining the study of key international business issues (including economics, marketing, management and finance) with language and cultural foundations.

If you are keen to travel overseas or work for an international firm, a BCom in International Business will put you one step closer by providing you not only with essential knowledge of global business, but also the linguistic skills to conduct that business in an international setting.

CAREER OPPORTUNITIES

Career options include: foreign economic relations; international trade and investments; international marketing and business strategy; international management consulting; government departments such as Foreign Affairs and Trade; tourism and hospitality agencies; multinational companies and financial institutions, both in New Zealand and overseas.

100-LEVEL PAPERS

If you intend to major in International Business, you must complete the BCom core BSNS papers and approved language or cultural papers (see the Business and Commerce entries for further details).

Note: Students should complete most of the 100-level BSNS papers in their first year. Depending on your native language, you have an option to complete language and/or cultural papers to complement your International Business degree. See the University Calendar or the International Business website (www.otago.ac.nz/internationalbusiness) for more details.

200-LEVEL AND BEYOND

Students at 200- and 300-level take papers in Economics, Finance, Management, and Marketing, further language courses, including papers in cultural studies related to the language taken, and a business language paper.

Indigenous Development

He Kura Matanui

Indigenous Studies is an area of increasing national and international interest, both amongst students and potential employers, where Māori and indigenous development issues are of increasing importance.

A BA major and BA(Hons) in He Kura Matanui/Indigenous Development aims to provide students with a strong grounding in core indigenous cultural values, concepts, issues and practices, using Māori and other indigenous examples and readings, including the Pacific. Students will include elective papers from other disciplines relevant to the focus of the programme on contemporary cultural, social, intellectual and economic development of indigenous peoples in an international context.

MAJOR SUBJECT REQUIREMENTS

100-level: MAOR 102, 110

200-level: MAOR 202; and any two of ANTH 204, 206, 208, ARCH 204, GEOG 278, HEAL 203, HIST 223, 226, MAOR 203-219, MFCO 212, PACI 201, 210, POLS 202, 207, SPAN 243

300-level: MAOR 302; and any three of ANTH 324, ARCH 301, ECON 303, ENGL 332, GEOG 378, HIST 326, MANT 341, MAOR 303-319, MART 305, MFCO 318, PACI 301, 310, PHSE 320, POLS 309, SPAN 343, TOUR 301, 306.

There is also the option of selecting Indigenous Development as a minor.
Irish Studies

The minor in Irish Studies can be taken in conjunction with a major in Arts, Science, Commerce or Theology. Irish Studies at Otago enables you to enrich your knowledge and enjoyment of the literature, history, film and theatre of the island of Ireland over the past 200 years. While the papers focus on issues such as identity, ethnicity and "nation building"; they also pay attention to Ireland's relationships with New Zealand, Europe and Australia.

To fulfil the requirement for a minor you can select five papers from a specified range of papers in literature, history, theatre and film. All papers are offered in conjunction with the English, History, Media, Film and Communication, and Theatre departments. Please plan your programme carefully as not all papers are offered every year.

Japanese Studies

Japan is the world's third largest economy and one of New Zealand's largest trading partners. The University of Otago has research links and student and staff exchange agreements with a number of leading Japanese universities, such as Tokyo, Yokohama National, Keio, Hiroasaki and Ochanomizu. Japanese Studies at Otago aims to provide students with a high level of expertise in both Japanese language and culture.

CAREER OPPORTUNITIES

Because of the important trade, tourist and cultural links between Japan and New Zealand, graduates with expertise in Japanese language and culture are in high demand by employers in a wide variety of fields, including business, law, government, tourism, journalism, advertising and education.

100-LEVEL PAPERS

If you intend to major in Japanese (BA), you must take the following 100-level papers, unless you have studied Japanese to Year 13 (NCEA Level 3):

JAPA 131 Introductory Japanese 1
An introductory course in reading, writing, speaking and listening to Japanese for students with no previous knowledge of the language.

The paper takes an integrated approach to the skills of language acquisition and includes basic material on the cultural heritage of the Japanese people.

JAPA 132 Introductory Japanese 2
A continuation of JAPA 131, further developing students' Japanese language skills in reading, writing, speaking and listening at an elementary level. The paper takes an integrated approach to the skills of language acquisition and includes basic material on the cultural heritage of the Japanese people.

200-LEVEL PAPERS AND BEYOND

200-level papers develop intermediate speaking, reading, writing and listening skills. Culture papers are in English (no knowledge of Japanese required).

JAPA 231 Intermediate Japanese
A continuation of JAPA 132, developing intermediate-level skills in speaking, listening, reading and writing, and in the grammatical analysis of Japanese.

JAPA 233 Business and Professional Japanese
A continuation of JAPA 231. Develops communication skills in professional and business-related Japanese language, with equal emphasis on speaking, listening, reading, writing and training in the cultural protocols involved in conducting business and professional activities in Japan.

JAPA 242 Understanding Japanese Culture
An introduction to traditional and contemporary Japanese cultures and society.

JAPA 243 Issues in Japanese Culture Today (offered in conjunction with JAPA 343)
An in-depth analysis of some of the major issues of Japanese culture and society today, such as nationalism, regionalism, modernisation and religion.

JAPA 244 Modern Japanese Fiction (offered in conjunction with JAPA 344)
The study of major works of Japanese fiction of the twentieth century in their historical, social and cultural contexts, and also in an East/West comparative perspective.

JAPA 245 Modern Japanese Film (offered in conjunction with JAPA 345)
Japanese film is studied as a window into some aspects of Japanese culture, such as war, peace, family, society, tradition, gender, aesthetics, morals and values.

JAPA 251 The Structure of the Japanese Language
A linguistic analysis of the Japanese language. 300-level papers continue to an advanced level. Students are encouraged to take the Japanese Language Proficiency Test. Japanese life and culture are explored through literary works and films. Culture papers are mainly taught in English and open to non-majors.

Land Planning and Development

Land planning, land administration and the process of land subdivision have significant impacts on the layout and function of human and natural landscapes. These activities influence the way land is used, patterns of residential development and assessments of the economic potential of land. For some, land also has an important cultural value.

This degree provides an excellent foundation for those wanting a career in planning and resource management, especially in relation to the subdivision and administration of land. It differs from other New Zealand planning degrees in that it emphasises engineering design and land administration, from Pākehā and Māori perspectives, as well as covering essential aspects of New Zealand legislation that relate to land development. It encompasses the practical aspects of planning and planning law.

CAREER OPPORTUNITIES

This is a foundation degree for a career in aspects of surveying that relate to land development. This can lead to work in local government and in surveying and other land development companies.

Note: While this degree is a stepping stone to a career in surveying and planning, membership of the New Zealand Planning Institute at a professional level currently requires an additional postgraduate qualification. Likewise, to become a full professional member of the NZ Institute of Surveyors, a minimum of a one year postgraduate diploma is required.
**100-LEVEL PAPERS**

If you wish to complete the BSc in Land Planning and Development, you must take the following papers:

**MATH 160** Mathematics I  
**SURV 101** Introductory Surveying  
**SURV 102** Computational Methods for Surveyors  
**ENGL 228** Writing for the Professions

**200-LEVEL AND BEYOND**

200-level papers deal with civil engineering, geographic information systems, land administration, land tenure and Resource Management Act processes.

300-level deals with contract management and offers experience in designing residential subdivisions in concept and detailed layout phases. Students can add papers from other degree programmes (such as Geography, Economics or Surveying) to complement their programme of study.

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**Language and Linguistics**

See Linguistics.

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**Languages**

See entries for Chinese, Classics (Greek and Latin), English, French, German, Hebrew, Japanese, Linguistics, Māori Studies and Spanish.

Otago also offers both a Diploma in Language and a Diploma in Language and Culture. These Diplomas can be completed alongside your Arts, Commerce or Science degree, all within three years. The Diploma is seven papers, two of which you can cross credit to your degree. The language papers offer for these diplomas are Chinese, French, German, Japanese or Spanish.

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**Latin**

See Classics.

Latin papers offer linguistic training and the experience of reading major works of Latin literature in the original language. (For Classical Studies courses taught in English translation, see Classics.) Latin and/or Greek papers constitute an optional component of the major for the BA and are strongly recommended for the BA(Hons) in Classics (at 400-level). A knowledge of Latin (and/or Greek) is an essential skill required for postgraduate work in Classics.

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**100-LEVEL PAPERS**

LATN 111 Introductory Latin I  
A reading-based beginners’ paper covering the basic elements of Latin grammar and vocabulary, designed to develop reading skills in Latin.

LATN 112 Introductory Latin 2  
A continuation of LATN 111, incorporating more advanced grammar and syntax and designed to develop reading skills in Latin. Students with at least 18 credits in NCEA Level 2 Latin (or equivalent) may enrol for this paper without taking LATN 111.

**200-LEVEL AND BEYOND**

Latin papers at these levels focus on improving language skills and reading major texts of Latin literature in the original language. Students with at least 16 credits in NCEA Level 3 Latin (or equivalent) may be admitted directly to LATN 211.

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**Law**

Law permeates all social activity. It defines relationships, protects rights, imposes obligations and gives legal structure to all enterprise.

**CAREER OPPORTUNITIES**

Law is a professional degree with pathways to a conventional legal career as a barrister and solicitor and many other career opportunities. Otago law graduates work in many areas in New Zealand and overseas. A Law degree from the University of Otago provides knowledge of the law that governs our society and an excellent grounding in skills such as analysing, problem-solving, decision-making, logical thinking, negotiation, researching and forming legal arguments. These skills are in demand in a wide variety of occupations.

Many Law graduates find careers as lawyers in private practice, but others work in business, government, the public sector or welfare agencies. In the commercial world, Law graduates work as legal advisers and company secretaries, in management and in executive positions. Government departments and local bodies employ lawyers for specialist legal advice. Lawyers working in private practice have a variety of fields of law to choose from. These include commercial, property, public, environmental, banking, wills and trusts, family, criminal, sports, media, civil, tax, maritime, intellectual property and medical law.

Over 80 per cent of Law students at Otago take the opportunity to complete double degrees, combining their Law degree with a Science, Arts, Commerce or other degree. This option increases opportunities in areas such as the media, public relations, the entertainment industry, the Ministry of Foreign Affairs and Trade and information technology consultancies. Otago graduates work in law firms all over the world and also in organisations like the United Nations, the International Labour Organisation and Amnesty International.

**100-LEVEL PAPERS**

If you intend to complete a four-year Bachelor of Laws (LLB) degree, you must take LAWS 101 (The Legal System) and 72 – 108 additional points at 100-level. For the additional 72 – 108 points at 100-level, no specific papers are required or recommended, but you are advised to include papers from your area of second preference in case you do not gain admission to second-year Law and then wish to go on in another degree. If you wish to do a double degree programme, you should choose the subjects of your intended second degree.

Note: You will need 72 non-Law points to be eligible for admission to second-year Law and a total of 108 before you graduate with an LLB.

**LAWS 101** The Legal System

A full-year 36-point paper with two examinations at the end of the year. Develops basic skills of legal analysis and legal argument through the study of selected court decisions and legislation. Opens broader perspectives by considering the way cases come to court and the role of law in its historical and social context.

Admission to LAWS 101 is unrestricted, but admission to second-year Law is restricted to 200 places. Students are selected on the strength of their academic record at university, with emphasis on the mark for The Legal System. Under the Alternative Entry category, students who are of Māori ethnicity may apply to have this taken into consideration along with their academic record.

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**200-LEVEL AND BEYOND**

The second-year course consists of four compulsory fundamental papers: Criminal Law, Law of Contract, Property Law and Public Law. At 300- and 400-levels, there are three compulsory papers: The Law of Torts, Jurisprudence, and Legal Ethics and Professional Responsibility. To complete the degree, you need optional full-year or single-semester papers worth the equivalent of six- and-a-half full-year papers (195 points) which you choose from a list of about 40 papers. You also complete a programme of research and writing and a short programme developing the skills of oral advocacy.
Dr Gillian MacKay advises students to keep their options open when choosing a degree subject and to pick something they enjoy.

She’s practised what she preaches. In her native Scotland she started a degree in Biochemistry but ended with one in Developmental Biology. When she won a Travelling Royal Society Fellowship to Otago to do postdoctoral work in genetics, she moved from research to concentrating on teaching.

“You don’t always know what you want to do until you try new experiences. I did quite a bit of demonstrating and teaching and it was something that I was really keen on getting into.

“You need to be a certain kind of person to do research, and it can be quite isolating. Now, as a Senior Teaching Fellow, I get to be around a lot of people and do a lot of labs and it’s fun to connect with students and encourage them.”

Gillian sees her students benefiting from the breadth of the Genetics programme. “One of the really good things is that we have so many different departments involved — Anatomy, Biochemistry, Botany, Microbiology and Immunology, Pathology, Women and Children’s Health and Zoology.

“Students get to experience lots of different areas of genetics. They can go in any direction that they want to go later. Genetics is the central theme of modern biology, and it’s so broad it can take you almost anywhere.”

Aside from teaching undergraduates, Gillian is heavily involved in the University’s Science Academy and Hands-on Science initiatives, both of which cater to interested senior school students considering coming to Otago. She is also developing a programme to introduce genetics to intermediate schools.

For Gillian, teaching should be inspirational. “The quality of teaching has to be academically good but it also has to be interesting for students — it has to have something that inspires them to want to study.”
LINGUISTICS

Linguistics

See profile on page 108.

Language is central and probably unique to human experience, and interest in its study has existed through history. For centuries, questions about language and its nature, structure, use and development have engaged scholars from a wide range of disciplines. Linguistics is the discipline that directly addresses these and other related questions.

Linguistics comprises different areas of specialisation: phonetics, the study of speech sounds; phonology, the study of sound systems; morphology, the study of word structure; syntax, the study of how words are combined into sentences; semantics, the study of meaning; pragmatics, the study of meaning in relation to the way that language is used; sociolinguistics, the study of language in its social context; historical linguistics, the study of language change; linguistic typology, the study of language universals and differences; and applied linguistics, the application of linguistics to the solution of practical problems, e.g. in language teaching.

Linguistics is a useful and rewarding subject for anyone who is interested in languages and in the teaching and learning of second/foreign languages. Linguistics may be usefully combined with the study of a wide range of other disciplines, such as anthropology, literature, education, philosophy, psychology, mass communication, speech therapy, computer science and information science. Although students of linguistics are strongly recommended to study another language, the linguistics programme at Otago University does not assume any prior knowledge of linguistics or of any languages other than English.

CAREER OPPORTUNITIES

While linguistics does not provide specific vocational training, you will be trained to use analytic, evaluative and argumentative skills, which are widely applicable in the modern world. Linguistics is a valuable subject for those interested in second-language teaching, interpreting, translating, writing, editing, speech therapy and computer programming. The skills that you will acquire in the study of linguistics can be put to use in diverse kinds of employment once you have graduated. See the entry on the TESOL minor for specific information about teaching English to speakers of other languages.

PAPERS IN LINGUISTICS

Advanced papers at 200- and 300-level include the study of phonology, syntax, semantics, second-language acquisition, TESOL (Teaching English to Speakers of Other Languages), advanced TESOL, language teaching methods and materials, and a practicum in TESOL. These papers complement papers in other subjects, including anthropology, communication studies, computer science, education, information science, philosophy, psychology and papers in individual languages: English, Chinese, French, German, Greek, Hebrew, Japanese, Latin, Māori and Spanish.

Linguistics major (BA) – required papers:

100-LEVEL

LING 111 Language and its Structure

One additional paper from the following:
LING 112, MFCO 103, MAOR 110, 131
or any 100-level paper from the following:
Chinese, English, French, German, Greek, Hebrew, Japanese, Latin or Spanish

200-LEVEL

LING 214 Syntax, LING 215 Phonology

and two 200-level papers in the language taken at 100-level

300-LEVEL

Two 300-level LING papers and two 300-level papers in the language taken at 200-level

English and Linguistics major (BA):

100-LEVEL

LING 111 Language and its Structure

Any 100-level ENGL paper (excluding ENGL 126)

200-LEVEL

LING 214 Syntax, LING 215 Phonology

and any two 200-level ENGL papers

300-LEVEL

Any two 300-level LING papers

and any two 300-level ENGL papers

Linguistics offers a minor in Linguistics and a minor in Teaching English to Speakers of Other Languages (TESOL). (See separate entry for TESOL minor.)

M

Management

See profile on page 111.

Great leaders, great entrepreneurs, great business people, even great bosses, all have one thing in common – great management skills.

Management teaches you to understand how people behave in organisations, and the nature of power, influence and leadership. Whether you aim to be self-employed, an entrepreneur, head your own company; or to work for private business, not-for-profit organisations or government agencies – Management gives you the tools for success!

Management skills are used in everything we do, and in every type of job. If you’re a “people person”, a long-term planner, a deep and meaningful thinker, or a process-orientated person, Management at Otago will equip you...
with skills and knowledge that will kick-start your career and give you greater potential. Because management plays such a vital role in so many different careers, Management is perfect as both a stand-alone degree or to complement other areas of interest.

CAREER OPPORTUNITIES
Recent graduates have taken up roles such as Product Manager, Business Improvement Consultant, Commercial Strategist, Risk Analyst, General Manager, International Sales Manager, Recruitment Consultant and Human Resources Consultants. The opportunities are endless!

MAJORING IN MANAGEMENT
If you intend to major in Management, you must complete the following papers and also complete the other BCom core BSNS papers (see the Business and Commerce entries for details):

100-LEVEL PAPERS

- BSNS 105 Management and Organisations

200-LEVEL PAPERS

- MANT 250 Managing People
- MANT 251 Managing Organisations

200-LEVEL AND BEYOND

MANT 250 and 251 give the core set of ideas and knowledge that all Management graduates should know. From there you build on this knowledge with the opportunity to specialise at 300- and 400-level.

Māori Studies – Te Tumu

Tēnei te mihi atu ki a koutou i roto i ngā tini āhuatanga o te wā.

Māori Studies is an academic programme focused on te ao Māori (the Māori world). Subjects offered include the Māori language, customary lore, history, performing arts, education, politics, research methodology, Ngāi Tahu studies, Te Tiriti o Waitangi (The Treaty of Waitangi) and Māori epistemology.

The immersion Māori language programme consists of courses from 100- to 400-level, and provides a strong foundation for a deeper appreciation of the multidisciplinary subjects listed above.

CAREER OPPORTUNITIES
Māori Studies is useful to those who wish to pursue a career as academics, archivists, the diplomatic corps, government officials, iwi development, language planners, librarians, the media industry, ministers of religion, police force, policy analysts, research historians, social workers, teachers and translators. Māori Studies can complement other subjects such as Anthropology, Commerce, Communication Studies, Education, Geography, History, Health Science, Law, Linguistics, Nutrition, Performing Arts, Physical Education, Politics and Social Work.

BA MĀORI STUDIES
If you intend to major in Māori Studies (BA), you must take the following 100-level papers:

- MAOR 101 Māori Society
- MAOR 102 Māori Society
- MAOR 103 Introduction to Ngāi Tahu Studies
- MAOR 105 Managing Organisations
- MAOR 107 Tēnei te Kākano 1
- MAOR 108 Waiaata: Te Timatanga
- MAOR 109 Te Tumu, the School of Māori, Pacific and Indigenous Studies
- MAOR 110 Introduction to Conversational Māori
- MAOR 111 Te Kākano 1
- MAOR 112 Te Kākano 2

100-LEVEL PAPERS

200-LEVEL AND BEYOND

200-level papers provide greater depth in Māori language, society, history, culture, performing arts, politics, education, Te Tiriti o Waitangi and the Pacific Islands.

300-level papers provide greater focus in particular areas, such as Māori research methodology, epistemology, pedagogy, Waitangi Tribunal, Pacific history and society, and Ngāi Tahu Studies.

400-level papers are offered as part of postgraduate diploma and honours programmes.

Marine Science

Marine Science is available as a minor in any undergraduate degree from Commerce, Humanities or Sciences.

CAREER OPPORTUNITIES
Opportunities include research, coastal resource management, marine conservation, fisheries and aquaculture.

Employers of recent graduates include government agencies (e.g. Ministry for Primary Industries, Department of Conservation), Crown Research Institutes (e.g. National Institute of Water and Atmospheric Research, Institute of Geological and Nuclear Sciences), regional councils and the private sector.

100-LEVEL PAPER

The 100-level paper in Marine Science is MARI 111 Global Marine Systems. Students may also be interested in EAOS 111 Earth and Ocean Science, taught jointly by the departments of Marine Science and Geology.

200-LEVEL AND BEYOND

Marine Science-related papers (e.g. GEOL 263 Sedimentary Processes and Materials; ZOOL 221 Animal Designs for Living). These provide a foundation for postgraduate study in Marine Science.

Marine Science postgraduate courses are open to students with a Bachelor of Science in related disciplines such as Zoology, Botany, Microbiology, Chemistry, Physics, Mathematics and Geology. Some training in Mathematics and Statistics is required.
Erica Buxton followed a family tradition when she came to Otago. She had an idea of what she wanted to do but didn’t want to limit her options, so she chose a range of subjects for her BA.

“I was interested in doing something international-related, maybe diplomacy, so I thought the best approach to get into that kind of work was to do something general and worldly. History would give me a broad education and French would give me language skills.”

Now Erica is an analyst with the Treasury’s international team, liaising with the Ministry of Foreign Affairs and Trade.

“We get involved with financial strategy and value for money. We deal with high-level questions about what the organisation will be doing over the course of the next few years, and we have a role to play in the advice the Ministry puts to Cabinet.

“The great thing about the Treasury is that it’s a relatively flat structure. You get opportunities that are quite rare in graduate jobs.”

Erica has already travelled to Indonesia with her work, and will soon be heading to China.

She credits the University for giving her a good start. “It was a major growing up time, from learning to put out the rubbish to meeting so many different people doing different subjects. Otago is its own little world and no one outside really understands what Otago student life is like. I loved it.”

Erica also appreciated the History and Art History department. “In a small department you make good personal connections with lecturers so you get references from people who really know you, and I got opportunities to work as a tutor and a research assistant.

“Between staff and students, I developed a really good network.”

Erica is broadening her education with finance study, and plans to be in New Zealand for a few years before furthering her career offshore.

“I’ve got a general direction, but I’m still keeping my options open.”

“THE GREAT THING ABOUT THE TREASURY IS THAT IT’S A RELATIVELY FLAT STRUCTURE. YOU GET OPPORTUNITIES THAT ARE QUITE RARE IN GRADUATE JOBS.”
Marketing Management

See profile on page 114.

Have you ever wondered what makes people buy or consume products and services? What is the difference between a product and a brand? What is the internet and how does it change the way people do business? How can we best promote social issues and help to increase people’s well-being?

These are all marketing questions, and we ask them because they are important to a huge range of people in business, sports, charities, entertainment, universities and even in government.

We experience marketing every day, everywhere. Marketing helps us to understand other people so we can better meet their needs and wants.

CAREER OPPORTUNITIES

Because marketing is such a broad-based discipline, Marketing graduates find themselves well-equipped to work in a huge variety of roles within organisations large and small, ranging across the public, private and not-for-profit sectors.

Like some of our former graduates, you may end up as part of a formal marketing graduate-training programme with such well-known companies as Nestlé or L’Oréal. Alternatively, you may choose to work for a smaller company as Nestlé or L’Oréal. Alternatively, you may choose to work for a smaller

organisation offering equally stimulating career opportunities, ranging from sales to advertising, or from market research to market analysis.

To major in Marketing Management (BCom), you must successfully complete the following papers (and also meet the BCom degree requirements including the completion of all BCom core BSNS papers – see the Business and Commerce entries for details):

<table>
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<tr>
<th>100-level papers</th>
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<tbody>
<tr>
<td>BSNS 103 Marketing and Consumption</td>
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<tr>
<td>MART 112 Marketing Management</td>
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<tr>
<td>MART 201 Integrated Marketing Communication</td>
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<tr>
<td>MART 202 Product and Brand Management</td>
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<tr>
<td>MART 203 Pricing and Distribution Management</td>
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<tr>
<td>MART 301 Strategic Marketing Management</td>
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<tr>
<td>MART 307 Marketing Research Methods</td>
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and any two other 300-level Marketing papers

Students taking Marketing are encouraged to study other business subjects, languages, social and physical sciences, and humanities. Popular degree combinations are Marketing and Media and Communication, Food Science, Psychology, Physical Education, Languages or Law.

Mathematics

Mathematics

From Accounting to Zoology, wherever there is a need to quantify and analyse, there is an application of Mathematics or its close ally Statistics (see separate entry). Mathematics provides the language and means to understand the quantitative nature of many areas of knowledge. It is not surprising that students often combine Mathematics with other subjects from the physical, applied, biological or social sciences, or from commerce and the humanities.

There are also those who take Mathematics simply because they like it and find it fascinating. It is a subject with a strong cultural element, encapsulating much of the history of scientific discovery from Greek geometry to the modern era of fractals, chaos and cryptography.

CAREER OPPORTUNITIES

Students who pursue Mathematics and Statistics at any level gain very marketable skills: clear thinking and deductive reasoning are valuable in all areas of modern life. Graduates find work in government departments and agencies and in commercial and industrial companies in New Zealand and overseas. Recent New Zealand employers include: AgResearch, various health authorities, insurance companies requiring actuaries, Landcare Research, the Ministries of Commerce, Education, Health and Housing, New Zealand Aluminium, New Zealand Forest Research Institute, New Zealand Meat Industry, New Zealand Meteorological Service, various power authorities and Statistics New Zealand. Other graduates teach in schools and tertiary institutions.

100-LEVEL PAPERS

If you intend to major in Mathematics (BA, BSc), you must take at least the following 100-level papers:

<table>
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<th>100-level papers</th>
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<tr>
<td>MATH 160 Mathematics 1</td>
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<td>MATH 170 Mathematics 2</td>
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or

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<th>100-level papers</th>
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<tbody>
<tr>
<td>STAT 110 Statistical Methods</td>
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<tr>
<td>STAT 115 Introduction to Biostatistics</td>
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</table>

Students with mainly Excellences and Merits in Level 3 Mathematics may go directly into MATH 170.

MATH 151 General Mathematics

A service paper on calculus and algebra, feeding into MATH 160. Students who have gained 12 credits in NCEA Level 3 Calculus or 18 credits in NCEA Level 3 Statistics and Modelling or an equivalent qualification will not normally be accepted into this course (for which HOD approval is required).

MATH 160 Mathematics 1

Covers algebra and calculus. The main entry point to 100-level Mathematics. Provides the basis for MATH 170, as well as an adequate background to support other subjects. This paper is suitable for those students who have passed at least 12 credits in NCEA Level 3 Calculus (or equivalent) or who have gained at least 18 credits in NCEA Level 3 Statistics and Modelling. Students without this background should seek advice and may be advised to consider first taking MATH 151.

MATH 170 Mathematics 2

Builds on MATH 160 and underpins 200-level Mathematics. Gives a good mathematical background to support other subjects. Students with mainly Excellences and Merits in Level 3 Calculus may go directly into MATH 170.

Note: Those with an adequate pass in NCEA Level 3 Mathematics should start with MATH 160 and follow with MATH 170. Those with a good pass in NCEA Level 3 Mathematics with Calculus are encouraged to start with MATH 170, allowing them to advance to 200-level papers in the second semester, and progress more rapidly. Those with an excellent NCEA Level 3 record and very high marks in Mathematics may be granted direct entry to 200-level Mathematics and Statistics papers.

200-LEVEL AND BEYOND

There are 200- and 300-level papers, as well as BA and BSc(Hons) programmes in Mathematics and a BAppSc programme in Computational Modelling. Computing facilities include several PC laboratories. Students have easy access to the latest software, both mathematical (Mathematica, Matlab) and statistical (SAS, SPSS, R).

Medical Laboratory Science

For details of the Health Sciences First Year (HSFY) course for Medical Laboratory Science, see pages 95 and 97.

The four-year BMLSc degree qualifies graduates as medical laboratory scientists. Graduates may become Registered Scientists for diagnostic laboratory-based employment, or enter into research and postgraduate study (e.g. Master of Medical Laboratory Science (MMLSc) and PhD).
CAREER OPPORTUNITIES

Most graduates start working in a diagnostic pathology laboratory and achieve full registration by the Medical Sciences Council after six months’ full-time work. Thereafter, opportunities exist in diagnostic laboratories, particularly in New Zealand, Australia and the UK. The degree is accredited by Australian authorities and UK registration is also possible.

ADMISSION

Admission to second-year classes in Medical Laboratory Science requires students to pass all HSFY papers with a B– (65 per cent) grade point average (GPA) or better and have a sufficient Undergraduate Medicine and Health Sciences Medical Admissions Test (UMAT) result.

Competitive entry to second-year classes normally follows the HSFY course.

Students with two years’ relevant study, or graduates with relevant papers in their degree, may also apply for entry to the second year.

All applications for admission must be made by 15 September of the preceding year. Late applications may be considered subject to availability. For a copy of the application form contact:

Health Sciences Admissions Office
Division of Health Sciences
University of Otago
PO Box 56
Dunedin 9054

200-LEVEL AND BEYOND

Degree subjects after admission are: Anatomy, Biochemistry, Microbiology, Physiology, Immunology, Diagnostic Pathology, Principles of Pathology, and Clinical Pathology including Diagnostic Chemical Pathology, Medical Microbiology, Histotechnology, Cytology, Haematology, and Transfusion Science.

In fourth year, students specialise in two of the following: Chemical Pathology, Clinical Microbiology, Clinical Virology, Diagnostic Molecular Pathology, Cytology, Haematology, Histopathology, Transfusion Science and Clinical Immunology. They study under supervision in an approved diagnostic pathology laboratory.

Medicine

See profile on page 117.

Medicine at the University of Otago is a six-year degree programme (the HSFY, plus five years) and students graduate with a Bachelor of Medicine and Bachelor of Surgery (MB ChB). Note: The Health Sciences First Year programme (HSFY) can be taken only once and, for school-leavers, it should be taken in their first year of university study; see page 95.

200-LEVEL AND BEYOND

After admission to Medical School, students complete Early Learning in Medicine (second and third years) in Dunedin, learning about the foundation biomedical sciences, the normal and abnormal function of body systems, and are introduced to practical aspects of clinical medicine including learning of clinical skills.

Individual development, social influences on health and illness and the role of the doctor are also covered.

These 200- and 300-level years include: Body Systems modules including Musculoskeletal System, Cardiovascular System, Respiratory System, Metabolism and Nutrition, Gastrointestinal, Renal, Nervous System, Behavioural Medicine, Endocrine, Reproduction Development and Ageing, and Regional and Clinical Anatomy. Vertical Modules include: Blood, Genetics, Infection and Immunity, Cancer, Pathology, Pharmacology, Psychological Medicine, Professional Development, Bioethics, Evidence-Based Medicine, Hauora Māori and Public Health. Integrated Programme modules include Clinical Case-Based Learning, Clinical Skills and Healthcare in the Community. In both years, student progress is assessed within each of the above learning modules, as well as by formal written, clinical and practical examinations at the end of each year.

The Advanced Learning in Medicine programme (fourth, fifth and sixth years) is completed at one of the University of Otago Schools of Medicine in Dunedin, Christchurch or Wellington. There are also some placements in the regions. The focus of these years is on learning and training in hospital wards, in general practices and other community settings.

As far as possible students are placed according to their School of choice, but occasionally it is necessary to direct students in order to balance numbers. This also applies to periods (up to a year) in regions. Students need to be prepared to relocate over the period of study in the programme. All are Schools of the University of Otago and accordingly the courses are similar and share common exit assessments.

The fourth year is divided among clinical work in the community and on wards and lectures, tutorials and clinical presentations in which common human illnesses are systematically studied.

In the fifth year, most of the time is spent on wards or in the community interviewing and examining patients and in clinical problem-solving. There are also projects in population health.

The sixth year is called the trainee intern year because it is an apprenticeship-type of course in preparation for the intern (house surgeon) years that follow. Students attached to clinical units carry out duties as members of a hospital team or a community-based health-care team. Students are assessed by supervising clinicians throughout the year and most are not required to sit any formal end-of-year examinations. Successful students graduate with a MB ChB degree in December.

RURAL MEDICAL IMMERSION PROGRAMME

Twenty students are selected to undertake their fifth year in a rural immersion programme. They are based in a rural district such as Southland, Clutha, Westland, Marlborough, Taranua and Wairarapa. Students who apply for admission through the Rural Origins sub-category may be required to participate in this rural immersion programme.

RESEARCH

The Faculty of Medicine strongly encourages research interests for students studying medicine. Students with a special interest and a sound academic record may interrupt the course, for one year at the end of the third or fifth year, to follow a research topic and graduate with a BMedSc(Hons) degree then resume studies for the MB ChB. In some cases students may be permitted to upgrade to PhD studies and complete both the MB ChB and PhD degrees as an integrated programme.

AFTER GRADUATION

MB ChB graduates must complete the pre-registration requirements of the intern year working in an approved hospital before the Medical Council of New Zealand grants full registration. There are limited, if any, places available for international students who will normally complete registration requirements in their home country.

CAREER OPPORTUNITIES

Graduates work in many kinds of clinical specialties, public health or in research, in teaching and in administration.

If you enter clinical practice (as most medical graduates do), society has expectations of you. One is that you are, and remain, technically competent in your field of practice; another is that you treat patients with patience, kindness and humanity; and further, that your ethical behaviour and rapport with your patients is such as to enable them to put their trust in you with the problems of their minds as well as their bodies.
“LINGUISTICS IS THE STUDY OF HOW LANGUAGE HAPPENS, AND HOW IT OPERATES IN THE REAL WORLD. IT’S INTRINSIC TO HUMANS, BUT WE DON’T GIVE IT A SECOND THOUGHT.”

Imogen Davis took a linguistics paper as part of her French degree. At first, she wasn’t keen.

“I was reluctant because I didn’t know what it was about. It sounded boring — but I was completely wrong, and very happy to be completely wrong.”

Imogen soon switched her BA major to Linguistics. “Don’t be afraid to change your course. It doesn’t mean you’ve failed at anything but that you have found a new passion.

“Linguistics is the study of how language happens, and how it operates in the real world. It’s intrinsic to humans, but we don’t give it a second thought.

“It’s exciting to look at it and realise how much it impacts us without us really knowing.

“It also makes a lot of other things make more sense further down the track, such as the study of other languages, how people communicate, and how people relate to language.”

The Linguistics Department suited Imogen. “It’s a small department and really easy to get familiar with. The lecturers really care about their subjects and have a great sense of humour. It’s easy to ask questions and be comfortable with them.”

She also found her niche in student life. “I’m not one of the party people — not everyone is like that. There are more people like me who are at university because they want to learn and are really excited by learning. I’ve met a whole lot of new people who share similar ideas.”

Working with friends, Imogen recently took second place in a phone video competition to explain linguistics.

“I did drama throughout high school and love acting and performing, so it was a great chance to combine my passions. And it was a lot of fun to write a script, make a movie, and promote linguistics.

“It’s a much more important subject than you might think.”
ADMISSION

There are three categories of admission, the HSFY category, the Graduate category and the Other category. Admission to medicine is competitive and places are limited to 272 domestic students, of which 50 places are reserved for students wishing to apply under the Rural Origins sub-category. There are a limited number of additional places for international students, primarily by contract with overseas governments. Private international students please enquire to the International Office.

Most medical students (approximately 70 per cent) will gain admission to second-year medicine through the HSFY category of admission. Applications through the HSFY and Graduate categories of admission, must be submitted by 15 September in the year preceding that to which admission is sought and by 1 May of the preceding year for the Other category.

Intending medical students are advised to read the appropriate admission regulations, which are available in the University Calendar.

All second-year medicine applicants will be required to declare any health conditions or impairments, in case they seriously affect their required to declare any health conditions or impairments, in case they seriously affect their
government agencies.

OTHER CATEGORY OF ADMISSION

Allied health professionals, those with mental health professional experience and mature graduates (New Zealand degrees completed more than three years ago or degrees from overseas universities) may apply under this category. Contact the Health Sciences Admissions Office for information.

SUB CATEGORIES

Rural

Students who have a rural New Zealand upbringing and/or education may apply under the Rural Origins subcategory through HSFY, Graduate Entry or Other categories.

Mäori and Pacific Islanders

Students wishing to apply under these sub-categories are required to provide an endorsed Whakapapa or Island of heritage/origin form along with a supporting statement.

Microbiology

See Immunology

Microbiology involves the study of microscopic organisms (bacteria, viruses, fungi and protozoa). Microbes compose greater than 50 per cent of life forms on our planet. They are best known as the causative agents of infectious diseases; less well known is the essential role they play in the functioning of the complex biochemical and geochemical networks that sustain Earth. To date only a small percentage of all predicted microbial groups have been studied. Technological advances are beginning to reveal the vast reservoir of untapped knowledge of the microbial world, with immense biotechnological promise in the 21st century. New developments are also beginning to reveal the vast reservoir of untapped knowledge of the microbial world, with immense biotechnological promise in the 21st century. New developments are also

MICR 336, selected 400-level papers) are core papers (CELS 191, HUBS 191, MICR 221, MICR 331, selected 400-level papers) are core papers (CELS 191, HUBS 191, MICR 221, MICR 332, Advanced Immunology (MICR 334), Molecular Microbiology (MICR 335), Applied and Environmental Microbiology (MICR 336) and Virology (MICR 337).

BBiomedSc PROGRAMME

An Infection and Immunity module within the Biomedical Sciences degree programme (BBiomedSc) is available. This degree structure is essentially similar to the BSc programme, but has a broader biomedical base at 100-level with 200- and 300-level papers being orientated towards medical microbiology and immunology. Two Microbiology papers are required at 300-level: Health Microbiology (MICR 332) and Advanced Immunology (MICR 334).

BAppSc PROGRAMME

A range of majors, including Molecular Biotechnology (MOBI) that must include a minor in a subject of your choice. Microbiology papers (CELS 191, HUBS 191, MICR 221, MICR 336, selected 400-level papers) are core contributions to the programme.
Molecular Biotechnology

Molecular Biotechnology represents one of the pivotal driving forces for the development of new products and systems in the new millennium. There is a worldwide demand for well-trained biotechnologists and graduates who have a sound scientific grounding in molecular biology, biochemistry, genetics, cell biology or microbiology. Molecular Biotechnology links the biological sciences with emerging technologies to provide the basis for discovery and innovation of new products and services. The demands for graduates in Biotechnology are increasing to match the rapid scientific advances and new developments taking place in bioinformatics, genomics, proteomics and recombinant DNA technologies, which are underpinning the current growth in Biotechnology.

If you are interested in a career in molecular biotechnology, contact the programme director, Professor Julian Eaton-Rye (julian.eaton-rye@otago.ac.nz)

100-LEVEL PAPERS

If you intend to major in Molecular Biotechnology in the BAAppSc degree, you must take the following 100-level papers:

Papers worth at least 120 points including:

- BIOC 192 Foundations of Biochemistry
- CELS 191 Cell and Molecular Biology
- CHEM 191 The Chemical Basis of Biology and Human Health
- HUBS 191 Human Body Systems I

200-LEVEL AND BEYOND

Papers in Biochemistry, Genetics and Microbiology form the core Molecular Biotechnology courses for the second year of the programme. Advanced course topics in the third and fourth years provide the opportunity to specialise in specific areas according to your personal interests.

As part of your degree you will specialise with a minor in a subject of your choice from an approved list of options.

Moral and Political Thought

Moral and Political Thought is an interdisciplinary minor subject that studies both real world politics and applied ethics.

It enables students to enrich their major subject by linking politics, philosophy, gender, religious studies and history.

The minor is available for a Bachelor of Commerce (BCom), Bachelor of Arts (BA), Bachelor of Theology (BTheol), or a Bachelor of Science (BSc) degree.

Music

The Department of Music offers courses in several areas, including Western Classical Music and Contemporary Popular Music. Students can take a three-year BA or a more specialised MusB degree, or a four-year MusB (Hons) degree, in the following broad areas: musical scholarship, classical performance, contemporary rock performance, composition and songwriting, music technology, industry studies, world music and popular music. The MusB structure enables students to have a named major in one or two of the areas listed below within their MusB degree.

The four MusB majors and their areas of study are:

- MusB Major in Classical Music Performance
- MusB Major in Composition
- MusB Major in Contemporary Music Performance
- MusB Major in Music Studies

All MusB degrees shall include the following required papers:

- MUSI 101, 201 and two of 102, 103, 104

The Department offers minors for most other degrees but not the MusB. These are in Classical Music, Ethnomusicology, Popular Music, Music Industry, Music Technology, and Music. Students wishing to take performance papers need to apply to the Music Department who will organise an audition.

Many papers are available as part of a BA.

CAREER OPPORTUNITIES

Graduates may become performers, teachers or composers. Some work in the media or the music industry. These are just a few of the many possibilities.
Abbe Hyde became interested in business and entrepreneurship when she took part in the Young Enterprise Scheme at school in Timaru. She chose to study in Dunedin because of Otago's great reputation for commerce, and it didn't take long to choose a major. “I knew immediately that Management was for me, and the more I learned about it the more I liked it.”

“The staff are fantastic, and being around people who are passionate about what they are doing makes for a really nice atmosphere. Doing honours, you get to know them all better and they’re so helpful.

“Student life is fantastic too. There’s always stuff going on. You can go to theatres and gigs in town, and if you want to hang out with friends, everyone lives within 10 minutes’ walk. You’re never short of things to do. Dunedin’s a pretty cool city.”

On an exchange semester in Minnesota, Abbe won a Dragon's Den-styled entrepreneurship competition, and now she's heavily involved with 100Percent.org.nz, an organisation for people prepared to donate their skills for charity. “100Percent is all about using people’s time and talent to raise money to alleviate social injustice, and students like me can do this by tutoring. I also manage the Otago team. It’s fun and a good way to put my management skills into practice.”

She found teaching others helped her own learning. “It’s good to get back to core concepts and keep building on knowledge rather than forgetting it.”

Abbe is currently working on her master’s degree. Once that’s completed, she’s considering getting work experience and returning to study for a PhD and an academic teaching career.

She advises new students to talk to lots of people before coming to university. “Going to university is a big investment. There are a lot of different paths you can take to get to where you want to go.

“And definitely come to Otago because it’s the best one — when you get here take advantage of everything that comes your way.”
MUSI 140  Performance Studies in Gamelan (Indonesian percussion) (no audition)
An 18-point paper in which students learn to play traditional and contemporary Indonesian music on several different instruments in an ensemble setting. No prior musical experience is necessary.

MUSI 141  Performance I (entry by audition)
A 36-point paper developing technical and interpretative skills in the performance of Western classical music through individual tuition and workshops.

MUSI 145  Contemporary Performance I (entry by audition)
A 36-point paper for rock performers, with a focus on original music, developing skills in instrumental technique within a band setting, composition, arrangement, interpretation, rehearsal skills and stagecraft.

MUSI 146  Professional Practice I A (entry by audition)
An 18-point paper that focuses on technique and repertoire that develops stylistic diversity in a band context on your chosen instrument within a wide range of contemporary idioms (leads to MUSI 156 in second semester).

MUSI 185  Music Industry
An introduction to the business procedures used by managers, lawyers, agents, promoters and record companies.

MUSI 191  Introduction to Music
A beginner’s guide to the notation, rudiments and theory of music, including elementary analysis and harmony. If you have no theoretical knowledge of music, or your knowledge is a bit rusty, you should take this paper in your first semester.

If you are seeking entry into MUSI 140 Performance Studies, MUSI 141 Performance 1, MUSI 145 Contemporary Performance 1, or MUSI 146 Professional Practice 1A, contact the Secretary of the Music Department, preferably before mid-August, to arrange an application for audition (forms are available on the Department’s website). For entry into MUSI 140 (excluding Gamelan), instrumental candidates have usually reached Grade 8 level. Candidates in voice are not expected to have passed grade examinations, but are required to show potential as singers. Candidates for MUSI 145 or MUSI 146 should have experience as performers in rock bands.

200-LEVEL AND BEYOND

There are papers in Western classical music performance, composition, musical history, musicology (the scholarly study of Western classical music) and ethnomusicology (the scholarly study of world music), as well as in popular music studies, contemporary music performance, songwriting and music technology. Fuller details of papers and activities appear on the website of the Department of Music, www.otago.ac.nz/music and its Facebook site (“University of Otago Music Department”). Please browse these sites regularly for updates. You are welcome to contact the Department staff with your questions.

Neuroscience

Neuroscience is the study of the nervous system, including the brain, spinal cord and the network of neurons that transmit signals around the body. You will study normal nervous systems as well as situations in which the nervous system does not work properly. Problems studied include mental illness, neurodegeneration (e.g., Alzheimer’s or Parkinson’s disease), and brain injury (such as from a stroke or a car accident).

Neuroscience is a subject in its own right, but you can also think of it as being made up of the “neuro” part of each of a wide range of other subjects, including Anatomy, Physiology, Psychology, Biochemistry, Genetics, Zoology, Chemistry, Computer Science and Pharmacology.

The University of Otago is the only New Zealand university that offers an undergraduate degree in Neuroscience. There are also opportunities for keen postgraduate students to work with the many internationally-recognised Neuroscience researchers at Otago.

CAREER OPPORTUNITIES

A BSc majoring in Neuroscience prepares graduates to work as laboratory technicians, research assistants, research managers and policy analysts. It also provides a convenient first degree for those who later specialise in professional or applied fields such as medicine, pharmacy, physiotherapy, optometry, audiology and nursing. Some also enter the general scientific or business workforce, as employers value the generic skills acquired while studying science.

Students who complete a PhD in Neuroscience are sought after for research positions in academic or industrial settings, such as universities, research institutes and biotechnology companies.

100-LEVEL PAPERS

For a Bachelor of Science majoring in Neuroscience, you must complete the following 100-level papers:

CELS 191  Cell and Molecular Biology
HUBS 191  Human Body Systems 1
New Zealand Studies

New Zealand Studies is an interdisciplinary minor that brings together a wide range of papers in Humanities with a clear New Zealand focus. Students are able to build a coherent programme with a strong body of knowledge that examines New Zealand, and the South Island in particular, from the perspectives of history, economy, culture, law and Māori.

**CAREER OPPORTUNITIES**

The New Zealand Studies minor complements a wide range of degrees and major subjects. It provides specific regional knowledge for those contemplating careers in business, teaching and the public service. It is of special interest to overseas students looking for a New Zealand focus for their study abroad.

100-LEVEL PAPERS

New Zealand Studies is currently available only as a minor subject.

To qualify for the minor, students may select 90 points from a wide range of mostly Humanities papers, of which 54 points must be above 100-level, and at least 18 points must be at 300-level.

There are seven papers available to choose from at 100-level, drawn from History, Law, Māori Studies and Politics.

200-LEVEL AND BEYOND

A further 11 200-level and five 300-level papers are available, allowing further study of many aspects of culture and society.

Oral Health

The three-year Bachelor of Oral Health degree focuses on dental hygiene, dental therapy and oral health promotion. Clinical skills are developed over the three years, as well as opportunities to advance health promotion skills, particularly in relation to oral health. A graduate in Oral Health may be registered in New Zealand and Australia, as either a Dental Hygienist, Dental Therapist or both.

**CAREER OPPORTUNITIES**

There is a demand for Oral Health graduates. Employment opportunities include working in private dental practices, orthodontic practices, community based clinics, iwi-based clinics and hospital dental clinics. Postgraduate study and research opportunities include Master of Health Sciences, Master of Public Health and PhD degrees.

**ADMISSION**

Entry is competitive. To be admitted to the programme applicants must be eligible to attend university and should have attained a satisfactory standard in NCEA Level 2 Biology or English or a recognised equivalent. Online applications can be made to the Health Sciences Admissions Office website from early August and close on 15 September of the year preceding enrolment. Late applications may be considered.

100-LEVEL PAPERS

If you wish to study for the Bachelor of Oral Health, you must take the following 100-level papers:

- DEOH 101 The Body and its Environment
- DEOH 102 The Oral Environment: Health and Disease
- DEOH 103 Oral Informatics
- DEOH 104 Clinical Oral Health Practice
- MAOR 102 Māori Society

200-LEVEL AND BEYOND

Papers cover human disease and pharmacology, clinical oral health practices, sociology of New Zealand society, health promotion and applied research.

Pacific Islands Studies

Pacific Islands Studies is a programme focusing on the Pacific Islands taught across several departments. Papers cover topics such as Pacific prehistory, Pacific people's issues, Pacific performing arts, Pacific history, geography, intercultural film and media studies and religion. These papers make up a unique programme with a multidisciplinary orientation that examines contemporary issues of importance to Pacific peoples.

The programme covers the geographical area contained within the Polynesian Triangle defined by Hawai'i, Rapa Nui and Aotearoa as well as the islands of Melanesia and Micronesia. The focus of the course acknowledges New Zealand’s location within the Pacific and examines changing attitudes and approaches by Pacific countries themselves as they seek relationships with more countries on the Pacific Rim.

Pacific Islands Studies can be taken both as a major and minor subject within the Bachelor of Arts, and combines well with other papers from a wider range of subjects including Anthropology, Sociology, Social Work, Geography, History or foreign languages, particularly those of European countries associated in colonial times with territories in the Pacific, e.g. French in New Caledonia, German in Samoa and Spanish in Rapa Nui.

**CAREER OPPORTUNITIES**

Pacific Islands Studies is useful to those who wish to pursue a career in the diplomatic corps, or as government officials, ministers of religion or social workers. It can also complement other academic subjects, including Anthropology, Geography, Commerce, Education, History, Health Science, Law, Nutrition, Māori Studies, Physical Education, Politics and Social Work.

100-LEVEL PAPERS

If you wish to major in Pacific Islands Studies for a BA, you must study:

- PACI 101 Pacific Societies
- ANTH 103 Anthropology, Culture and Society
- ANTH 105 Global and Local Cultures
- MAOR 102 Māori Society
- MFCO 102 Understanding Contemporary Media

and any one paper from:

- ANTH 103 Anthropology, Culture and Society
- ANTH 105 Global and Local Cultures
- MAOR 102 Māori Society
- MFCO 102 Understanding Contemporary Media
Allie Buczkowski came to Otago needing a change of scene. “I was born and bred in Auckland and after 17 years it was time for a big change. Otago has absolutely done that for me. It’s the best decision I’ve made so far.

“At school I loved business and art. Marketing gave me the best balance between the two. I was particularly interested in consumer behaviour and decided on honours in Marketing Management pretty early on.”

Allie won awards and scholarships throughout her four-year degree. She admits to being extremely competitive, but says hard work is easier when you are having fun.

“It’s because I enjoyed what I was doing, and because the staff in Marketing were just so amazing. They were so friendly and welcoming, and you could talk freely to the lecturers and they’d listen to you. It’s all part of the reason I did honours and ultimately why I did so well.”

Allie also entered two Business Case Competitions — winning one — and was made an ambassador for the Business School, returning to her old school to advise pupils considering studying at Otago.

“I talked about the lifestyle, which I loved. But I wasn’t always so confident. When I first got to Otago I was incredibly shy. I didn’t talk to anyone on the first day. But I soon learned you make friends so easily, and they end up becoming your family away from home. You learn a lot of new skills, which brace you for the real world.”

The move from home and into the unknown paid off. “I think everything I learned and the confidence I gained came from being out of my comfort zone, and that was incredibly beneficial, along with the support of the Marketing Department.”

After graduating, Allie backpacked through South East Asia and India, returning to work first with a marketing company, and now as an account manager at a full-service advertising agency — “I’m absolutely loving it.”
PACI 102  Pacific Dance
PACI 103  Language and Cultures of the Pacific: An Introduction

There is also the option of selecting Pacific Islands Studies as a minor.

200-LEVEL
PACI 201; ANTH 204; ARCH 205; ARTH 220; GEOG 278; HIST 208; MAOR 207; MFCO 212; MUSI 228; PACI 210; SOWK 233, 234, or approved Special Topic papers relevant to the Pacific Islands in ANTH, ARCH, ARTH, CHTH, GEOG, HIST, MAOR.

300-LEVEL
PACI 301 and any three from ANTH 316, GEOG 378, HIST 337, MAOR 307, MUSI 328, PACI 310, or approved Special Topic papers relevant to the Pacific Islands in ANTH, ARCH, ARTH, CHTH, GEOG, HIST, MAOR.

100-LEVEL PAPERS
PACI 101  Pacific Societies
An introduction to Pacific societies in traditional and contemporary contexts, with a focus on indigenous perspectives.

PACI 102  Pacific Dance
An introductory study of various forms of traditional and contemporary Pacific dance. A practicum component is also included.

PACI 103  Language and Cultures of the Pacific: An Introduction
Cultural and social similarities and differences amongst Austronesian speech communities of the Pacific.

ANTH 103  Anthropology, Culture and Society
An introduction to concepts of Anthropology and its approaches to the study of culture and society.

ANTH 105  Global and Local Cultures
An introduction to anthropological ethnographies and conceptual frameworks of contemporary cultural and social issues, both globally and locally.

MAOR 102  Māori Society
An introduction to Māori culture and society in traditional and contemporary contexts.

MFCO 102  Understanding Contemporary Media
An introduction to the historical framework of media studies and contemporary discourses that define the discipline.

200-LEVEL AND BEYOND
PACI 201  Tagata Pasifika
Examines contemporary social, political and economic issues affecting Pacific peoples, with particular reference to Polynesia and Melanesia.

PACI 201  Gafa o Tagata Pasifika
Examines Pacific people’s interaction with Māori and Pākehā in New Zealand with regard to issues such as identity, culture, spirituality, education and contemporary music.

Other papers at 200- and 300-levels in Anthropology, History, Geography, Music, etc., continue the themes developed during first year.

400-LEVEL PAPERS
Students can continue their Pacific Islands Studies at Honours level, or undertake a Postgraduate Diploma.

Performing Arts
See profile on page 120.

Otago’s Bachelor of Performing Arts is a new and unique degree introduced in 2014. This distinctive, exciting collaboration between the university’s programmes in Theatre, Music and Dance gives students a rare opportunity to study more than one performing art form – music, theatre and dance – within a single university degree.

Students will be guided to develop their knowledge and skills in areas such as acting, dance, directing, devising, bicultural theatre, music performance (singing or instrument), composition, songwriting, technical production and the theoretical foundations of theatre, music and dance.

The Bachelor of Performing Arts degree is a three-year full-time course of study. It is made up of a minimum of 20 papers.

Bachelor of Performing Arts students will train and perform in a fully equipped theatre as well as music and dance studios and performance spaces.

CAREER OPPORTUNITIES
Graduates of the degree will be able to pursue careers in a wide range of performance forms and styles, as well as in performing arts-related education, media and other similar fields.

The performing arts programme enables the development of a range of skills. While the skills and knowledge gained will prove invaluable for those desiring a career in musical/theatrical forms and performing arts education, they are equally useful for many career paths.

Cultural knowledge and skills gained through creative practice and historical and theoretical study are valued, for example in journalism, advertising, marketing, law, medicine and many other occupations.

Students will develop many generic skills employers seek, including teamwork and leadership, effective oral and written communication, analysis, critical evaluation and problem-solving, organisational skills and time-management.

100-LEVEL PAPERS
Students must take the following 100-level papers:

THEA 153  Voice and Movement
THEA 122  Drama on Stage and Screen
MUSI 101  Materials of Music 1
MUSI 101  Materials of Music 1
MUSI 101  Materials of Music 1
plus one of
PHSE 115  Fundamentals of Dance
or
PHSE 116  Elements of Dance
plus one of the following
MUSI 131  Composition 1 (Students must be able to read and write music)
MUSI 135  Song Writing
MUSI 140  Performance Studies (Audition required)
MUSI 146  Professional Practice 1A (Audition required)
or
MUSI 156  Professional Practice 1B (Audition required)

plus two other papers of the student's choice.

Note: Auditions are required for papers that involve singing and/or playing an instrument. In approved cases, the structure of the programme above may be varied to include the full-year music classical performance paper: MUSI 141.

200-LEVEL AND BEYOND
At 200-level students are required to take specific theatre and music papers, and are also offered a choice from a range of other music, theatre and dance papers. 300-level includes a performance project paper.

Note: In approved cases, the structure of the programme may be varied to include the full-year music classical performance papers: MUSI 241 and MUSI 341.

The degree is flexible enough to accommodate up to five papers from outside of the Arts area, in any subject of the student’s choice.
Pharmacology and Toxicology

Pharmacology is the science that underpins the discovery of new drugs and the validation that they are effective, including their mechanism of action. Other important aspects of Pharmacology are to understand how drugs are absorbed, distributed, metabolised and eventually excreted from the body. We work closely with other departments in seeking new drug targets and pharmaceutical strategies to impact on new and emerging disease states and to limit the harmful effects of current medications.

The effects produced by medications may be useful or harmful to the patient. Toxicology is concerned with the noxious effects of medications, environmental pollutants and cancer-causing agents, as well as how toxicity can be prevented.

CAREER OPPORTUNITIES

Graduates in Pharmacology and Toxicology are employed in a wide variety of vocations, including sales and management, drug-discovery science in the pharmaceutical industry, drug information and scientific publishing, biotechnology and regulatory affairs. Many of our graduates and postgraduates pursue stimulating careers within sub-government agencies, for example, Medsafe, The National Poisons Centre and PHARMAC. Postgraduate students are employed in research projects in drug discovery, biomedical science, clinical pharmacology and toxicology (in universities or the pharmaceutical industry), as well as various companies that produce scientific equipment.

100-LEVEL PAPERS

If you intend to major in Pharmacology (BSc), you must take the following 100-level papers:

- BIOC 192 Foundations of Biochemistry
- CHEM 191 The Chemical Basis of Biology and Human Health

and at least two of

- CELS 191 Cell and Molecular Biology
- HUBS 191 Human Body Systems 1
- HUBS 192 Human Body Systems 2

200-LEVEL AND BEYOND

The 200-level papers illustrate how chemicals act as drugs, how they are developed into useful medicines and how the balance between safety and usefulness is maintained. You will also learn important concepts in the use of drugs to treat cardiovascular, respiratory and neurological diseases. The field of toxicology is also introduced at a basic level.

300-level papers examine neuropharmacology, molecular pharmacology, clinical pharmacology and human toxicology including effects of environmental pollutants.

Pharmacy

Pharmacists provide patient-centred care by optimising use of medicines. The profession has at its foundation a broad range of sciences including physical, chemical, biological and social sciences. These lead into integrated studies that include drug discovery, medicine development, access to medicines and optimal clinical use of medicines.

CAREER OPPORTUNITIES

Pharmacists work in a variety of positions. While most pharmacists work in community and hospital pharmacies, many also work in primary health-care environments (with general practitioners), government organisations, industry, medical writing and academia. Opportunities for pharmacists are constantly growing as the health-care sector changes to meet the needs of our communities. Some pharmacists are even involved in border patrol. New roles for pharmacists are also developing which include advanced clinical services as well as prescribing.

The role of the community pharmacist focuses on the provision of patient-centred care for their local community. This may include adherence and clinical medicines review services, which aim to optimise health outcomes for their patients. In addition pharmacists also provide long-term care services for patients with chronic illnesses as well as dispense prescriptions, assess and treat some ailments and run anticoagulation clinics. Some pharmacists offer specialist medicine review services to rest homes or to people with complex medication regimens. Community pharmacists work closely with local health-care teams.

Hospital pharmacists are responsible for providing high-level clinical patient-centred care to patients in hospital. Hospital pharmacists may also be involved with the manufacture of intravenous and oncology medicines, while others provide expert advice on medicines. Some pharmacists work in industrial pharmacy developing new pharmaceutical products for human or veterinary use. Some responsibilities undertaken by industrial pharmacists are: formulation and production, quality control, provision of information on new products, clinical evaluation of new products and the marketing of medicines.

ADMISSION TO PHARMACY

This occurs following the Health Sciences First Year (HSFY) course. For details of the HSFY course for Pharmacy see pages 95 and 97.

There are 120 places for New Zealand citizens and permanent residents in the second-year programme, as well as additional places for international students. All applications for admission must be made to the Division of Health Sciences by 15 September of the preceding year. There are several different categories of admission, although most students are selected on their performance in HSFY. Entry is competitive, and average grades of B (with passes in all HSFY papers) are generally required to gain a place. This standard is only a guideline and not a guarantee. Students who only select pharmacy as their option will be given preferential consideration. The school is committed to support for Mäori and indigenous Pacific Island students for entry into Pharmacy.

Students may also enter the programme after two or more years of university study or as university graduates. In these categories, papers equivalent to the Otago HSFY papers should be passed prior to application for a place in Pharmacy.

Students whose background may not fit the specified categories may still apply for admission (Alternative category). In every case, applicants have to demonstrate that they have completed work equivalent to the requirements of the Otago HSFY course and must meet the minimum academic standard.

200-LEVEL AND BEYOND

Following entry to the second year of Pharmacy, the programme of study involves foundation-based subjects for three semesters, followed by an integrated Pharmacy programme which includes many foundation subjects integrated into a patient-centred clinical setting as well as social Pharmacy papers for the remaining three semesters. It is in this latter portion of the programme that students learn how to apply the scientific principles and pharmacy-specific skills from early study to the practice of pharmacy.

INTERNSHIP

Once you complete your fourth year and graduate, there is a one-year pre-registration programme. You must register with the Pharmacy Council of New Zealand to be eligible for the pre-registration training programme. This is undertaken as paid employment at an approved site in a hospital or community pharmacy. It is the graduate’s responsibility to arrange employment at this site.
Otago’s reputation attracted Auckland-born Rahul Das to Dunedin to study Physiology.

“The University is well known and well regarded round the world. Even family overseas knew that Otago was the place to go to for medicine and health sciences. “I had always been intrigued by how the human body functions and the clinical component of what doctors do, and physiology gave me a pathway to see how that works.” Rahul found a balance between working hard, playing sport and music, and having a good social life, and graduated with a BBiomedSc in Functional Human Biology.

Inspired and encouraged by his lecturers, he went on to postgraduate studies investigating kidney problems after urinary obstruction, and then a master’s researching liver regeneration. It seemed natural to move from student to staff, and Rahul worked for three years as a Teaching Fellow.

“I really enjoyed teaching. I learned a lot about how the education system works, and really learned how to learn. I taught in all kinds of situations including lectures, labs, tutorials and case studies, which I thought might lead me down the academic pathway.”

Then Rahul remembered his early interest in the clinical aspects of physiology, and wondered about retraining as a doctor.

“My colleagues and my boss were all very supportive and their enthusiasm helped me make the decision.”

The next semester Rahul found himself in the same class as students he had been teaching the year before — “they thought I was playing a joke on them, but they soon got used to it.” Rahul is now in his third year, still working hard, still involved in music and playing and coaching sport, and still keeping his options open for the future.

“You never know what path you will take, but for now I’m really enjoying Medicine. I’ve got a good foundation in physiology and now I get the chance to apply it.”
Philosophy examines the big questions about the nature of the world and our place in it, attempting to assess the foundations of our beliefs and the principles we live by. Students learn rigorous and analytical approaches to answering questions and the need to justify their answers. Studying Philosophy develops constructive, creative and critical reasoning. The University of Otago’s Philosophy Department has scored exceptionally highly in all the PBRF quality evaluations by the Tertiary Education Commission since they began in 2003.

CAREER OPPORTUNITIES

Employers value the clear thinking and reasoned argument learned in Philosophy. Philosophy graduates earn well and secure positions in business, government, secondary and tertiary education and many professions. For more information see www.otago.ac.nz/philosophy/careers

100-LEVEL PAPERS

As the basic questions connect with most university subjects, Philosophy 100-level papers are a useful part of any degree. If you intend to major in Philosophy (BA), you must take two of the following 100-level papers:

PHIL 101 Mind and Reality

Deals with questions of existence. Do we have souls as well as bodies? Does God exist? What is thought? Are we ever really free to choose our actions?

PHIL 102 Knowledge and Truth

Discusses whether there is a convincing answer to the sceptic who says that nothing can be known for certain.

PHIL 103 Ethical Issues

Questions the basis of our distinctions between right and wrong, good and bad.

PHIL 105 Critical Thinking

Teaches clear thinking and logical argument.

Note: Students with a Mathematics background should take PHIL 222 Introduction to Formal Logic instead of PHIL 105.

200-LEVEL AND BEYOND

These papers examine the foundations of many disciplines, including the social, biological and physical sciences, religion, ethics, politics and logic.

Philosophy, Politics and Economics

Philosophy, Politics and Economics (PHPE or PPE) combines three long-established and influential disciplines with natural affinities and common roots. The PHPE major exposes students to a wider range of analytical approaches than any of the three single-discipline majors taken separately.

CAREER OPPORTUNITIES

The PHPE major cultivates a range of logical, analytical and mathematical skills which are in demand among employers. It also exposes students to three different approaches to understanding (and perhaps improving) the social world. Career opportunities exist in a wide range of businesses, government departments and NGOs, both in New Zealand and around the world.

BACHELOR OF ARTS (BA) IN PHILOSOPHY, POLITICS AND ECONOMICS

100-LEVEL

BSNS 104 Principles of Economics 1

ECON 112 Principles of Economics 2

One 100-level PHIL paper (up to you but PHIL 103 Ethical Issues, recommended)

One 100-level POLS paper (up to you but POLS 102 Ethical Issues, recommended)

200-LEVEL

ECON 201 Microeconomics or ECON 271 Intermediate Microeconomic Theory

One further 200-level ECON paper

Two 200-level PHIL papers

Two 200-level POLS papers (Thus the pattern is 2:2:2)

300-LEVEL

Six 300-level ECON, PHIL and POLS papers including at least two papers in two of the subjects and at least one paper in the third subject. Thus the pattern is 2:2:2 or 3:2:1, your choice of which subject will be the 3, which the 2 and which the 1.

For intending PHPE students thinking of specialising in Economics, it is useful to have done one of the following papers: FINQ 102, MATH 160, 170, or QUAN 102

BACHELOR OF ARTS WITH HONOURS (BA(HONS)) IN PHILOSOPHY, POLITICS AND ECONOMICS

One of ECON 490 Econometric Methods and Dissertation, ECON 492 Dissertation, PHIL 490 Dissertation, or POLS 490 Dissertation; plus three further 400-level ECON, PHIL or POLS papers. No more than 100 points may be from any one of the component disciplines. This means in effect that even if you choose to specialise you must do at least one paper which is not from your preferred subject.

Physical Activity and Health

Physical Activity and Health is a growing area of employment for Physical Education graduates. The Physical Activity and Health major supports students who are interested in a number of health-related careers ranging from fitness instructors, personal trainers and gym instructors working with all sectors of the population, to clinical exercise specialists working in rehabilitation of individuals with chronic medical conditions. This major provides the foundation for further postgraduate studies in the clinical exercise physiology.

Physical Education

Otago’s Bachelor of Physical Education (BPhEd) is a programme that provides you with an opportunity to develop the skills and lifelong learning strategies underpinning all aspects of life and work in the sport, fitness, leisure and physical education fields. Dance Studies is available as a minor at undergraduate level for Arts, Sciences and Commerce. The BPhEd is a four-year degree and you can complete it in conjunction with another degree such as Applied Science, Arts, Commerce, Law and Science, with only one year of extra study.

The School of Physical Education, Sport, and Exercise Sciences offers four majors:

Exercise and Sports Science (see page 90 for more details)

Physical Activity and Health (see above for more details)
Professional Studies (see page 124 for more details)
Sport and Leisure Studies (see page 130 for more details).

CAREER OPPORTUNITIES
Graduates of the BPhEd have enhanced technical, critical and problem-solving skills. These skills have enabled recent graduates to gain employment in: national and regional sports organisations and trusts; outdoor industries; city councils; primary and secondary schools; fitness industries; Māori organisations; sports-related businesses; sport media; tertiary institutions; government departments (e.g. ACC, armed forces, police force and High Performance Sport New Zealand); community organisations (e.g. Age Concern, Green Prescription); dance schools; and the tertiary sector. See the graduate career diagram for inspiration – http://physed.otago.ac.nz/prospective/careers.html

ADMISSION PROCESS
The BPhEd is a four-year restricted entry degree. To enter the programme you must apply by 15 August the year before you plan to study at Otago. Under special circumstances late applications will be considered. Offers of places will initially be made in mid-October and may continue to be made as late as mid-February. Successful applicants will be required to satisfy University Entrance requirements and enrolment procedures.

There are two main entry pathways into the BPhEd: i) as a school-leaver or ii) as someone who has had one or more years at university. If you do not fit these two pathways, because you have, for example, been in the workforce and/or travelled, we encourage you to contact the School to discuss your personal situation. (See http://physed.otago.ac.nz/courses/apply.html for information about applying for entry into the BPhEd.)

For school-leavers, no specific Year 12 or 13 subjects are required for admission. However, Biology and Physical Education are highly recommended.

100- AND 200-LEVEL PAPERS
If you gain admission into the BPhEd you must take the following papers in your first two years:

100-LEVEL

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
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<tbody>
<tr>
<td>PHSE 101</td>
<td>Sociocultural Foundations of Physical Education</td>
</tr>
<tr>
<td>PHSE 102</td>
<td>Biophysical Foundations of Human Movement</td>
</tr>
<tr>
<td>PHSE 103</td>
<td>Movement Education: Dance and Gymnastics</td>
</tr>
</tbody>
</table>

PHSE 191 Human Body Systems 1
PHSE 192 Human Body Systems 2
and a further 36 points from any degree.

200-LEVEL

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAT 250</td>
<td>Functional Anatomy</td>
</tr>
<tr>
<td>PHSE 104</td>
<td>Applied Physical Experiences</td>
</tr>
<tr>
<td>PHSE 202</td>
<td>Movement Analysis and Control</td>
</tr>
<tr>
<td>PHSE 203</td>
<td>Exercise Physiology</td>
</tr>
<tr>
<td>PHSE 204</td>
<td>History of Sport</td>
</tr>
<tr>
<td>PHSE 205</td>
<td>Psychology of Sport</td>
</tr>
<tr>
<td>PHSE 206</td>
<td>Sociology of Sport</td>
</tr>
</tbody>
</table>

300- AND 400-LEVEL

In your third and fourth years of study you begin to specialise in an area of your choice, i.e., you choose your "major". The major will build on some of the core ideas you were introduced to in your first and second years. You can major in one or two of the following areas: Exercise and Sports Science (see page 88); Physical Activity and Health (see page 116); Professional Studies (see page 122); Sport and Leisure Studies (see page 128).

In your third and fourth years there is scope for you to choose papers from outside the BPhEd, enabling you to develop an understanding in complementary areas.

Physics

Physics is about gaining a fundamental understanding of how the universe around us works. Our papers cover topics as diverse as the internal structure of atoms to the gigantic black holes powering distant galaxies. In other papers, you could be learning about Einstein’s theories of relativity, the inner working of modern electronics or global warming. Many of the technologies in the world around us are products of breakthroughs in physics.

A degree in Physics from the University of Otago equips you with the knowledge and confidence to get you where you want to go. Your physics skills will allow you to attack the questions on how the universe works and tackle complicated real-world problems. From the edge of space to building better heaters, physics research at Otago studies fundamental and commercial science problems.

CAREER OPPORTUNITIES
Our graduates are found all over the world in all types of situations: from research scientists in Antarctica to the financial trading floors of London; from government policy advisers in Wellington to entrepreneurs developing tomorrow's cutting-edge products. And programmers, engineers, teachers and artists are found all over the globe. Our students have gone where they want to go.

Whether you want to go into the scientific or commercial world, physics skills help you tackle hard problems and find the best solutions. Physicists develop abilities in applied mathematics and problem-solving, as well as learning how to use complicated technical equipment. Our graduates are flexible, and find work in a myriad of areas, companies and countries.

100-LEVEL PAPERS
If you intend to major in Physics (BSc), you should take the following 100-level papers:

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 160</td>
<td>Mathematics I</td>
</tr>
<tr>
<td>MATH 170</td>
<td>Mathematics 2</td>
</tr>
<tr>
<td>PHSI 131</td>
<td>Physical Law and its Applications</td>
</tr>
<tr>
<td>PHSI 132</td>
<td>Fundamentals of Modern Physics</td>
</tr>
</tbody>
</table>

Note: It is possible to proceed to 200-level Physics with any one of PHSI 191, 131, 132. Most 200-level Physics papers require MATH 160 or 170.

PHSI 131 Physical Law and its Applications
The development of physical law from Newton to Einstein. The physics of the real world: motion, relativity, energy and its transfer; properties of materials; and thermal processes. Applications of the principles of physics to a technological society. Recommended for majors in Mathematics, Physical Sciences, Computer Science or Engineering.

PHSI 132 Fundamentals of Modern Physics
The physics of modern technology and the revolutionary ideas of quantum physics, as formulated by Planck, Schrodinger, Heisenberg, Bohr and Einstein. Foundations of electromagnetism and electronic circuits, applications of geometrical and wave optics, and an introduction to the quantum mechanical nature of light and matter. Recommended for majors in Physical Sciences, Mathematics, Computer Science or Engineering.

PHSI 191 Biological Physics (required for Health Sciences First Year)
Introduces the foundational Physics necessary for an understanding of biological systems: mechanics and movement, thermodynamics, properties of biological materials, electricity, light and vision, radiation and health.
When Dr Ian Chapman studied for his music degree he never thought he’d see the day when Otago would be offering rock music — or that he would be teaching it.

Now, following the success of the contemporary music course, Otago is combining music, theatre and dance in a new Performing Arts degree championed by Ian and Theatre Studies’ Dr Suzanne Little.

“We’re catering for students who want to be actively involved with more than one discipline, while still giving them a grounding in specialised skills,” says Ian. “This is the degree that I would have taken if it had been available.”

After a productive career as a drummer, guitarist and vocalist, Ian was invited to teach contemporary music. While lecturing and working on his own master’s and PhD, he continued to perform as alter ego Dr Glam, proving to students that tutors didn’t just talk the talk.

“Just because we lecture doesn’t mean we don’t walk the walk. Most of my music, theatre and dance colleagues are excellent practitioners.”

Ian’s thrilled to have the new degree course up and running.

“We’re attracting people who are interested in performing across the disciplines, but we’re not a Glee training ground or Fame school. We’re teaching the three disciplines and how they interact. What students turn their skills to then is up to them, and music theatre is certainly one option.

“Students may specialise in one performing art while getting an awareness of the other two. And as well as working on the physical skills of performing, we are developing critical thinking and looking at theory — the whys and wherefores of the performing arts.

“The University has invested in facilities like our million-dollar recording studio, and we have the wonderful Allen Hall theatre, so we’re certainly up there with the best in the country. We’ve already got a healthy number of people enrolled for the first year of this new degree.

“This is my dream job.”
Ancient, classical and modern astronomy, stellar evolution, supernovae, black holes, cosmology and the exploration of the solar system. A non-progressing course aimed at students with little or no physics background but an interest in the universe around them.

200-LEVEL AND BEYOND

In second year there are two core papers that develop core ideas of quantum physics, thermal physics, electromagnetism and optics, and a lab course introducing the skills and techniques of experimental physics. In addition there are options to take papers in environmental physics and electronics.

Your third year will continue to develop core ideas of physics including topics such as atomic physics, relativity and cosmology, electromagnetic waves, statistical physics, particle and nuclear physics and condensed matter physics. Two laboratory-based papers on experimental physics and computational physics are available, so you will have plenty of opportunity to gain hands-on experience in problem-solving. There is also scope for you to choose papers outside of Physics, enabling you to develop extra skills in a complementary area, such as Computer Science or Mathematics.

Physiology

See profile on page 123.

Physiology is a branch of biology that deals with the functions and activities of living organisms. Physiology underlies all aspects of work and life – from sleeping and walking to talking and smelling. Physiology is focused on the biology within cells and organs, the interactions between cells and organs, as well as the effects that these interactions exert on the behaviour and health of the whole organism.

CAREER OPPORTUNITIES

Studying Physiology gives you the opportunity to develop the skills and lifelong learning strategies crucial for careers in science – such as in universities, polytechnics, hospitals, government and agricultural research agencies or even in military or space agencies. Physiologists are also well placed to pursue biomedical-based careers such as in medicine, dentistry, pharmacy or physiotherapy.

100-LEVEL PAPERS

If you intend to major in Physiology (BSc), you must take the following 100-level papers:

PHSI 170 Sun, Earth and Universe (Summer School paper)

HUBS 191 Human Body Systems 1
and
HUBS 192 Human Body Systems 2
and at least two of
BIOC 192 Foundations of Biochemistry
CELS 191 Cell and Molecular Biology
CHEM 191 The Chemical Basis of Biology and Human Health
PHSI 191 Biological Physics

PHYSIOTHERAPY

For details of the Health Sciences First Year (HSFY) for Physiotherapy, see pages 95 and 97.

A physiotherapist works with people of all ages to maintain and promote health, and to restore physical function, independence and well-being, always working in partnership with their patients and clients.

The main methods of managing patients include specific exercise prescription for mobility, strength, balance and health-related fitness; manual techniques, such as manipulation and massage; and application of other modalities including heat and electrotherapy as well as education of the condition and the best way the patient can assist in their own physical recovery.

The University of Otago’s School of Physiotherapy has an excellent teaching environment. It is a purpose-built facility which includes spacious laboratories and state-of-the-art equipment of an international standard. Highly-skilled physiotherapists also work in the School’s own clinics which are open to the public.

The Physiotherapy programme is also able to draw on the strengths and expertise of staff at the Faculty of Medicine and other departments in Health Sciences and Science. The School is well known for its clinical teaching facilities based in Dunedin, Wellington and Christchurch.

CAREER OPPORTUNITIES

Top performing students in Year 3 may be invited to undertake an Honours programme in Year 4. The final year involves supervised clinical practice and an individual research project. Students graduate with BPhy(Hons) and like the BPhy graduates are then eligible for registration.

Graduates are eligible to register with the Physiotherapy Board of New Zealand as soon as they are awarded their degree and must register in order to practise. The qualification is internationally-recognised.

Work environments include practice in acute hospitals, rehabilitation centres, private practice, occupational health, in schools with children with special needs, sports clinics, industry, with the elderly and in research.

ADMISSION

Entry to second-year classes is competitive and based on admission levels set by the School of Physiotherapy Admissions Committee.

Admission to the second-year classes of the four-year Bachelor of Physiotherapy (BPhy) requires students to pass all HSFY compulsory papers with a B- (65%) grade point average (GPA) or better, with no paper less than a C (55%) pass.

There is a “two year plus” category for applicants who have completed two or more years of university study towards a degree at Otago and have passed the HSFY papers.

Applications are considered from graduates who have completed a first degree; first degree followed by Honours or first degree followed by a Postgraduate Diploma similar to an Honours programme from a university in New Zealand normally within the minimum time and within the past three years. Applicants are ranked on their best 120 points in each year of study as well as the other criteria above.

Applications are also considered from people who do not satisfy the normal requirements, but who may warrant admission for particular reasons, such as those with a relevant health-related employment background who can show evidence of academic ability to an appropriate level.
Successful applicants in this category will be required to complete the HSFY or equivalent, before a place in the second-year class can be confirmed.

Note: There is a subcategory for Mäori and New Zealand resident Pacific Island applicants in each of the four categories.

The four-year Physiotherapy programme is physically demanding and prospective applicants need to be aware of this when considering their ability to apply for entry to the programme and later when seeking registration with the Physiotherapy Board of New Zealand. If you have any doubts about your health or ability to cope with the course, you should contact either the Associate Dean for Undergraduate Studies (Physiotherapy) or the University Disabilities Officer for advice. Questions are dealt with in confidence.

200-LEVEL AND BEYOND

Subjects studied in the three years following HSFY include: Functional Anatomy, Physiology, Pharmacology, Pathology, Physiotherapy Rehabilitation Science, Physiotherapy Clinical Practice and Research. Supervised clinical experience of around 1,000 hours must be completed during the course. In their fourth year, BPhy students are assigned to one of the School’s clinical centres in Dunedin, Christchurch or Wellington and clinical sites associated with the centres. All BPhy(Hons) students are based in Dunedin in Year 4.

Planning

See Botany, Ecology, Geography, Geology, Marine Science and Zoology.

The Master of Planning (MPlan) degree is a postgraduate interdisciplinary programme requiring two years of study. Planning for urban and rural development is a major challenge in countries around the world today. Planning is a practical, relevant and growing profession that envisages alternatives taking into account global and local, social, economic and environmental constraints. To enter the MPlan, students will need a degree in a relevant field such as Geography, Economics, Ecology, Law, Sociology, Science or Surveying. The degree is accredited by the New Zealand Planning Institute as providing a recognised training course for professional planners.

CAREER OPPORTUNITIES

Planning provides students with excellent career prospects. Graduates find work with both central and local government and in both the public and private sector. Recent graduates have been employed with organisations such as planning consultancies, regional and district councils, the Ministry for the Environment, the Department of Conservation and the Historic Places Trust.

Plant Biotechnology

Plant Biotechnology encompasses plant physiology, plant biochemistry and plant molecular biology. Plant scientists in Botany and Biochemistry teach the structure and function of the whole plant and how to apply modern molecular and biochemical techniques to manipulate plants of agronomic importance.

CAREER OPPORTUNITIES

There are opportunities in at least three of the Crown Research Institutes (dealing with horticultural, arable, pastoral and forestry products), private sector companies, university research groups, and in secondary and tertiary teaching.

100-LEVEL PAPERS

There are no 100-level papers in Plant Biotechnology. If you intend to major in Plant Biotechnology (BSc), you must take the following 100-level papers:

BIOL 123 How Plants Shape the World
BIOC 192 Foundations of Biochemistry
CELS 191 Cell and Molecular Biology
CHEM 191 The Chemical Basis of Biology and Human Health
ECOL 111 Ecology and Conservation of Diversity

200-LEVEL AND BEYOND

200-level papers include BTNY 221 Plant Physiology and Biotechnology and at least three 200-level BIOC, BTNY or GENE papers.

300-level papers include PLBI 301 Applied Plant Science; and Biochemistry, Botany or Genetics 300-level papers.

In addition to BSc and BSc(Hons), it is possible to study for postgraduate qualifications in Plant Biotechnology.

Politics

The Department of Politics offers papers in all the major aspects of politics: political philosophy, public policy, domestic politics, international relations and comparative studies.

CAREER OPPORTUNITIES

Politics is an excellent lead subject in a general degree, with a strong emphasis on widely sought-after analytical and communications skills. Graduates have found highly rewarding employment in government service, particularly in foreign affairs and policy-making, legal practice, journalism, teaching, the media and business.

100-LEVEL PAPERS

If you intend to major in Politics (BA), you must take two of the following 100-level papers:

POLS 101 Political Philosophy: Basic Problems
Exposes the views of great thinkers of the Western world to ask what constitutes the good life? Is politics natural? Should individual liberty outrank other goods?

POLS 102 New Zealand Politics: Introduction
Examines the New Zealand political system, focusing on the formal structures of government, political parties and interest groups, the citizen and political participation.

POLS 103 International Politics: Asia-Pacific
Introduces international politics of the Asia-Pacific region, from the USA through the Pacific to East Asia.

POLS 104 International Relations: Introduction
Considers key elements of modern international relations, including the Cold War system, perennial international issues and the emerging post-Cold War world.

200-LEVEL AND BEYOND

Studies topics such as democracy, ethnic conflict and peacekeeping, theories of justice, ethics and international affairs, political theory, environmental politics, politics and the media, US foreign policy, and the Middle East.

To major in Politics, students must take seven papers above 100-level, with at least two 200-level papers. Honours and postgraduate studies are available.
Aleisha Moore attended about 10 schools as her family moved around the world with the New Zealand Air Force, so she's become a good judge of educational establishments. When it came to tertiary study, she chose Otago. "I'd always been interested in biology and Otago has a really good reputation for science. When I got here I found there was so much more to science than the chemistry, physics and biology I'd done at school."

Aleisha took a Bachelor of Biomedical Sciences (Hons) in Functional Human Biology. "The degree allowed me to sample a large variety of papers and see different departments and staff. I got to experience a lot of the University. "I was doing what I enjoyed rather than thinking about what I would do with it, but it worked pretty well for me. I ended up at the Physiology Department because I liked it the most."

Aleisha experienced academic research by working on summer programmes, which she loved — "I’d recommend them as a good bridge between undergraduate and postgraduate programmes."

Her own physiology project on how neurons in the brain control human female fertility was considered so promising that she has advanced straight to a PhD without going through a master’s. She’s already breaking new ground in finding that during infertility, some neurons have an impaired ability to sense information sent from the body. "The facilities in the Physiology department are so good that we can create some very imaginative projects. The research done here is high quality, and the staff are friendly and talented people. "Student life is very enjoyable too. I’ve met a lot of good people and made lifelong friends, and there’s great student support."

After her PhD, Aleisha hopes to broaden her research career — "but I could well come back to Otago one day. It’s a very good place."
Professional Studies

See Physical Education for details on admission into this major.

The Professional Studies major emphasises professional practice in the fields of teaching physical and health education, outdoor education, and dance as well as in exercise prescribing, coaching and sports training. Subject areas include: Outdoor Education; Māori Physical Education; Athletic Training and Conditioning; Dance Education; Dance in the Community; Sports Coaching; Teaching Physical Education and Health.

CAREER OPPORTUNITIES

The Professional Studies major enhances students’ technical, critical and problem-solving skills. These skills have enabled recent graduates to gain employment in: national and regional sports organisations and trusts; outdoor industries; city councils; primary and secondary schools; fitness industries; Māori organisations; government departments (e.g. ACC, armed forces and police force); community organisations (e.g. Age Concern, Green Prescription); dance schools; and the tertiary sector. See the graduate career diagram for inspiration – http://physed.otago.ac.nz/prospective/careers.html

Psychology

See profile on page 126.

Psychology is the science of behaviour. Psychologists study the way humans (and other animals) interact with the world and each other. For example, Psychology examines how our abilities change with age, and what might underlie abnormal behaviour. It investigates how we process and store information using our senses and memory, and how our experiences shape our behaviour.

Psychologists study how behaviour relates to the functioning of the brain, and why things such as drugs, hormone levels and lack of sleep can influence the way we behave. They also address problems in areas as diverse as sleep disorders, industrial relations, phobias, drug rehabilitation, aircraft safety and hyperactivity.

Psychology is a very popular course. It may be a major in either Arts or Sciences or may accompany degrees in Commerce, Law, Physical Education and Applied Science. The Psychology Department at Otago has a highly regarded teaching programme and is internationally renowned for the strength of its research.

CAREER OPPORTUNITIES

Graduates work in universities, health services, business and industry, road safety, communications and planning. Clinical psychologists work in the public health sector or private practice.

Psychologists with appropriate postgraduate qualifications work in research sections of the government, such as the Departments of Health, Justice, Social Development, Transport and the Ministry of Business, Innovation and Employment. Many of our graduates spend time working overseas in the United Kingdom or Australia.

100-LEVEL PAPERS

If you intend to major in Psychology (BA, BSc), you must take the following 100-level papers:

PSYC 111 Brain and Behaviour
PSYC 112 Human Thought and Behaviour

Students intending to major in Psychology are recommended to take STAT 110 or STAT 115.

PSYC 111 Brain and Behaviour
Introduces the biological bases of behaviour, memory, neuropsychology, perception, learning and developmental psychobiology.

PSYC 112 Human Thought and Behaviour
Introduces child development, social psychology, thought and language, and abnormal psychology.

200-LEVEL AND BEYOND

200-level covers biopsychology, sensation and perception, cognitive processes, applied psychology, social cognition, intergroup and interpersonal processes, abnormal psychology, and theoretical and applied approaches to explaining individual differences in behaviour, intelligence and personal adjustment.

300-level offers a large selection of papers. Students can take specialised courses in human development, social processes, brain-behaviour relationships, cognition, perception, and forensic and applied psychology.

Public Health

See Health Studies.

Radiation Therapy

Wellington Campus

Are you attracted to a scientific discipline, willing to accept responsibility and keen to work as part of a team of skilled professionals treating and curing patients? The three-year Bachelor of Radiation Therapy (BRT) qualifies you as a radiation therapist able to use radiation to treat disease with minimum supervision from radiation oncologists. The qualification incorporates theory components at the University of Otago, Wellington and practical components at radiation oncology departments around New Zealand. In addition, students complete work experience in radiation oncology departments during many of the academic breaks. This work experience is a course requirement for the programme.

CAREER OPPORTUNITIES

Graduates may apply for registration with the Medical Radiation Technologists’ Board (MRTB) and work in departments of radiation oncology in Auckland, Hamilton (Waikato), Tauranga, Palmerston North, Wellington, Christchurch and Dunedin. Overseas opportunities exist particularly in Australia, Canada and England.

SELECTION CRITERIA

Applicants will be selected on the basis of having met the following criteria:

1. Successful completion at NCEA Level 3, or equivalent of:
   • One of the following subjects: English, Classics, Geography, History, Art History, Te Reo Māori or Te Reo Rangatira; and Mathematics (Statistics or Calculus); and Biology or Physics

2. Demonstration of suitability to the profession by interview. Selection for interview is based on academic performance, department visit and hand-written statement to a standard determined by the Radiation Therapy Board of Studies.

Applicants should note that:

• school leavers are initially selected on their Year 12 NCEA performance and the subjects taken for Year 13. Alternative academic qualifications from secondary school will also be considered
tertiary applicants need to ensure successful completion of the following topics within their tertiary studies: English-rich, maths, physics or biology; if these were not successfully completed at NCEA Level 3, or equivalent

• student numbers will be limited due to the availability of clinical placements.

*For a list of English-rich subjects refer to Admission Guidelines at www.otago.ac.nz/healthsciences

MĀORI AND NEW ZEALAND RESIDENT PACIFIC ORIGINS (NZRPO) APPLICANTS

The Division of Health Sciences is actively seeking to recruit Māori and/or Pacific origin students for Radiation Therapy. Therefore, students who are of Māori and/or Pacific origin may have this fact taken into consideration along with their application by completing Form A (Māori) or Form B (NZRPO).

Note: Applications are available online www.otago.ac.nz/healthsciences

Upon acceptance into the programme applicants will usually be offered a clinical placement from one of the hospitals taking part in the programme to ensure access to clinical training. A current approved comprehensive first aid certificate is required on entry to the programme. Applications for admission must be made to the Health Sciences Admissions Office by 15 September of the preceding year.

100-LEVEL PAPERS

The Bachelor of Radiation Therapy (BRT) is a professional course and all papers are compulsory. Subject areas include: Anatomy and Imaging, Cancer Cell Biology, Health and Human Behaviour, Healthcare Communication, Radiation Technology, Radiation Therapy and Oncology, and Radiation Therapy Planning Concepts.


Religion

Whether you're following world news or watching what's happening on campus, you'll be aware of the impact of religion on the contemporary world. Virtually every aspect of human culture has been, and continues to be, shaped by beliefs about gods and demons, saints and shamans.

So if you want to understand our world, you need to know something about religion. Studying Religion at Otago will help you to understand the fascinating world of religion by introducing you to the diversity of religious beliefs and practices. Some papers trace our established traditions from their ancient roots through to modern times while others examine the various forms of "spirituality" that feature so prominently in modern popular culture.

Papers in Religion are designed to be accessible to everyone, irrespective of religious background, and can be usefully combined with most other subjects or degrees.

CAREER OPPORTUNITIES

Religion graduates work in teaching, development, counselling, libraries, business (especially marketing) and government.

100-LEVEL PAPERS

If you wish to major in Religious Studies, you must complete:

| RELS 101 | Judaism, Christianity and Islam |
| RELS 102 | Hinduism and Buddhism |

200-LEVEL AND BEYOND

Advanced papers deal with individual religious traditions in greater depth, as well as dealing with themes across a number of religions, such as mysticism or the body as a vehicle for religious practice. Religion is studied as it exists in relation to other spheres of human activity, rather than as an isolated phenomenon.

Most Religion papers are offered through the University’s Distance Learning network.

MINORS IN ISLAMIC STUDIES AND IN BUDDHIST STUDIES

Although there is much to be gained by studying the major religions of the world alongside one another, and many of our papers deal with more than one religion, it is also possible to specialise in the study of one religious tradition. If you choose to take several papers on one religion this can be formally recognised by including a minor in your degree.

We currently offer minors in Buddhist Studies and in Islamic Studies, which can be combined with a major in another subject. Five papers are required for a minor, beginning with either RELS 101 (for Islamic Studies) or RELS 102 (for Buddhist Studies). In addition you must take at least three papers above 100-level, including one above 200-level, from the lists provided in the Guide to Enrolment.

Science Communication

The Master of Science Communication (MSciComm) comes in three different streams: science and natural history filmmaking, creative nonfiction writing, and popularising science. The programme is open to all graduates.

Admission to the programme is on a competitive basis and applicants should have a minimum B average in 300-level papers.

CAREER OPPORTUNITIES

The programme will support a variety of career options, including natural history filmmaking, documentary making, the production of educational materials, science journalism and writing, publishing, museum and display work, public relations for organisations involved with wildlife and the environment (e.g. regional councils, Department of Conservation, conservation groups and tourist ventures) and online promotion of science through digital means.

100-LEVEL PAPERS

BSc students majoring in science subjects are recommended to include in their degree one or more papers in subjects such as Design; Media, Film and Communication Studies; English (science writing) or Philosophy (the philosophy and history of science).

Students not majoring in science subjects are recommended to include one or more science papers in their degrees.

Website: www.sciencecommunication.info

Social Work

Social workers are increasingly required to hold professional social work qualifications at degree level, and it is likely that in the future registration with the Social Workers Registration Board will be mandatory. The University of Otago provides one of the leading programmes of social work education in New Zealand and enables graduates to apply for registration. Our students are taught a combination of broad academic critical skills as well as applied social work practice skills. Fieldwork components at 300- and 400-level are an important part of this programme.
At high school Damian Scarf wanted to learn, but was channelled into the lowest classroom stream.

“Once you’re there it’s almost impossible to work your way up, especially if it is a disruptive class like mine was. By year 11 you’ve already lost out on things you need to do well in years 12 and 13. It made me think that playing rugby was going to be my only option for the future.”

Damian failed school and went on the dole — so his subsequent path to becoming a lecturer in the Department of Psychology is inspirational.

He returned to study at polytech to gain entrance to Otago where, inspired by TV animal experts David Attenborough and Steve Irwin, he enrolled in Zoology. He hoped that “if you pick something you’re curious about, things might fall into place and hopefully you’ll get a job”.

It was tough. “I realised that first year success was based on the level you reached at school. I wasn’t at that level. I didn’t have the foundation that I needed. I needed to catch up, and the only way I was going to even just pass was to work really hard.”

Damian’s efforts snowballed, and his marks improved as he progressed through his Zoology degree. But he’d only just begun.

He did a “fill-in” psychology paper on comparative cognition with Professor Mike Colombo, and something clicked. “Mike was incredible. I was sold. I realised I was more interested in the behavioural side of animals, and crossed over to do postgraduate work in Psychology.”

He came up with a research project on the thought processes of pigeons. It grew from a master’s to a PhD, generating nine first author publications and a Fulbright scholarship to the United States.

Now Damian has his own laboratory and PhD students.

“I love teaching and supporting students and trying to raise their interest in the subject, because I know that was part of the key for me. And often students who’ve had to struggle become the best researchers.”
There are two pathways to completing the Bachelor of Social Work:

PATHWAY 1

Students initially enrol in a BA in a major subject such as Psychology, Sociology or Gender Studies. The first two years must include specific papers at 100-level from SOWK, SOCI, MAOR, and EDUC or PSYC programmes (as outlined below). Students apply for admission to the BSW at the end of their 200-level year and must have 234 points to be eligible for the professional programme (years 3 and 4). This path requires four years’ full-time study to complete the requirements for the BSW degree.

PATHWAY 2

Alternatively, students can apply for entry into the BSW 300-level after completion of a BA, provided their course of study is relevant. Students may also apply on completion of a BTheol, BSc in Psychology or BEdSt. In combination, this pathway will take five years, and students will graduate with a double degree.

CAREER OPPORTUNITIES

Government services: Department of Child, Youth and Family, Community Probation, Prison Service, Te Puni Kokiri, and Ministry of Social Development.

Health services: Mental health, care of the elderly, medical/surgical, newborn intensive care and children’s health.

Community services: Non-government social service organisations such as Age Concern, Barnardos, Salvation Army, Presbyterian Support, Methodist Mission, Anglican Family Care and Kaupapa Māori services.

Schools, local government and private sector services.

The following shows the structure of pathway 1, and an indication of relevant areas of study for pathway 2 students:

100-LEVEL

Compulsory papers:

MAOR 102 Introduction to Māori Society
MAOR 110 Introduction to Conversational Māori
SOCI 101 Sociology of New Zealand Society
SOWK 111 Working with People: The New Zealand Context

Either
EDUC 102 Human Development
or
PSYC 112 Human Thought and Behaviour
(Students may take up to 54 points of approved papers from Arts and Music Schedule C and PAST/X papers).

200-LEVEL AND BEYOND

There are also prescribed papers at 200-level which prepare students for Social Work study at 300- and 400-level. 200-level papers apply social science analysis of family, criminology and inequality, as well as of services arising from the Treaty of Waitangi and its principles.

OTHER REQUIREMENTS

In addition to academic requirements, students applying for the BSW in either pathway must also have some kind of experience in the social service sector. This can include voluntary and/or paid employment in any capacity in any area of practice.

Sociology

Sociology critically analyses how people organise and participate in groups, collectivities or societies. It seeks to understand how humans as social beings construct, re-construct and resist the social world in which they live. Sociology is also very interested in social change – how societies or social groups change over time. Sociology is also strongly interested in social conflict. Why are some societies so conflict-ridden, and what kinds of social divisions lie behind such conflicts? Why is it that differences of ethnicity, religion and gender are the basis of major conflict in some societies and yet are the source of much less tension in other societies? Who decides what is “bad” conflict and what is “good” conflict?

The subject matter of Sociology traverses a broad range of topics, including: inequalities of class, gender and ethnicity; social dynamics of environmental sustainability and change; social institutions such as family, media, education, work, religion and government; and the implications of these for health and well-being.

CAREER OPPORTUNITIES

Sociology is a broad-based discipline that combines well with a range of other subjects at university. By learning skills of social research and social analysis, Sociology graduates find careers in the following fields: social and marketing research, trade unions, human resources, public health, national and local government (conducting research and advising ministers on issues related to housing, health, service delivery, arts and culture, tourism and sport etc.), non-governmental organisations, academia and politics (working on social justice campaigns, advising politicians on social policy). Upper level Sociology papers include options to place students into applied research situations with community groups, organisations and businesses as a bridge towards employing sociological skills in workplace situations.

The University of Otago offers both a minor and a major in Sociology. A major in Sociology is available within the BA degree, and a minor in Sociology can be attached to a BA, BCom, BSc or BTheol degree. As a degree programme, Sociology works well in conjunction with a minor in Public Health, Management, Marketing, Tourism, Social Services Law, Psychology and Gender Studies. Both the major and minor are administered through the Department of Sociology, Gender and Social Work.

100-LEVEL PAPERS

The Sociology major requires you to take both of:

SOCI 101 Sociology of New Zealand Society
SOCI 102 Cultural and Social Identities

200-LEVEL AND BEYOND

At higher levels, there is a selection of 200- and 300-level SOCI papers available to complete a major or minor. Approved papers in other programmes may also be substituted into a SOCI major or minor.

Software Engineering

Software Engineering can be studied for the Bachelor of Applied Science degree. There is a growing need for technical professionals capable of designing, constructing and managing the complex information systems that underpin and drive our increasingly knowledge-based society. To meet this need individuals need the skills to design, develop, apply and maintain complex information technology, as well as having an understanding of the business and social context of these systems.

Software Engineering emphasises those aspects of computer and information science that are concerned with the principles and techniques required to produce high performing, reliable software systems.
CAREER OPPORTUNITIES

The BAppSc graduate in Software Engineering will have the theoretical and practical skills to supervise the construction of systems that can interoperate with the vast, distributed array of information repositories and computational elements that exist across the internet. Study in this area provides the student with excellent national and international employment opportunities. Students will also be well equipped to consider launching their own business or software start-up company.

100-LEVEL PAPERS

If you intend to major in Software Engineering (BAppSc), you must take the following 100-level papers:

Papers worth at least 120 points including:
- BSNS 106 Information and Communication in Organisations
- COMP 160 General Programming
- and one of the following: MATH 151, 160, 170 or FINQ 102

Note: The course must include either a minor or a second major in a strongly-related subject area. This supporting subject can be from Commerce, Humanities or Sciences.

www.otago.ac.nz/courses/subjects/seng.html

Spanish

Spanish is the world's most widely spoken language after Chinese, with more than 400 million speakers spread across all five continents. The University of Otago has developed strong academic partnerships with universities in Spain and several Latin American countries. Staff and student exchange programmes have been established with universities in Argentina, Chile and Mexico. New partner arrangements are also being finalised with several prominent universities in Spain.

CAREER OPPORTUNITIES

Spanish language skills can give graduates employment opportunities in government departments, planning and consultancy firms, the mass media (e.g. journalism, publication and advertising), the finance and banking sectors, the health sector, the tourism and hospitality industries, as well as all sectors of the education system. With New Zealand-Latin American trade links growing fast, the demand in business for Spanish language graduates is on the increase.

100-LEVEL PAPERS

If you intend to major in Spanish (BA), you must take the following 100-level papers:

- SPAN 131 Introductory Spanish 1
- SPAN 132 Introductory Spanish 2
- SPAN 141 Introduction to Hispanic Culture
- SPAN 131 Introductory Spanish 1
- SPAN 141 Introduction to Hispanic Culture

Students can complete an Honours degree (fourth year) in Spanish, with a research component focusing on a specific aspect of Latin American or Spanish culture and/or literature and linguistics. Students studying at fourth-year level are required to spend one semester at one of our partner universities in Latin America or Spain as part of their programme. It is also possible to progress to postgraduate level study in Spanish, including the PhD degree.

Sport and Exercise Nutrition

The links between diet, exercise and athletic performance are becoming increasingly recognised in many areas of sport, nutrition and human health. The Sport and Exercise Nutrition major in the Bachelor of Applied Science is the first qualification in New Zealand that focuses on these fundamental linkages. Sport and Exercise Nutrition gives a thorough grounding in all aspects of nutrition and relevant areas of exercise and sport science drawing on interdisciplinary content from Human Nutrition, Physical Education and the Sciences.

If you are interested in a career in Sport and Exercise Nutrition, contact the programme director, Dr Tracy Perry (tracy.perry@otago.ac.nz).

100-LEVEL PAPERS

The 100-level papers required for this major are:

- BIOC 192 Foundations of Biochemistry
- CHEM 191 The Chemical Basis of Biology and Human Health
- CELS 191 Cell and Molecular Biology
- HUBS 191 Human Body Systems 1
- HUBS 192 Human Body Systems 2

For BAppSc SPNU plus dietetic prerequisites (3 1/2 years): the above 5 papers plus FOSC 111 plus papers for minor e.g. FOSC 111, STAT 115, PSYC 111, 112.

Sport and Exercise Medicine

Although many health professionals find that sport and exercise medicine forms a significant part of their work, most practitioners have minimal formal training at an undergraduate or postgraduate level. This programme reflects the multidisciplinary nature of sport and exercise medicine.

The Postgraduate Diploma in Sport and Exercise Medicine is for graduates in Medicine, Physiotherapy, Physical Education, Human Nutrition, Podiatry, Pharmacy or Sciences, or those with a comparable qualification in the health-care professions. It requires the accumulation of 120 points. There is one compulsory generic paper, SPMX 701 Issues in Sports Medicine. Candidates choose their remaining points from a selection of papers. This allows students to complete a postgraduate diploma with an emphasis on a specific area of expertise.

There is increasing demand for sport psychologists, nutritionists, and strength and conditioning experts who work with professional sports teams. Team doctors and physiotherapists accompany national teams to world championships, Commonwealth and Olympic Games.
Statistics

When Mark Patterson was a personal trainer, he helped clients keep an eye on their figures. Now he’s helping the Prime Minister keep his eyes on totally different kinds of figures.

Mark is an analyst at the Ministry of Business, Innovation and Employment (MBIE), processing information to produce reports for stakeholders including Tourism Minister John Key.

He started out with sports qualifications, working his way up to gym manager before deciding he needed new challenges. After two years of OE in Europe and the USA, he didn’t want to return to the world of workouts.

“I’d always been good at maths at school so I decided to change direction and study statistics. It’s purely the numbers I like; I enjoy working with any kind of data and accumulating results. I’m reasonably computer-savvy so I enjoy the computational side of it too.”

One-on-one tutorials arranged by Otago’s Pacific Islands Centre helped Mark return to study — “they knew my mum, who’s full Niuean, and they were very helpful” — and he found the small size of the Statistics department meant he came to know the lecturers well.

“They were highly knowledgeable and always available. You couldn’t ask for better people to work with.”

On graduating, Mark did agency work with ACC while looking for the perfect job. When the MBIE vacancy turned up, Mark was disappointed to learn it had already been filled, but cheered up when they called him with a job offer a couple of months later.

“Most of my work has involved analysing tourism information, and now I have moved into a new role where I analyse and advise on major events at an economic level. Both roles use computer programming I learned at Otago. I struggled with it at university but it’s hugely beneficial now.

“I still use what I did in my degree as a basis for my work, although I’m learning new things all the time on the job. I’m really lucky to have this role.”

“It’s purely the numbers I like. I enjoy working with any kind of data and accumulating results.”
**Sport and Leisure Studies**

See Physical Education for details on admission into this major.

The Sport and Leisure Studies major uses sociopsychological and sociocultural perspectives to examine the role, purpose and status of sport, leisure and physical activity in everyday life. Subject areas include: Sport Management and Policy; Sport and Exercise Psychology; Sport Media and Culture; Sports Coaching; Sport Sociology; Sport History; Body Culture; Sport, Leisure and Social Theory; and Māori Physical Education.

**CAREER OPPORTUNITIES**

The Sport and Leisure Studies major enhances students’ technical, critical and problem-solving skills. These skills have enabled recent graduates to gain employment in: national and regional sports organisations and trusts; city councils; sports-related businesses; sport media; and tertiary institutions. Some of the roles graduates have taken up are: sport managers and marketers; sport/exercise psychology consultants; sport and social policy advisers; journalists; and recreational planners. See the graduate career diagram for inspiration - http://physed.otago.ac.nz/prospective/careers.html

**Sports Technology**

Our top sports organisations recognise the importance of sporting technology in ensuring New Zealand’s competitiveness in sport and have confirmed their support of the new Bachelor of Applied Sciences in Sports Technology. This new degree delivers many benefits:

- the development of new ideas, including products and technology-based services
- engagement with entrepreneurs and businesses
- collaboration with key partners locally and internationally.

Students will be able to develop a range of practical skills, scientific and technical knowledge that is suited to the diverse employment opportunities that exist in this exciting area of development.

Sports Technology is an incredibly diverse, interdisciplinary field. Teaching and research in technologies associated with sport already occur in a number of disciplines including Clothing and Textile Sciences, Design, Computer Science, Medicine, Human Nutrition, Physical Education, Physics, Physiology, Physiotherapy and Psychology – leading research into fields such as artificial intelligence and the modelling of movement, measuring and assessment of balance, performance-enhancing clothing and equipment, brain-blood flow neurophysiology, eye movement registration, and the broadcasting of sporting events (e.g. 3D animation).

Sports Technology can be taken as either a major or a minor subject within the Bachelor of Applied Sciences. There are several recommended pathways to choose from specialising in topics such as human performance, clothes and design, and computational modeling.

**MAJOR SUBJECT PAPERS REQUIRED**

PHSE 102, HUBS/PHSE 191, 192, one from STAT 110, 115, MATH 151, 160, 170, COMP 150, COMP 160, DESN 101, MATH 170, PHSI 191.

**Statistics**

See profile on page 129.

Statistics is the mathematical collection, analysis and interpretation of data. Some students study Statistics as their major because they are looking for a useful application of their mathematics skills, others because they wish to enhance their employment prospects, possibly by completing double degrees.

They also may want to work with researchers in a wide range of disciplines; they want a job that involves contributing to policy decisions for government and industry; or they have a concern for social and environmental issues in biological, environmental or health research. Statistics is not just another branch of Mathematics. It can be studied at all undergraduate levels, as a minor or a prerequisite for other majors. Many graduates discover data analytic skills are crucial for a modern, educated society.

**CAREER OPPORTUNITIES**

Graduates work in government departments, research institutes and private industry in New Zealand and overseas. Employers include AgResearch, health organisations, insurance companies, Landcare Research, New Zealand Aluminium Smelters, New Zealand Forest Research Institute, Treasury and Statistics New Zealand. Biostatistics and epidemiology are currently growth areas for statisticians.

**Surveying**

See profile on page 132.

Surveyors have indoor and outdoor elements to their work and are involved in four main activities including: precise measurement of position; boundary definitions, land ownership and land rights; land and resource management including subdivision design and engineering; and geographic information science including the capture, display and management of spatial information.

**CAREER OPPORTUNITIES**

The BSurv degree is the only academic qualification offered in New Zealand that will lead to licensing by the Cadastral Surveyors Licensing Board – a licence to carry out land title surveys that is also recognised by all Australian states. It can also lead to full membership of the New Zealand Institute of Surveyors. Graduates are employed in such diverse areas as measuring land and built-structure deformation; the
design, layout and construction of subdivisions and services; property management; planning; hydrographic surveying; mining; construction surveying; and the application of geographic information systems.

100-LEVEL PAPERS
If you wish to be considered for admission to second-year studies leading to a BSurv, you must normally have passed the following 100-level papers:

- MATH 160 Mathematics I
- SURV 101 Introductory Surveying
- SURV 102 Computational Methods for Surveyors
- ENGL 228 Writing for the Professions

and further papers worth at least 54 points.

Note: SURV 101 is also available as a distance-taught paper (SURVX 101).

Admission to second-year classes is competitive. Applications must be received by 15 November of your first year for entry into second year of the BSurv degree. A maximum of 65 places is available. The School of Surveying offers up to two $1,000 scholarships to the students with the best academic record in their first year.

200-LEVEL AND BEYOND
The remaining three years of the Surveying professional course involve 18 core papers, including, among others, measurement technology and processes, civil engineering, professional practice, land law, project management, satellite remote sensing and photogrammetry and geographic information systems.

The degree has an elective component of 126 points, 54 of which must be Surveying electives. Options for these are hydrographic surveying, engineering surveying, remote sensing and resource mapping, spatial databases, environmental engineering, urban design, Land Tenure and spatial information management. A significant portion of time is spent in practical work.

OTHER DEGREES
There are BSc majors in Land Planning and Development, and Surveying Measurement, and a BAppSc in Geographic Information Systems. These degrees allow students to focus their careers at an early stage. Those who wish to include the BSurv papers SURV 298 Introductory Field Courses and SURV 201 Surveying Methods 1 in their degree must apply for admission by 15 November of the preceding year. If you wish to take any of these majors, contact the School before enrolling (surveying@otago.ac.nz)

Surveying Measurement
The BSc degree in Surveying Measurement focuses on the precise measurement of position applied to land, the sea floor and built structures. This degree may also be used as a basis for becoming an internationally qualified hydrographic surveyor.

CAREER OPPORTUNITIES
Career opportunities exist wherever there is a need for accurate spatial information or precise position measurement. Graduates may specialise in engineering surveying including road and building set out, underground mining, and tunnelling. These skills are internationally generic and may be applied in any country and in a variety of contexts.

100-LEVEL PAPERS
In order to be admitted to the second year studies of the BSc in Surveying Measurement, you must have passed the following 100-level papers:

- MATH 160 Mathematics I
- SURV 101 Introductory Surveying
- SURV 102 Computational Methods for Surveyors
- ENGL 228 Writing for the Professions

In order to continue beyond this level candidates for the BSc (SM) must complete for a place in the SURV 298 Introductory Field Camp with BSurv candidates.

200-LEVEL AND BEYOND
200-level courses that are required are SURV 201 Surveying Methods 1, SURV 202 Surveying Mathematics and SURV 208 Introduction to Geographic Information Systems.

300-level courses that are required are SURV 301 Surveying Methods 2, SURV 302 Geodetic Reference Systems and Network Analysis, SURV 309 Introduction to Remote Sensing Technologies and SURV 399 Third Year Field Course, and two further advanced surveying papers from a specified range, depending on the student’s particular interests.

Students may then complete the requirements for the degree by gaining further points from subjects of their own choice.
Mariana Pagan is stoked that she has been able to incorporate her heritage into her surveying degree. She spent her early childhood in Bluff, where her whakapapa in Kai Tahu, Waitaha and Kāti Mamoe entitled her to go muttonbirding. Now she’s researching a number of issues to do with land and the Tītī Islands, which she visits with her whānau.

“Having the right to go muttonbirding is important to me. To be able to study that with support from my lecturers has been the highlight of my degree so far.”

Before Mariana started her degree she was able to spend a familiarisation week with a firm of surveyors.

“I liked the concept of working both in the office and in the field and although I didn’t know what I wanted to specialise in, there were lots of different disciplines within the School of Surveying available only at Otago. There was so much in the degree that you could get an idea of everything and choose later.

“The school is small so everyone knows everyone, which is cool, and all the equipment is top notch.”

University life has gone well. “The Māori Centre was so helpful, particularly in the first year when I was coming to grips with university life.

“The University facilities are great, and I love the central campus and how all the students are in it together, sussing things out, and how the community supports the students.”

Mariana has spent two summers on research internships. She helped establish baseline data for assessing changes to an indigenous agroecology project on Banks Peninsula, and investigated resource management issues on the Tītī Islands.

“I’ve learned heaps and met so many different people. I’ve got to know several professionals and been able to ask questions and learn from them. ”

“I’ve got a pretty keen interest in land tenure and Māori land, and I like research, so I’ll probably head in that direction.”
EARLY CHILDHOOD EDUCATION

These programmes are designed for individuals who want to teach in early childhood centres and/or kindergartens in New Zealand and overseas. Opportunities in both the three- and four-year options enable a student to take selected specialist subject studies in other University departments or with specialist subject experts in the UOCE.

- Three-year Bachelor of Teaching (BTchg) degree
- Four-year programme: Bachelor of Education Studies (BEDSt) followed by the Graduate Diploma in Education and Teaching (GradDipEdTchg)
- One-year Graduate Diploma in Teaching (GradDipTchg), requires a completed degree for entry.

Māori-medium (0-8 years) *Subject to final approval

- One-year Graduate Diploma in Teaching (GradDipTchg), requires a completed degree for entry and te reo language requirements.

PRIMARY EDUCATION

Qualifications for people who want to teach in primary and intermediate schools in New Zealand and overseas. Opportunities in both the three- and four-year options enable a student to take selected specialist subject studies in other University departments or with specialist subject experts in the UOCE.

- Three-year Bachelor of Teaching (BTchg) degree
- Four-year programme: Bachelor of Education Studies (BEDSt) followed by the Graduate Diploma in Education and Teaching (GradDipEdTchg)
- One-year Graduate Diploma in Teaching (GradDipTchg), requires a completed degree for entry.
- One calendar year Master in Teaching and Learning (MTchgLn) requires a degree for entry.

SECONDARY EDUCATION

Prepares graduates to teach in secondary schools throughout New Zealand and many overseas countries. Applicants must meet the academic requirements for their secondary teaching subjects.

These programmes provide the opportunity for study in both junior and senior curriculum areas (where prerequisites can be met). Only offered at the Dunedin campus.

- One-year Graduate Diploma in Teaching (GradDipTchg) requires a completed degree for entry.
- One calendar year Master in Teaching and Learning (MTchgLn) requires a degree for entry.

ADMISSION TO ALL UOCE TEACHER EDUCATION PROGRAMMES

Admission to all teacher education programmes is by application and selection. The process includes an online application, referees’ reports and an interview following short-listing.

Applicants must meet academic requirements and demonstrate personal and professional qualities essential for teachers.

Applications for all programmes are requested by 25 August 2014. Later applications will be considered but preference given to those received by this date.

TESOL (Teaching English to Speakers of Other Languages)

The study and practice of Teaching of English to Speakers of Other Languages (TESOL) are significant elements of the international education industry in New Zealand. English is the global lingua franca, the language learned and used by more second language speakers than any other language and the language most widely distributed across the world. TESOL practitioners are required worldwide and TESOL practitioners trained in English-speaking countries are highly valued. The TESOL minor is a useful option for students intending to make a career of teaching English as a foreign language in New Zealand or overseas. It is also very useful for someone seeking temporary employment while travelling abroad for an extended period.

TESOL is available as a minor subject in a Bachelor of Arts (BA), Bachelor of Commerce (BCom), Bachelor of Theology (BTheol) or Bachelor of Science (BSc) degree.

The following papers are required for the minor in TESOL:

100-LEVEL PAPERS

- LING 111 Language and its Structure
- LING 112 Social Aspects of Language

200-LEVEL PAPERS

- LING 231 TESOL
  - One of LING 214 Syntax or LING 215 Phonology or EDUC 252 How People Learn

300-LEVEL PAPERS

- LING 319 Second Language Acquisition
- LING 331 Advanced Topic in TESOL
- LING 332 TESOL Practicum

Note: This minor cannot be taken in conjunction with the major in Linguistics (which includes it), but can be taken in conjunction with the major in English and Linguistics, the major in Language and Linguistics or any other major subjects.

Telecommunications

Telecommunications is crucial to today’s expanding information-based society. This Bachelor of Applied Science programme prepares telecommunications professionals to participate in the rapidly-evolving business climate involving new technology. Papers include Telecommunications, Information Science, Computer Science, Physics, Mathematics and Electronics.

CAREER OPPORTUNITIES

Graduates work in a range of areas from sales, service and technical support to network design, operations and management.

100-LEVEL PAPERS

If you intend to major in Telecommunications (BAppSc), you must take the following 100-level papers:

- COMP 160 General Programming
- MATH 160 Mathematics 1
- MATH 170 Mathematics 2
- Papers worth at least 120 points, including:
and one of
PHSI 131, 132, 191 (PHSI 132 is recommended).

The 200-level course requires papers worth at least 120 points including:

COSC 243 Computer Architecture and Operating Systems
ELEC 253 Electronics: Introduction
INFO 221 Application Software Development
TELE 202 Computer Networking

The three-year programme for the BAppSc degree must include either requirements for an approved minor or approved second major subject or other approved papers. Entry into Honours at fourth year is possible on the basis of competency.

www.telecom.otago.ac.nz

Theatre Studies

Theatre represents and explores human experience and imagination in a dynamic, immediate way. Both across the programme as a whole and within individual papers, Theatre Studies at Otago is concerned with the interplay of theory and practice. Drawing on the rich diversity of theatrical expression in different cultures and epochs, our papers teach a combination of practical and academic aptitudes, including specific performance and craft skills, the ability to work within a team, leadership, critical thinking, research, creative expression, problem-solving, and advanced communication and presentation skills. These skills are applicable to a wide range of career options.

Theatre Studies has its own lively performance venue, the historic Allen Hall Theatre. Students have the opportunity to be involved in the theatre’s full programme of lunchtime and evening performances.

CAREER OPPORTUNITIES

In addition to possible careers in the theatre, film and television industries, graduates work in such fields as teaching, journalism, broadcasting, marketing, design, tourism and arts administration.

100-LEVEL PAPERS

If you intend to major in Theatre Studies (BA), you must take the following 100-level papers:

THEA 122 Drama on Stage and Screen
THEA 151 Improvisation
THEA 152 Theatre Technology (not necessarily taken in the first year)

THEA 122 Drama on Stage and Screen
Introduces conventions and techniques of drama, using texts drawn from cinema, television and theatre. The texts represent a variety of dramatic genres from a wide range of periods and cultures, and include some “paired texts” – plays and films based on key plays. There is an emphasis on performance, with comparisons of different approaches for stage and screen. The paper introduces students to the skills of textual analysis for page, stage and screen as well as the opportunity to develop a proficiency in academic writing. Students will attend film screenings and have opportunities to perform scenes from plays.

THEA 151 Improvisation
Focuses on understanding the value of improvisation as a tool for actors and theatre-makers. You will acquire skills in freeing the imagination, exploring narrative and developing awareness of the needs of the group. Students from many disciplines – including Law, Education, Commerce, Design, Music, Dance, Physical Education, English, and Film and Media Studies – enrol for this paper.

THEA 152 Theatre Technology
This paper introduces students to the design of theatre technology, including the design and operation of lighting, the use of audio technology and creation of soundscapes, as well as the responsibilities and skills involved in stage management. Students put these skills into practice by working on our weekly Lunchtime Theatre productions.

Another recommended paper is:

THEA 153 Voice and Movement

Voice and movement are fundamental to the way we communicate with the world. These modes of expression are in turn linked to the wider notions of gender and representation. This paper introduces theories, issues and skills related to communication with a practical focus on the development and refinement of body and voice as a “performance instrument”.

200-LEVEL AND BEYOND

200- and 300-level papers teach a variety of performance and theatre-making skills as well as theatre history, textual analysis and performance theory.

Performance and craft skill oriented papers include: approaches to actor-training based on Stanislavsky’s system (THEA 252 The Actor’s Imagination); Shakespearean performance (THEA 351 Performing Shakespeare); playwriting (THEA 241 and 341); directing (THEA 352 Directing); and design for performance (THEA 256/356). The core second-year paper THEA 221 Truth and Representation introduces students to the study of theatre history and to the close analysis of dramatic texts. Other papers include: THEA 323 Performance Research; THEA 322 Australian and New Zealand Drama; THEA 324 Aspects of Modern Drama and Theatre; THEA 253/353 Bi-cultural Theatre; MUSI 265/365 Music and Theatre; THEA 255/355 Performing Ireland and THEA 325 Radical Theatre 1880-2000, which looks at various manifestations of the avant-garde in theatre and performance.

Student numbers are restricted in some of the 200- and 300-level papers: THEA 241 Playwriting, THEA 341 Advanced Playwriting, THEA 351 Performing Shakespeare and THEA 352 Directing.

Theatre Studies also offers a full postgraduate programme, including Honours, PGDipArts, MA, MFA and PhD.

Theology and Religion

See Religion.

Theology is concerned with the critical study of Christianity; the study of Religion looks at a range of religious traditions.

Theology is studied by students from a variety of backgrounds. The primary qualification for entry is an interest in religious questions.

Theology papers can lead to a BTheol or BA degree, or form part of a degree in Science, Commerce, Education or Law. They are often of particular interest to students completing degrees in other subjects in the Liberal Arts or Social Sciences.

There are three subject areas within Theology:

1. Biblical Studies (BIBS) explores the Jewish and Christian Scriptures, looking at the origins of the biblical writings and the history of their interpretation. Language study is required to proceed to postgraduate study
2. Christian Thought and History (CHTH) deals with the Christian faith and the historical development of the Christian Church. It looks at Christian beliefs from historical, philosophical and ethical standpoints
3. Pastoral Studies (PAST) concentrates on the theory and practice of Christian ministry and spirituality.

CAREER OPPORTUNITIES

Graduates develop valuable skills in critical thinking, research and communication. They go on to develop careers in any number of roles:
Tourism

Josh Jenkins’ decision to study tourism was based on a gap year working at Hamilton’s Mystery Creek Events Centre. His decision to come to Otago was based on the healthy combination of academic and social life.

“Family and friends raved about the excellent learning facilities as well as the compact student quarter. I had a fantastic time and even met my wife in my first year.”

They met at City College, where modern apartment-style living differs from Otago’s other fully catered residential colleges, and offers “a great introduction to flating life”.

First year Tourism was a surprise. “It wasn’t as hands-on and practical as I expected, but that’s often the nature of first year papers. From the second year on it was really interesting and motivating.

“Facilities at the Business School were great. The tourism lecturers were really friendly and supportive and had an open-door policy if you needed to talk. I loved the department and I’ve kept up relationships and contacts since graduating.”

Josh first door-knocked his way to a guiding job with Monarch Wildlife Cruises. While helping host a social event on board he met the chief executive of Tourism Dunedin and soon landed a research co-ordination role with the council organisation.

“I moved on to be Digital Marketing Coordinator, which gave me a huge understanding of the tourism industry. I really started to use tourism theory, and skills I’d developed at the University came into play.

“They weren’t just academic skills, but also social skills I’d picked up from the lifestyle at the University. They’ve helped me as much as anything. I’d advise students to take any opportunity you can — both academic and extra curricular.”

Currently Josh is spearheading Dunedin’s bid to win the Gigatown contest for fastest internet in the southern hemisphere: gigatownndunedin.co.nz
teaching, social work, journalism, librarianship, administration, aid and development agencies, government department work, and church leadership and ministry.

100-LEVEL PAPERS
If you intend to complete a Bachelor of Theology (BTheol) degree, you must take the following 100-level papers:

- BIBS 112 Interpreting the Old Testament
- BIBS 121 Interpreting the New Testament
- CTHH 102 The History of Christianity
- CTHH 111 Doing Theology
- CTHH 131 God and Ethics in the Modern World

If you intend to major in Biblical Studies (BA), you must take the following 100-level papers:

- BIBS 112 Interpreting the Old Testament
- BIBS 121 Interpreting the New Testament

If you intend to major in Christian Thought and History (BA), you must take the following 100-level papers:

- CTHH 102 The History of Christianity and other
- CTHH 111 Doing Theology or
- CTHH 131 God and Ethics in the Modern World

DISTANCE LEARNING
Theology papers are also offered by the University’s Distance Learning programme and may be credited to a BTheol degree or Diploma for Graduates. Most papers are taught by way of audioconference, but some are available as one-week intensive courses.

Tourism
See profile on page 135.

Tourism is one of New Zealand’s leading industries. It offers unparalleled opportunities to contribute to a sustainable economy and confirm our “100% Pure” global brand. Tourism is a global growth industry and so while the Tourism degree has a strong business emphasis, close attention is also paid to the ethical, cultural, social and environmental dimensions of tourism.

Studying Tourism is about understanding those people who come to visit New Zealand. It is also about understanding ourselves, as tourists and travellers, and understanding our role in the global economy.

The BCom (Tourism) critically explores multiple and dynamic facets of the international tourism industry. This innovative major prepares students for careers in tourism and related industries, by exploring the effects and ongoing planning and management issues associated with tourism at both destination and business levels, in New Zealand and globally.

CAREER OPPORTUNITIES
Graduates work in government ministries (tourism policy and planning), regional and national tourism organisations (e.g. tourism and marketing), businesses (e.g. adventure, ecotourism – guiding, interpretation, visitor management), events, conference and convention management, interpretation, accommodation and facilities management, heritage management, and in visitor attractions such as museums, art galleries and wineries.

100-LEVEL PAPERS
For a Bachelor of Commerce majoring in Tourism, you must complete the following paper (and also meet BCom degree requirements, including the completion of all BCom core BSNS papers – see the Business and Commerce entries for details):

- TOUR 101 Introduction to Tourism

200- and 300-levels cover tourism destination, enterprise management, tourist behaviour and hospitality. Other papers include wine, conventions and events management, cultural and heritage tourism, tourism product development, accommodation management, ecotourism and sustainable development, and sport tourism.

Wildlife Management
The Postgraduate Diploma in Wildlife Management is open to all graduates, although preference may be given to students with some Biology or Ecology in their degrees. Applicants should have a minimum B+ average over their four best relevant 300-level papers.

CAREER OPPORTUNITIES
The major objective of the Wildlife Management Diploma is to train students with the skills necessary for employment in some aspect of wildlife or ecological management research. Recent graduates have found positions in government ministries, the Department of Conservation, Crown Research Institutes, Fish and Game Councils, regional and local authorities, private wildlife management consultancies and community-led restoration projects.

100-LEVEL AND BEYOND
There are no undergraduate Wildlife Management papers. Students not majoring in a Biological Science are recommended to include in their degrees STAT 110 or STAT 115, and ZOOL 316. In addition, ECOL 111, ECOL 211 and ZOOL 319 would be advantageous.

Writing
The Department of English and Linguistics offers a minor in Writing, which can be taken alongside major subjects in Arts, Science or Commerce, including the major in English. There are papers in Professional Writing, Academic Writing and Creative Writing. Completing this minor demonstrates to prospective employers that a student has mastered the complex writing and communication skills they seek. The minor consists of five papers. However, papers may also be taken individually.

Toxicology
See Pharmacology and Toxicology.
Zoology

Zoology studies the biology of animals at many levels: molecular, physiological, structural, evolutionary, behavioural and ecological.

The University of Otago emphasises the diversity and conservation of New Zealand’s unique animals and gives an appreciation of how animals function, whether they live on land, in fresh water, in the sea or as parasites.

CAREER OPPORTUNITIES
Graduates work in government departments, Ministry for Primary Industries, the Department of Conservation, Crown Research Institutes, regional and local authorities, medical and veterinary laboratories, wildlife and fisheries management, environmental consultancy and education.

100-LEVEL PAPERS
There are no 100-level Zoology papers. If you intend to major in Zoology (BSc), you must take the following 100-level papers:

- CELS 191 Cell and Molecular Biology
- BIOL 112 Animal Biology
- and either
- STAT 110 Statistical Methods
- or
- STAT 115 Introduction to Biostatistics

200-LEVEL AND BEYOND
200-level papers deal with the diversity of animal life, both invertebrate and vertebrate, animal evolution and physiology.

300-level papers deal with freshwater ecology, conservation biology, environmental physiology, neurobiology, behavioural and evolutionary ecology and biological data analysis. Zoology staff also teach 300-level papers in evolutionary and developmental genetics and marine science.

There are postgraduate courses in Ecology, Biotechnology, Environmental Science, Genetics, Marine Science and Zoology. A one-year Postgraduate Diploma in Wildlife Management and a two-year Master of Science Communication are open not only to graduates in Zoology, Ecology and other biological sciences, but also to non-graduates with appropriate qualifications or practical experience.
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