FOR STUDY IN
2019

Science
Biomedical Science
Biotechnology
Brewing
Environmental and Conservation Science
Food and Nutritional Science
Geoscience
Mathematical Science
Veterinary and Wildlife Science
Our exciting science courses give you the skills employers need.

Great discoveries don’t just happen in the classroom. Our practical, hands-on courses will immerse you in the natural environment, research laboratories and commercial facilities.

If you’re interested in a career in science, FedUni’s courses – including biomedical, environmental, chemical, physical, mathematical, food and nutritional science, exercise and sport, and animal sciences – will provide you with the skills and knowledge you’ll need to gain employment in this expanding field that supports a wide range of industries and services.

Designed in consultation with industry, our courses are internationally recognised for producing graduates who are equipped with relevant, up-to-date knowledge and skills.

Our courses will take you on a learning experience that includes problem solving, practical industry placements, field trips and research opportunities.
Entry Requirements
Entry Requirements will be determined by your background.

Recent Secondary Education: Current Year 12 students, including applicants who have completed Year 12 within the previous two years (and have not undertaken Higher Education or VET studies), must meet Year 12 prerequisite entry requirements.

Eligible applicants will be ranked for admission based on their ATAR and ATAR Adjustment Factors – e.g. Special Entry Access Scheme (SEAS) and Subject Adjustments. Applicants will be selected in order of ranking and the number of offers made to applicants will be based on course specific quotas.

Non year 12 applicants are people who have undertaken Higher Education or VET studies; completed Year 12 more than 2 years previously; or those who are being considered based on other work/life experience. These applicants will be considered based on relevant background, as well as demonstrated ability to undertake further studies.

Some courses have extra requirements during the application process. Depending on the study area, this may be an interview, folio or audition, test or additional form. These are essential requirements and must be completed in order to be considered for selection.

FedUni offers a range of admission pathways for students who do not meet specified entry requirements.

How to apply
You can apply to FedUni via VTAC or direct application. How you apply, and the subsequent entry requirements will be determined by your applicant background.

Higher Education applicants: Current Year 12 students and applicants applying for more than one institution must apply through VTAC. Non Year 12 students only applying to FedUni can submit a direct application form to FedUni.

TAFE applicants: Please check individual courses as application requirements may vary.

Study modes
You may study full-time or part-time, on-campus, or online (where applicable), or a blend of study modes where available.

Student fees
Fees will vary dependent on your circumstances and what course you apply for.

Scholarships, grants and bursaries
Scholarships, grants and bursaries are available to eligible students and may be awarded based on academic merit, indigenous background, financial challenges and hardship or relocation support.
There are many ways for you to achieve the qualification you need for your chosen career.
FedUni offers study at various levels — from VET and undergraduate study through to postgraduate and research. Use the above diagram to see how the levels of study work together, and where each course is on your path to success.
Visit federation.edu.au/pathways

Foundation Access Studies (FAST)
NOTE: FAST is an alternative entry option for most FedUni undergraduate courses.

Admission pathways

VCE or equivalent or VCAL

Bachelor of Science

Certificate IV in Food Science and Technology
National Course Code: FDF40311

Foundation Access Studies (FAST)

Bachelor of Food and Nutritional Science

Bachelor of Biotechnology

Bachelor of Biomedical Science

Bachelor of Veterinary and Wildlife Science

Bachelor of Science (Honours)

Diploma of Conservation and Land Management
National Course Code: AHC51116

Bachelor of Environmental and Conservation Science

Bachelor of Mathematical Science

Bachelor of Geoscience

Research programs
Master of Science
Doctor of Philosophy (PhD)

Bachelor of Science

Bachelor of Biomedical Science

Bachelor of Veterinary and Wildlife Science

Bachelor of Environmental and Conservation Science

Bachelor of Mathematical Science

Bachelor of Geoscience

Bachelor of Science

Bachelor of Biomedical Science

Bachelor of Veterinary and Wildlife Science

Bachelor of Environmental and Conservation Science

Bachelor of Mathematical Science

Bachelor of Geoscience

Audit of Science

Academic support programs
We understand that starting your life as a university student is exciting, but that it also involves change with a challenge or two along the way.
To help you meet these challenges, and to succeed, we have a range of student-focused programs and services available.
To find out more visit federation.edu.au/student-support
Careers in Science

Science
- Biologist
- Chemist
- Ethical advisor
- Laboratory worker
- Physical science technical officer
- Research assistant
- Research scientist
- Resource analyst
- Science field officer
- Strategic planner
- Sustainability officer
- University educator

Biomedical Science
- Biochemist
- Biomedical engineer
- Biomedical scientist
- Clinical scientist
- Forensic scientist
- Healthcare scientist
- Clinical biochemist
- Microbiologist
- Museum officer
- Pathology technician
- Teacher
- Research scientist

Biotechnology
- Biological scientist
- Biotechnologist
- Clinical scientist
- Development chemist
- Ecological advisor
- Forensic scientist
- Healthcare scientist: genetics
- Healthcare scientist: IVF
- Immunologist
- Life scientist
- Patent examiner
- Policy advisor

Brewing
- Beverage manufacturer
- Brewer
- Food process worker
- Food technologist

Environmental and Conservation Science
- Conservation and biodiversity manager
- Cultural geographer
- Cultural heritage officer/manager
- Ecologist
- Environmental advisor/consultant
- Environmental and conservation biologist
- Environmental planner
- Environmental policy developer
- Environmental protection officer
- Environmental scientist
- Ethical advisor
- Fire management scientist
- Forestry officer
- Hydrologist
- Landcare worker
- Land management consultant
- Natural resource manager
- Pest management officer
- Resource analyst/manager
- Soil scientist
- Sustainability officer

Food and Nutritional Science
- Educator
- Environmental health officer
- Food chemist
- Food flavourist
- Food microbiologist
- Food policy officer
- Food safety auditor
- Food technologist
- Health promotion practitioner
- Health and safety officer
- Life scientist
- Nutritionist
- Quality control technologist
- Sensory scientist

Geoscience
- Engineering geologist
- Environmental geologist
- Exploration geologist
- Geologist
- Geomorphologist
- Geoscience data manager
- Geotechnician
- Hydrogeologist
- Land use geologist
- Metallurgist
- Mine geologist
- Mineralogist
- Natural resource manager
- Petroleum geologist
- Production geologist
- Science educator
- Stratigrapher
- Structural geologist

Mathematical Science
- Actuary
- Business analyst
- Cryptanalyst
- Data analyst
- Data engineer
- Data scientist
- Finance analyst
- Intelligence analyst
- Mathematician
- Modelling analyst
- Policy advisor
- Risk analyst
- Statistician
- Strategic planner
- Teacher

Veterinary and Wildlife Science
- Animal control officer
- Animal technician
- Biological scientist
- Clinical scientist
- Conservation and biodiversity manager
- Ecological advisor
- Evolution and adaptation biologist
- Fisheries officer
- Park ranger
- Policy advisor
- Quarantine officer
- Researcher
- Wildlife officer
- Zoologist

Industry Placement Program

The Industry Placement Program (IPP) is an opportunity for you to gain valuable and relevant workplace experience while working towards your science degree.

You will take part in a two-year professional development program within the field of your degree, receiving up to 26 weeks industry placement, and an industry funded scholarship payment of up to $15,000.

Throughout your placement, you’ll apply knowledge learnt in the classroom, while developing the hands-on employment skills sought by employers.

federation.edu.au/ipp

Chloe Szkwarek
Bachelor of Science: Industry Placement Program

Chloe recently completed a seven month placement at Loy Yang B Power Station. “I enjoyed learning about the different processes including basic operations and the environmental aspects of the power station. I was placed with the Chemical, Environment and Compliance team at Loy Yang B and was part of a project supporting the review and development of the Loy Yang B Gas Pipeline Environmental Management Plan.”

The placement also involved working alongside an Engineering Technologist to develop the plan in accordance with regulatory requirements. “I learnt many new skills such as document writing for legislative requirements, and worked with environmental consultants as part of an environmental survey. The valuable industry experience gained has given me a new perspective on careers in this field, as well as the confidence to apply new skills to future roles.”
Develop-work ready skills with us

Your studies can take you outside the University to ensure you are skilled and prepared for real-life science careers when you graduate.

Students have access to first class instrumentation at the Carbon Technology Research Centre which also operates as a commercial laboratory with the latest in advanced analytical and diagnostic equipment.

Federation Microbrewery is a high quality micro-brewery in our Science and Technology Building at Mt Helen where students can learn the science and processes of authentic brewing.

New anatomy and physiology laboratories at Berwick provide a first-class teaching and learning environment.

Industry and site visits

Depending on the course or major study area, you may visit farming and breeding enterprises to see animal husbandry in real life including; chicken farms, aquaculture operations, beef and dairy production, sheep breeders and horse studs. You may also visit production landscape and forestry sites.

Food and nutrition students may visit and collaborate with a wide range of food manufacturing industries ranging from raw material processing through to product manufacture.
Field Work
Field work can take you to outback New South Wales, Phillip Island, the Otway ranges, Wilson’s Promontory National Park, Gippsland Lakes region and the Flinders ranges in South Australia.

You may visit native and restored environments, be involved in wildlife counts and hear from experts on-site about research and monitoring activities.

Geoscience offers international and local geology tours to fascinating locations.

All of our campuses have areas of native vegetation, lakes and/or creeks that provide opportunities for on-site field studies.

International Study experiences
Undergraduate students contribute to research on global health problems. For example, some of our post-graduate students are currently working in Cambodia and Papua New Guinea, in efforts to reduce the burden of infectious disease in these countries.

Our international partnerships allow our students to experience environmental, conservation and wildlife projects with significant and lasting impact and provide an opportunity to visit and study at the National Trust for Nature Conservation, Nepal. Students may also visit Hebei University, in Northern China.

Geoscience students may enhance their understanding of the field in a range of international locations such as Timor, Hawaii and New Zealand.

Nanya Arid Zone Research Station
Nanya Station is a magnificent 40,000 hectare property in far western New South Wales. It is used for both teaching and research. Its unique system of natural salt lakes, old growth Mallee, and variety of intact ecosystems, makes Nanya a significant refuge for biological diversity.

Nanya can accommodate more than 40 staff and students within the original refurbished station building and new facilities. Activities at the station include monitoring and surveying the unique range of fauna and flora.
Help make food safe for consumers. Start a career in the food technology industry, or wine production.

Our one-year certificate will give you the skills you need to step up your career or break into the food technology industry. You can work in research and development, quality control, laboratory testing, production supervision, technical services, marketing and management within the huge food manufacturing industry here in Australia or overseas.

You will use your scientific and analytical skills to learn about storing, processing, preserving, packing and distributing food so that it is safe and hygienic. You’ll be responsible for protecting the health of many Australians and you may wish to work overseas to assist with food programs in developing countries.

Career opportunities
Students who successfully complete the certificate can look forward to a rewarding career as a food technologist. Food technologists work in a wide range of areas including research and development, quality control, laboratory testing, production supervision, technical services, marketing and management within the food manufacturing industry.

Further study options
• Bachelor of Food and Nutritional Sciences
study.federation.edu.au/science

Diploma of Conservation and Land Management

Protect endangered species. Advise on bushfire prevention programs. Manage waterway redevelopment projects. Take your love for the environment and make it your career.

You will develop skills across science and management. This hands-on diploma has an emphasis on practical learning. Upon completion, students have strong field experience underpinned by theoretical knowledge. You will learn to develop management plans for designated areas, including pest management. You will also learn to sample soils and interpret results. You will study the management of fauna populations, conduct biological surveys, collect and classify plants and will develop sound scientific and critical analysis skills. This will prepare you for your career in the field as well as laboratory and management positions.

Career opportunities
Conservation officer, landcare technician, pasture and irrigation technician, fisheries officer, field assistant.

Your skills will be sought by environmental and bush regeneration organisations, government and private water authorities, parks and waterways authorities, land care groups, catchment management authorities, contractors in land management and rehabilitation, and sustainable agricultural, forestry/fisheries or mining activities and departments concerned with vertebrate pest and weed management. Successful completion of the course will allow up to one year’s credit toward the Bachelor of Environmental and Conservation Science.

Further study options
• Bachelor of Environmental and Conservation Science
study.federation.edu.au/science

What will you study?

Areas of study
• Develop a management plan for a designated area
• Conduct biological surveys
• Collect and classify plants
• Define the pest problem in a regional or broader context
• Prepare reports
• Manage fauna populations
• Support implementation of waterway strategies
• Produce maps for land management purposes
• Develop conservation strategies for cultural resources
• Manage wildfire hazard reduction programs

Correct at time of printing. Study areas and majors are subject to change. Please refer to study.federation.edu.au
If you are fascinated by science, this comprehensive degree could be your passport to an exciting future in many diverse areas. Tailor your studies to your specific career destination and interests.

The Bachelor of Science provides a foundation in scientific practice and a specialisation in at least one discipline area chosen from thirteen major study areas. The degree is delivered in small applied laboratory classes and workshops, allowing the development of advanced skills sought by employers.

The emphasis is on acquiring skills in scientific communication, data analysis and quantitative literacy, problem solving and research skills, and a comprehensive understanding of the scientific and ethical framework of at least one major study area.

Graduates have the opportunity to undertake a research-based honours degree to enhance their employment prospects and postgraduate study opportunities.

**Professional recognition**

Depending on your major area of study, you may be eligible to join professional bodies: Royal Australian Chemical Institute; Australian Society for Microbiology; Environment Institute of Australia and New Zealand; and others.

**Career opportunities**

Depending on the areas of specialisation, you may find government or private sector employment in: medical science, earth science, environmental management, analytical laboratories, computer support, health, environmental planning and sustainability, consultancy or research. The analytical skills of science graduates are also in high demand in education, marketing, administration and business management.

**Industry experience**

You may apply for the Industry Placement Program (IPP). Please refer to page 3.

**Further study options**
- Bachelor of Science (Honours)
- Master of Teaching (Secondary)

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**What will you study?**

**Sample Course Structure:** For example, majors in Microbiology and Chemistry

<table>
<thead>
<tr>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chemistry 1</td>
<td>• Analytical techniques</td>
<td>• Medicinal chemistry</td>
</tr>
<tr>
<td>• Scientific practice</td>
<td>• Biochemistry</td>
<td>• Food chemistry</td>
</tr>
<tr>
<td>• Principles of biology</td>
<td>• General microbiology</td>
<td>• Food microbiology</td>
</tr>
<tr>
<td>• Environmental studies</td>
<td>• Environmental chemistry 1</td>
<td>• Environmental microbiology</td>
</tr>
<tr>
<td>• Chemistry 2</td>
<td>• Biotechnology laboratory techniques</td>
<td>• Environmental chemistry 2</td>
</tr>
<tr>
<td>• Scientific communication</td>
<td>• Elective 1</td>
<td>• Clinical microbiology</td>
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<tr>
<td>• Statistical methods</td>
<td>• Elective 2</td>
<td>• Elective 1</td>
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<tr>
<td>• Elective 1</td>
<td>• Elective 3</td>
<td>• Elective 2</td>
</tr>
</tbody>
</table>

Correct at time of printing. Study areas and majors are subject to change. Please refer to study.federation.edu.au
## Areas of Study in the Bachelor of Science

<table>
<thead>
<tr>
<th>Major/Minor</th>
<th>Ballarat</th>
<th>Gippsland</th>
<th>Online*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biochemistry</strong> considers the chemical processes and compounds of living organisms focusing on biology in the context of chemistry. This area examines the molecular basis of living systems and the application of molecular genetics for medical, industrial, and environmental processes.</td>
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<tr>
<td><strong>Biological Sciences</strong> is the study of life. Studies range from physiological aspects of human and animal species to the cellular processes and genetics of organisms in healthy and diseased states.</td>
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<tr>
<td><strong>Biotechnology</strong> brings living organisms and advanced biological techniques together to create products that provide innovative and sustainable technologies. This area focuses on the practical applications of a range of biological processes.</td>
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<tr>
<td><strong>Chemistry</strong> is at the core of science and is the study of all matter and its interactions; the composition, structure, properties and behaviour of substances is studied. Chemists measure, harness and transform substances for useful applications.</td>
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</tr>
<tr>
<td><strong>Earth Materials</strong> focuses on composition of the earth’s crust, the formation of minerals and rocks, and their role in energy production and economic uses, such as mining.</td>
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<tr>
<td><strong>Ecology</strong> is the study of the interactions of organisms and their environment. The adaptations of species to their environment, population and community structure and the concept of the ecosystem will all be covered within the framework of conservation biology theory.</td>
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<tr>
<td><strong>Environmental Geoscience</strong> considers the development of sediments and soils, earth’s water resources, the evolution of the earth’s surface and geologic hazards.</td>
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<tr>
<td><strong>Environmental Restoration</strong> focusses on land and water resources and methods for the restoration and remediation of degraded ecosystems and landscapes.</td>
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</tr>
<tr>
<td><strong>Food Science</strong> explores the science behind food to ensure food is safe, tasty, nutritious, and meets the needs and desires of consumers.</td>
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<tr>
<td><strong>Health and Nutrition</strong> provides students with an opportunity to develop an enhanced understanding of the key aspects that impact on our health, in both positive and detrimental ways.</td>
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<tr>
<td><strong>Information Technology</strong> will complement studies in science through acquiring foundation knowledge in programming, multi-media design, data management and data mining.</td>
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</tr>
<tr>
<td><strong>Mathematics</strong> encompasses the study of numerical, algebraic and analytical structures and the development of quantitative methods. Mathematics is essential for complex modelling and other applications in science, engineering and non-science fields.</td>
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</tr>
<tr>
<td><strong>Microbiology</strong> focusses on the diverse roles of microscopic life in environmental, industrial and medical science. This area has extensive applications including the production of safe foods and drinking water, and controlling infectious diseases.</td>
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</tr>
<tr>
<td><strong>Mineral Processing</strong> involves extractive metallurgy and mineral processing, and the branches of chemistry that support this field.</td>
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</tr>
<tr>
<td><strong>Statistics</strong> incorporates methods for communicating data, predicting outcomes and provides a framework for experimental design and analysis.</td>
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</tr>
</tbody>
</table>

*Attendance is required for most study areas for a block of approximately 4 days per semester.*
Bachelor of Biomedical Science

Joe Dawson
Biomedical Science Graduate; Graduate Medicine student

Following his Biomedical Science degree at FedUni Joe is pursuing study to realise his dream of becoming a medical doctor. “I am continuing study in a Bachelor of Medicine/Bachelor of Surgery course to become a rural doctor. I want to help people understand their health in the world of changing treatment and technology.”

“My Biomedical Science course was comprehensive, and I have acquired practical laboratory experience and a strong understanding of the field.

Learn all about the human body and the processes associated with disease in this degree. Find out how you can help improve human health and contribute to important research.

Biomedicine is an exciting area that plays a major role in helping people to lead healthier lives. It’s an industry that is constantly evolving. You’ll learn about anatomy, pathophysiology, genetic sciences and can go on to work in areas like genome biology, genetic mapping, stem cell research and biological pharmaceuticals.

Industry experience
You may apply for the Industry Placement Program (IPP). Please refer to page 3.

Further study options
• Bachelor of Science (Honours)
• Master of Teaching (Secondary)

What will you study?

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<tr>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
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<tbody>
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<td>• Principles of biology</td>
<td>• Biochemistry</td>
<td>• Laboratory management and quality assurance</td>
</tr>
<tr>
<td>• Chemistry 1</td>
<td>• General microbiology</td>
<td>• Mammalian genetics</td>
</tr>
<tr>
<td>• Scientific practice</td>
<td>• Analytical techniques</td>
<td></td>
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<tr>
<td>• Introduction to nutrition</td>
<td>• Pathophysiology 1</td>
<td></td>
</tr>
<tr>
<td>• Chemistry 2</td>
<td>• Nutrition and metabolism</td>
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</tr>
<tr>
<td>• Statistical methods</td>
<td>• Immunology</td>
<td></td>
</tr>
<tr>
<td>• Scientific communication</td>
<td>• Biotechnology laboratory techniques</td>
<td></td>
</tr>
<tr>
<td>• Systems biology</td>
<td>• Pathophysiology 2</td>
<td></td>
</tr>
</tbody>
</table>

Correct at time of printing. Subject to change. Please refer to study.federation.edu.au

Career opportunities
When you graduate, you’ll be prepared for a career in biomedical research or one of many positions in a range of health-related industries such as laboratory technology, medical sales, research and pharmaceuticals.

This degree has been used as a pathway to postgraduate studies in medicine, physiotherapy, dentistry, pharmacy and other allied health programs, as well as veterinary science.

Although completion does not automatically guarantee entry into a Graduate Medical School, it does fulfill the anatomy, physiology and biochemistry pre-requisites required for entry into graduate medicine at some institutions.

Extra Requirements
Non-Year 12: Applicants applying based on work/life experience must complete a personal statement.

Year 12 applicants will be ranked for admission based on ATAR and relevant adjustments. Refer to page 1 for details.
FEDERATION UNIVERSITY AUSTRALIA | CAREER GUIDE

Bachelor of Biotechnology

Biotechnology is an exciting field of science with important applications in medicine, agriculture and food production.

As a graduate, you can work in many areas including production of vaccines, antibiotics and drugs, creating alternative fuels, quality control, and even producing the latest flavours and sweeteners for the food industry.

During your studies, you’ll learn how to use innovative and sustainable technologies for the benefit of your community, wider Australia and overseas.

This laboratory-based degree has a core of basic science studies including principles of modern instrumentation, experimental design and data analysis, biochemical and microbiological techniques and recombinant DNA technology. You can also explore in depth your favourite area through a research project in your final year as well as your choice of electives.

Industry experience

Links with regional industries enable final-year students to participate in directed biotechnological research in an applied research project.

You may apply for the Industry Placement Program (IPP). Please refer to page 3.

Career opportunities

Graduates may find employment in areas such as the production of vaccines, antibiotics, drugs and diagnostic kits, waste treatment processes, environmental monitoring programs, quality control, production of alternative fuels, synthesis of organic chemicals and polymers, and biologically-based applications in the food industry.

Further study options

• Bachelor of Science (Honours)
• Master of Teaching (Secondary)

<table>
<thead>
<tr>
<th>Duration</th>
<th>3 years FT or PT equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Gippsland Campus (Churchill) Mt Helen Campus (Ballarat) Off-campus/Online</td>
</tr>
<tr>
<td>Application</td>
<td>VTAC/Direct</td>
</tr>
<tr>
<td>Entry Requirements</td>
<td>(Refer to page 1 for full details)</td>
</tr>
</tbody>
</table>

Year 12: Units 3 and 4: a study score of at least 20 in any English; and a study score of at least 20 in one of any Mathematics or any Science; or interstate/overseas equivalent.
Non-Year 12: HE, VET and/or Work/life experience.

Extra Requirements

Non-Year 12: Applicants applying based on work/life experience must complete a personal statement.

Year 12 applicants will be ranked for admission based on ATAR and relevant adjustments. Refer to page 1 for details.

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<tr>
<td>• Statistical methods</td>
<td></td>
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<tr>
<td>• Systems biology</td>
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<tr>
<td>• Elective 1</td>
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<td>• Biochemistry</td>
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<tr>
<td>• General microbiology</td>
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<tr>
<td>• Analytical techniques</td>
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<td>• Nutrition and metabolism</td>
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<td>• Immunology</td>
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<tr>
<td>• Elective 2</td>
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<tr>
<td>• Molecular cell biology</td>
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<tr>
<td>• Food microbiology</td>
<td></td>
<td></td>
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<tr>
<td>• Organic synthesis for drug design</td>
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<tr>
<td>• Laboratory management and quality assurance</td>
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<tr>
<td>• Advanced methods in biotechnology</td>
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<tr>
<td>• Medicinal chemistry</td>
<td></td>
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<tr>
<td>• Research project</td>
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</tbody>
</table>

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Consider the impact humans have on the natural world and work to implement solutions.

You’ll conduct fieldwork in some fascinating ecosystems including arid, coastal and forested areas to put the theory you’re learning into practice. You’ll learn about the management, conservation and rehabilitation of our natural and degraded ecosystems.

Areas to explore include ecology and wildlife, water and climate, mine site rehabilitation, landscape management and restoration with a strong focus on the Australian environment. Your electives are just as practical and stimulating, with subjects available including mine site rehabilitation, landscape restoration, fire ecology and land and water contamination.

There is an emphasis on developing professional skills encouraged and required by industry and government departments.

**What will you study?**

**Career opportunities**

Career choices include: conservation of native flora, fauna, and ecosystems, ecological restoration to repair or reinstate ecological function and ecological risk management – where you may work to address key threatening processes, such as environmental change, resource use and human population expansion.

Employment opportunities exist with environmental agencies, government departments, energy suppliers, water companies, consultancies, engineering and construction firms, environmental lobbying organisations, forestry and agriculture to name just a few.

**Industry experience**

Staff maintain close working relationships with the Department of Environment, Land, Water and Planning (DELWP), Victoria, and carry out research and consultancy activities for other bodies such as Parks Victoria, VicRoads, Landcare groups, Catchment Management Authorities and private organisations.

You may apply for the Industry Placement Program (IPP). Please refer to page 3.

**Further study options**

- Bachelor of Science (Honours)
- Master of Teaching (Secondary)
Bachelor of Food and Nutritional Science

If you enjoy science, and are intrigued by the scientific basis of food production and nutrition, this is the ideal degree for you.

If you’d like to be a nutritionist, a product developer or a laboratory analyst, this in-depth course covers everything from the scientific study of ingredients to marketing the final product. Food and nutritional scientists are in high demand in the food industry to manage operations, develop new and better products and processes, and improve the efficiency and quality of the industry.

This degree will take you through all aspects of food, from the raw product to how it ends up on the store shelf. You’ll learn about food processing, product development, quality assurance and how to market food products online and around the world.

There is also a focus on the importance of nutrition to human health, and the sociological and cultural issues relating to food, including quality of taste for consumers. This course provides an ideal background for further studies in dietetics.

Duration
3 years FT or PT equivalent

Location
Gippsland Campus (Churchill)
Mt Helen Campus (Ballarat)
Off-campus/Online

Application
VTAC/Direct

Entry Requirements
Year 12: Units 3 and 4: a study score of at least 20 in any English; and a study score of at least 20 in one of any Mathematics or any Science; or interstate/overseas equivalent.
Non-Year 12: HE, VET and/or Work/life experience.

Extra Requirements
Non-Year 12: Applicants applying based on work/life experience must complete a personal statement.

Year 12 applicants will be ranked for admission based on ATAR and relevant adjustments. Refer to page 1 for details.

Career opportunities
On completion of this course you will be qualified to be employed in a diverse range of companies, government and research organisations.

Some of the many areas include: product development and management, community nutrition, laboratory analysis or management, quality assurance and control, research and development, food policy development and marketing and technical sales.

Industry experience
You may apply for the Industry Placement Program (IPP). Please refer to page 3.

Professional recognition
On successful completion, you will be eligible for membership with the Australian Institute of Food Science and Technology (AIFST) and the Nutrition Society of Australia (NSA).

Further study options
• Bachelor of Science (Honours)
• Master of Teaching (Secondary)

What will you study?

Year One
• Principles of biology
• Chemistry 1
• Introduction to Nutrition
• Scientific practice
• Systems biology
• Chemistry 2
• Introduction to food science
• Scientific communication

Year Two
• Biochemistry
• General microbiology
• Analytical techniques
• Food processing systems 1
• Nutrition and metabolism
• Statistical methods
• Biotechnology laboratory techniques
• Food processing systems 2

Year Three
• Laboratory management and quality assurance
• Food microbiology
• Lifespan nutrition
• Product and process development
• Food chemistry
• Clinical microbiology
• Elective 1
• Elective 2

Jessica Kelly
Technical Assurance Engineer, True Foods Pty Ltd

Jessica is currently working for a leading local manufacturer in the bakery sector in a quality assurance/Compliance role. “Within this role I have enjoyed the training aspects and their contribution to continuous improvement. As a result I am currently undertaking a Cert IV in Training and Assessment to extend my skills in this area.”

Jessica enjoyed the opportunities to explore food safety and other aspects of food science in a focused way. “The industry visits to explore the practical implementation of material we were learning was invaluable, and through these connections I also gained my current Graduate position.”
Bachelor of Geoscience

With our degree, you'll learn all about the geology of our planet - the structure, physical history, composition and dynamic systems.

You’ll explore our planet through both theory and field experience, using mapping, technology and historical data to build conceptual models. You will learn how these models can help you estimate where mineral, water and other natural resources are located beneath the earth's surface. We will also teach you how to extract these resources in a sustainable way. You will also gain experience in identifying and mitigating natural hazards.

The degree is highly interactive and teaches you the specialised skills you need to work in this field. You can choose to specialise in exploration/mine geoscience or environmental geoscience. Your field skills will be honed at world-renowned sites in Victoria, New South Wales and South Australia.

This course provides specialist training for those who wish to pursue professional careers in mineral and oil exploration, extractive industries, environmental science, or hydrogeology.

### Duration
3 years FT or PT equivalent

### Location
Mt Helen Campus (Ballarat)

### Application
VTAC/Direct

### Entry Requirements
(Refer to page 1 for full details)

- **Year 12:** Units 3 and 4: a study score of at least 20 in any English; and a study score of at least 20 in one of any Mathematics or any Science; or interstate/overseas equivalent.

- **Non-Year 12:** HE, VET and/or Work/life experience.

### Extra Requirements

- **Non-Year 12:** Applicants applying based on work/life experience must complete a personal statement.

### Career opportunities
Graduates of this degree are widely recognised by employing agencies as having excellent applied skills in their chosen field. Past graduates have found rewarding careers in the mining industry, government geoscience organisations and the petroleum exploration sector, as well as engineering and environmental geologists. Geoscience qualifications are highly regarded in all resource-rich countries, including Australia.

### Industry experience
You may apply for the Industry Placement Program (IPP). Please refer to page 3.

### Professional recognition
Graduates are eligible for membership of a number of professional societies, including the Australasian Institute of Mining and Metallurgy, and the Australian Institute of Geosciences. Membership of either professional body carries accreditation with the Australian Stock Exchange, a requirement for some practising geologists in order to authorise the release of company reports.

### Further study options
- Bachelor of Science (Honours)
- Master of Teaching (Secondary)

### What will you study?

<table>
<thead>
<tr>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chemistry 1</td>
<td>• Structural geology</td>
<td>• Geochemistry</td>
</tr>
<tr>
<td>• Environmental studies</td>
<td>• Hydrology</td>
<td>• Petrology</td>
</tr>
<tr>
<td>• Earth’s living history</td>
<td>• Sedimentology and stratigraphy</td>
<td>• Paleontology</td>
</tr>
<tr>
<td>• Planet earth</td>
<td>• Landscape evolution</td>
<td>• Geophysics</td>
</tr>
<tr>
<td>• Inorganic chemistry</td>
<td>• Fieldwork principles and practice</td>
<td>• Tectonics and petrogenesis</td>
</tr>
<tr>
<td>• Scientific practice</td>
<td>• Optical mineralogy</td>
<td>Fieldwork</td>
</tr>
<tr>
<td>• Scientific communication</td>
<td>• Economic geology</td>
<td>Elective 1</td>
</tr>
<tr>
<td>• Statistics</td>
<td>• Geographic information systems</td>
<td>Elective 2</td>
</tr>
</tbody>
</table>

Correct at time of printing. Subject to change. Please refer to study.federation.edu.au

**Jack McInerney**

**Bachelor of Geoscience**

Jack has enjoyed the hands-on teaching style with industry-connected staff and practical placement. "There is an extensive fieldwork component over the three year course. We are exposed to a wide range of rock types and environments, particularly on our field trips which really helps."

Jack undertook a summer work placement at CEG Ballarat Goldmine, a gold explorer and producer with five significant tenements in the central Victorian gold belt. "In my placement I was engaged in a wide range of activities including core logging, the regional soil sampling program and structural mapping. I consider the experience excellent for me to fast-track into the mineral industry."
**Bachelor of Mathematical Science**

This degree will allow you to work across all sorts of industries, whether in Australia or overseas, and it will help you grow your passion for maths.

You enjoy solving complex equations. Did you know that you can use your maths skills to solve real-life problems too?

A degree in mathematics provides unique training in abstract reasoning highly sought after by a wide range of employers. This degree will provide you with a strong foundation in the basic principles and techniques of mathematics and an understanding of how mathematics is applied in the real world. You will also develop communication and report writing skills to enhance your employability.

Graduates may choose to undertake a Master of Teaching (Secondary) and become a VCE mathematics teacher.

**Industry experience**

You may apply for the Industry Placement Program (IPP). Please refer to page 3.

**Further study options**

- Bachelor of Science (Honours)
- Master of Teaching (Secondary)

**Career opportunities**

Graduates of the Bachelor of Mathematical Science will be equipped to work across an extremely varied range of careers in the public and private sectors. Perhaps you’ll work in national security, banking, financial advice, commerce, stock broking, forecasting, logistics, manufacturing or engineering. Our graduates have also gone on to work as medical statisticians, cancer treatment analysts, and internet security analysts. You may choose to move into teaching maths or IT by completing our Master of Teaching degree, or pursue postgraduate studies and research.

### What will you study?

<table>
<thead>
<tr>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Communications in technology</td>
<td>• Agile coding</td>
<td>• Modelling and change (adv level)</td>
</tr>
<tr>
<td>• Upon the shoulders of giants</td>
<td>• Statistics for prediction</td>
<td>• Modelling the environment</td>
</tr>
<tr>
<td>• Modelling and Change Intro. level</td>
<td>• Modelling and change</td>
<td>• Advanced elective</td>
</tr>
<tr>
<td>• Modelling and change (intro. level)</td>
<td>• Profit loss and gambling</td>
<td>• Analytics project 1</td>
</tr>
<tr>
<td>• Secrets of the matrix</td>
<td>• Space, shape and design</td>
<td>• Puzzles, patterns and proofs</td>
</tr>
<tr>
<td>• Elective 1</td>
<td>• Statistics for prediction</td>
<td>• Advanced elective</td>
</tr>
<tr>
<td>• Elective 2</td>
<td>• Elective 1</td>
<td>• Elective 1</td>
</tr>
<tr>
<td>• Elective 3</td>
<td>• Elective 2</td>
<td>• Elective 2</td>
</tr>
</tbody>
</table>

Correct at time of printing. Subject to change. Please refer to study.federation.edu.au
Bachelor of Veterinary and Wildlife Science

If you are passionate about animal science, this hands-on degree provides an exciting opportunity to focus on animal health and management.

This degree offers a regional perspective relevant to local wildlife and animal health, and will also highlight key issues of international relevance by exploring suitable examples and case studies. Laboratory-based learning is supported by fieldwork at sites such as farming and breeding enterprises, animal health practices and natural habitats with wildlife populations.

You will study a wide range of topics including anatomy, animal health, biochemistry, cellular metabolism, immunology, microbiology, physiology and zoology.

In the final year, there is an opportunity for a research project or industry placement to explore your own area of interest and develop advanced technical skills.

What will you study?

<table>
<thead>
<tr>
<th>Year One</th>
<th>Year Two</th>
<th>Year Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Principles of biology</td>
<td>• Australian fauna</td>
<td>• Molecular cell biology</td>
</tr>
<tr>
<td>• Chemistry 1</td>
<td>• Animal management and disease</td>
<td>• Mammalian genetics</td>
</tr>
<tr>
<td>• Scientific practice</td>
<td>• General microbiology</td>
<td>• Pathophysiology 1</td>
</tr>
<tr>
<td>• Systems biology</td>
<td>• Biochemistry</td>
<td>• Case studies in animal management</td>
</tr>
<tr>
<td>• Chemistry 2</td>
<td>• Wildlife ecology and conservation</td>
<td>• Clinical microbiology</td>
</tr>
<tr>
<td>• Biodiversity conservation</td>
<td>• Immunology</td>
<td>• Pathophysiology 2</td>
</tr>
<tr>
<td>• Scientific communication</td>
<td>• Biotechnology laboratory techniques</td>
<td>• Elective 1</td>
</tr>
<tr>
<td>• Elective 1</td>
<td>• Statistical methods</td>
<td>• Elective 2</td>
</tr>
</tbody>
</table>

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Berwick based students: First year chemistry subjects include a compulsory one day excursion to access specialised equipment at the Gippsland Campus. Students will be transported to Churchill and back to Berwick and will meet other students from other campuses on this day. There will be no additional cost to students.

Career opportunities

Graduates have a wide range of career opportunities in animal management and welfare, animal biotechnology and pharmaceutical industries, research institutes and centres, diagnostic laboratories, animal quarantine and disease surveillance, wild animal research and management.

Professional recognition

You will be prepared for further studies in veterinary science to allow you to practice in the field. Past graduates of this course have been successful in gaining graduate entry into veterinary science. Your eligibility will depend on the university and your results.

Industry experience

You may apply for the Industry Placement Program (IPP). Please refer to page 3.

Further study options

• Bachelor of Science (Honours)
• Master of Teaching (Secondary)

Jayden Daldy
Graduate Livestock Scientist, Turi Foods, Victoria

I studied Veterinary and Wildlife Science and have found my degree has been important in the workplace. The areas of vertebrate biology and animal management techniques have been invaluable in both acquiring and succeeding in this position.

The job involves a great deal of variety including the monitoring of poultry health and welfare, and liaising with farm managers at a range of sites. I am involved in the appraisal of all aspects of good farming practice across the company’s contract farms. I really enjoy my job, and the complexities and challenges associated with managing such a large number of animals make every day interesting and exciting.
Further study options

Bachelor of Science (Honours)

- **Duration**: 1 year FT or PT equivalent
- **Location**: Gippsland Campus (Churchill) Mt Helen Campus (Ballarat) Off-campus/Online
- **Application**: Direct
- **Entry Requirements** (Refer to page 1 for full details)
  - Completion of a relevant bachelor degree with a D average/ GPA 6.0 or better in the third year or in a relevant sequence.

Honours is a research year that can be taken after successfully completing a bachelor degree in any area of science or mathematics. You will have the opportunity to run a supervised research project in a chosen area of interest. This experience will enhance your qualifications and prepare you to apply for master or PhD level studies.

Graduate Certificate in Brewing

- **Duration**: 2 years PT
- **Location**: Off-campus/Online Workshops at Mt Helen (Ballarat)
- **Application**: Direct
- **Entry Requirements** (Refer to page 1 for full details)
  - Completion of a bachelor degree or TAFE Diploma, or evidence of completion of relevant workplace training.

Designed to provide students with an in-depth knowledge of the scientific principles and practice of malting and brewing. The Graduate Certificate overviews the whole brewing process, it provides significant detail in the areas of raw materials, wort production, fermentation and analysis, which may be typically required for small scale breweries, suppliers of breweries, and allied industries.

Graduate Diploma of Brewing

- **Duration**: 2 years PT
- **Location**: Off-campus/Online Workshops at Mt Helen (Ballarat)
- **Application**: Direct
- **Entry Requirements** (Refer to page 1 for full details)
  - Completion of Graduate Certificate in Brewing

Designed to provide students with an advanced knowledge of the scientific principles and practice of malting and brewing. The Graduate Diploma includes detailed information in areas relevant to the large scale brewing industry such as types of packaging, quality assurance and quality management, and the engineering principles of brewing.

Graduates from these courses generally find employment in the malting and brewing industries. For example, past graduates have opened their own brewery, worked in craft breweries, or worked for major brewing companies.

Rowena West
Bachelor of Science (Honours)
Laboratory Manager,
Gippsland Water Factory

Rowena’s first job since graduation is a coordination role where she is able to apply her strong interest and ability in chemistry at a major domestic and industrial wastewater treatment facility.

Rowena’s responsibilities include mentoring new staff, reviewing laboratory documentation, maintaining instruments and routine and non-routine analyses to monitor the treatment processes.

“My job is diverse and no two days are the same. It can be challenging at times, however highly rewarding. What I enjoy most about my job is the friendly people I work with and the ability to use the skills developed during my degree”

Rowena attributes her success to the opportunities provided at FedUni including smaller class sizes, making life-long friendships and undertaking the Honours course.

“I participated in many rewarding activities including studying in China and conducting my own research. These experiences helped to develop motivation, confidence, a work ethic and passion for doing and teaching science.”
Master of Science

<table>
<thead>
<tr>
<th>Duration</th>
<th>1.5 years FT</th>
</tr>
</thead>
</table>
| Location | Gippsland Campus (Churchill)  
Mt Helen Campus (Ballarat) |
| Application | Direct |

**Entry Requirements**

Refer to page 1 for full details.

Four year honours bachelor degree, or degree with honours, at least second class honours level, that included a dissertation demonstrating the ability to undertake research at masters level; or qualifications and/or demonstrated skills, experience, research, or publications which are assessed as being at least equivalent to the qualifications above.

This Masters by Research degree sees candidates working with a Principal Supervisor, appointed by the Research Higher Degrees Sub Committee, with the approval of the School. The degree is awarded on the basis of an externally examined thesis of approximately 40,000 words.

Graduates are well placed to gain senior level research positions with government or industry. They may be employed as consultants, in research or the tertiary sector.

Advanced Research

PhD level and Advanced Research is carried out in Science and Technology in a diverse range of areas, including:

- animal health
- asset management and condition monitoring
- climate change and landscape restoration
- mathematical optimisation: theory and methods
- resources engineering and metallurgy
- biomedical science.

A common theme underpinning nearly all research is a concern with the impact of that research on the environment, society and economy in which we live, on a regional, national and global scale.

Bharti Garg

PhD Candidate

Bharti is a chemical engineer with 12 years of experience in the oil, gas and sugar industries. Studying in Gippsland, home to coal-based power generation, Bharti’s climate change focussed research has industry sponsorship from the CSIRO.

“My PhD was a good opportunity to develop practical applications for my chemical engineering knowledge in carbon capture and storage with the potential to help reduce climate change.”

“I am investigating amine regeneration technologies on samples from CSIRO’s pilot plant at AGL Loy Yang’s brown coal-fired power station. The amine-based liquid absorbents under investigation will remove these harmful gases out from brown coal-fired power stations. Regenerating these absorbents will help reduce the costs of the CSIRO’s novel technology”. Bharti’s research promises outcomes that will be highly important for CSIRO and will also have wider social benefits: “It will not only decrease harmful gas emissions and climate warming but will also create jobs in the Gippsland region.”

“FedUni’s Churchill campus is close to CSIRO’s pilot plant and has the expert supervision and latest equipment for my research project at its Carbon Technology Research Centre.”
Open Day 2018
Sunday, 26 August 2018
Ballarat, Berwick and Gippsland

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#1 in Australia for employability, technical, and adaptive skills, as rated by employers.#

#1 for overall employment outcomes^

#1 in student support^*

#1 in skills development^*

#1 for median salary^*

# 2017 Employer Satisfaction Survey, Australian Federal Government’s Quality Indicators Learning and Teaching (QILT)
^ 2016–2017 Victorian Institution Survey Results, Australian Federal Government’s Quality Indicators Learning and Teaching (QILT) www.qilt.edu.au
* Good Universities Guide 2010–2017

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Wimmera Campus
Horsham

Ballarat Campuses
Mt Helen, Camp Street and SMB campuses

Berwick Campus

Gippsland Campus

Ballarat

Churchill

MELBOURNE

VICTORIA

NSW