# Five facts about the Bachelor of Science

**#1: Seeks to inspire**

Solving the great challenges facing modern society requires individuals who understand science and technology.
#2: Develops varied graduate attributes

- Problem-solving skills
- Ability to work with others and independently
- Logical thinking skills (methods of science)
- IT skills
- Analytical skills
- Communication skills

BSc

#3: Teaching & Learning environment

- Subjects taught by top scientists and engineers
  - Exposed to up-to-date research
- Facilities
  - State-of-the-art learning and teaching spaces
  - Access to research-level equipment
- Parkville Precinct
  - Bio21 – biotechnology hub
  - VLSCI – super computer
  - Melbourne Brain Centre

#4: Opportunity

- Opportunities to
  - learn collaboratively,
  - put your science interest into a bigger context,
  - communicate about science as mentors, writers, web designers,
  - engage in community,
  - gain research experience (UROP), and
  - learn on exchange at international partner institutions.
#5: Choice

Diverse first-year experiences
- Allows you to explore multiple areas of interest

Coherence
- Single discipline, or multidisciplinary majors

Flexibility and choice
- At least two majors kept open to the end of second year
- 35 majors to choose from

Deconstructing the majors

Bachelor of Science – 35 majors
My Major: Bachelor of Science

Sample course plan

First year
- Physics 1
- Calculus 1
- Linear Algebra
- Introductory Microeconomics

Second year
- General Mechanics & Dynamics
- Fluid Analysis & Applications
- Thermodynamics & Optics

Third year
- Partial Differential Equations
- Vector Analysis
- Statics
- Thermal & Climate Systems
- Weather & Climate Systems
- Numerical & Symbolic Mathematics

Career pathways

Bachelor of Science – pathways

- Science knowledge foundational
- Science breadth

Straight to employment:
- Resources, Technology, Environment, Finance, Health

Graduates programs for graduates of all degrees:
- Law, Management, Teaching, Information Systems

Graduate coursework programs for BSc graduates:
- Engineering, Dentistry, Medicine, Physiotherapy, Optometry, Nursing, Vet Science...
- Master of (emphasis on profession)...
- Environment, Biotechnology, Operations Research & Management Science, Forest Ecosystem Science

Pathways to research higher degrees
My Major: Bachelor of Science

BSc pathways – straight to employment

Industries include:
- agriculture
- community industries
- defence
- finance
- government
- health care
- logistics
- mining
- telecommunications

Graduates with majors in:
- agricultural science
- geology
- chemistry
- physics
- mathematics

are amongst the top 10% of salary earners.

Bachelor of Science – pathways

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Pathways to research higher degrees

BSc pathways – graduate study

In 2011:
73% of graduating students went on to further study
60% of graduating students went on to further study at Melbourne
27% enrolled in research training courses such as Honours, MSc
13% enrolled in the Master of Engineering
14% enrolled in Health Science Higher Degrees
**My Major: Bachelor of Science**

**From BSc to a career in Health Sciences**

- **Plan A: Doctor of Dental Surgery**
  - Take the required prerequisites in the BSc, and at the same time you could also ...

- **Plan B: Major in Biochemistry**
  - Complete a major in Biochemistry and Molecular Biology and possibly go on to Honours Study in this discipline, and at the same time you could also ...

- **Plan C: Master of Science (Bioinformatics)**
  - Include some IT or maths subjects in your undergraduate studies

**From BSc to a career in Science Research**

- Complete a major in science and then
- Continue with further study
  - BSc Honours
  - MSc courses
  - Master of Agricultural Science
  - Master of Biotechnology
  - Master of Information Systems
  - and many other options

**BSc pathways – from first-year to your chosen career**

<table>
<thead>
<tr>
<th>First-year package</th>
<th>Second &amp; third year</th>
<th>Graduate study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural sciences</td>
<td>Complete a major in science, engineering or technology in your area of interest</td>
<td>Animal Sciences</td>
</tr>
<tr>
<td>Chemical Sciences</td>
<td></td>
<td>Business</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td></td>
<td>Earth/Environ'l Sciences</td>
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<tr>
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<td></td>
<td>Engineering</td>
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<tr>
<td>Engineering Systems</td>
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<td>Health Sciences</td>
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<td>Information Technology</td>
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<tr>
<td>Life Sciences</td>
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<td>Law</td>
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<tr>
<td>Mathematics</td>
<td></td>
<td>Research</td>
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<tr>
<td>Physical Sciences</td>
<td></td>
<td>Teaching</td>
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Ensure you complete the necessary prerequisites to continue with your chosen graduate course.
What is biotechnology?

- “All lines of work by which products are made from raw materials with the aid of living organisms” – Karl Ereky
- Commercialising the products of research in the life sciences
What is biotechnology?

The lab bench-to-supermarket shelf transition

Many areas of science contribute to biotechnology

Where could I wind up?

There are over 400 biotech companies in Australia, 130 are listed on the ASX

Source: Nature Biotech (2008) 26, 753-762
My Major: Bachelor of Science

Biotech, a sunrise industry

Most Ozbiotech companies are based in Melbourne

Source: BioMelbourne Network

Biotech @ UM – a flexible pathway

The biotechnology major provides choice

Source: BioMelbourne Network

Careers Practitioners Seminar
Animal Science and Management
Dr Ian Bland

Source: BioMelbourne Network
My Major: Bachelor of Science

Bachelor of Science
(Animal Science & Management)

- Ensuring ethical use of animals as a resource for advancing human endeavour.
- Support and enhance the integral roles that animals play in sustaining our lives.

What do Animal Scientists do?

Animal science professionals are essential for ensuring the ethical treatment of animals in use as a resource for:
- Food
- Fibre
- Recreation
- Research
- Sport
- Work
- Companionship

What do you study in Animal Science & Management?

- Welfare, ethics and protection
- Behaviour
- Physiology
- Companion animal biology
- Nutrition
- Reproductive technology
Sample course plan: 
Animal Science & Management

<table>
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<tr>
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<td>Animal care and welfare</td>
<td>Animal husbandry and nutrition</td>
<td>Animal production systems</td>
</tr>
<tr>
<td>Animal health services</td>
<td>Applied animal behaviour</td>
<td>Animal systems analysis</td>
</tr>
<tr>
<td>Animal ethics</td>
<td>Applied animal nutrition and genetics</td>
<td>Animal husbandry</td>
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Careers in Animal Sciences ...continued

- **Animal care and welfare** – animal welfare and protection, animal behaviour, improvement of conditions and treatment of animals, stockmanship and quality assurance, animal health services, improved and alternative management strategies.

Careers in Animal Science

- **Enterprise management** – manager of large livestock enterprises or farm service businesses (feed or animal health companies), adviser, livestock improvement officer, consultant or research scientist. Careers are available across the whole food supply chain, from the farm level to processing, distribution and marketing.
My Major: Bachelor of Science

Careers in Animal Sciences …continued

- Animal research and biotechnology industries – animal molecular genetics and breeding, identification and quality assurance, biotechnology in health related research and management methods.

Honours in Animal Science & Management

- Research project relating to applied problems within animal industries/organisations
- Provides a pathway towards a research higher degree (MPhil or PhD)
My Major: Bachelor of Science

Postgraduate study options

- Coursework options:
  - Master of Animal Science
  - Doctor of Veterinary Medicine (4 year program)
- Research options:
  - MPhil / PhD

Ecology & Evolutionary Biology

- Fundamental science of our biosphere.
- What controls where a species is found and how abundant it is?
- How did that species evolve from its ancestors?
- How do living things interact with the environment?
Favour the curious, those who want to work outside, fascinated by the natural world

What's involved?
Practical work
Understanding ecological and evolutionary theory
Appreciating and learning scientific methodologies for improving ecological knowledge

Careers—it's a jungle out there
- Government policy & practice
- Non Governmental Organizations
- Consulting
- Teaching
- Research – knowledge
  - Biodiversity
  - Botany
- Land use planning
  - Natural resource management
  - Forestry, fisheries, pests
  - Carbon economy
  - Conservation
  - Wildlife
- Risk assessment
- Natural products research
Applied questions

• How do populations respond to human actions?
• How to manage the environment?
• How to save species?

Thank you.