Next steps

BSc and beyond! Course and Career planning for your future

Associate Professor Michelle Livett
Director, Bachelor of Science
Plus a guest!

What's this session about?

Navigating your way through choices at the next year level

Keeping your options open - how flexible can you be?

What do you need for Careers & Graduate pathways?

Concurrent Diplomas - how?

What other opportunities are there?

Issues for you to explore

• What areas of study spark your interest?
• What related areas might also appeal?
• What opportunities could these open up?
• What are the differences between X and Y?
• Could you keep open the path to both X and Y?
• Are there requirements for Graduate programs you are interested in?
• Do you have to start on these now?
• etc. etc. …

Bachelor of Science – Next Steps

Career
⇒ Lots of opportunities, and
⇒ it could follow …

Graduate Coursework
⇒ professional entry
⇒ professionally oriented

Research
⇒ research training
⇒ honours
⇒ Masters
⇒ MPhil PhD
Future of 2012 graduates:
82% went on to further study
55% went on to further study at Melbourne in 2013. Of these,
- 36% enrolled in research training courses such as Honours, MSc
- 22% enrolled in the Master of Engineering or IT
- 18% enrolled in Health Science graduate programs (human!)
- 12% enrolled in the Doctor of Veterinary Medicine

* 2012 graduating numbers and Graduate Destination Survey

People with a science background say …

Analysing problems by synthesizing ideas and information from multiple sources is a skill I developed in science.

I think that if one is a scientist, taking an approach to life that is experimental, observation-driven and analytical is second nature.

As a clinician I need to evaluate and analyse the health situation from a rational perspective.

I work in a policy role, so gathering the required evidence to support policy development and to inform decision-making is an important part of my job … my science background means I am comfortable researching and analysing information …

Selection Criteria

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<th>G/D/H</th>
<th>C/M/E</th>
<th>A/F</th>
<th>L/PS</th>
<th>M</th>
<th>C/T/U</th>
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<td>Interpersonal and communication skills (written and oral)</td>
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<td>Passion/Knowledge of industry/ Drive/Commitment/Attitude</td>
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<td>Critical reasoning /analytical skills/Problem solving/Lateral thinking/Technical skills</td>
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<td>Cultural alignment / Values fit</td>
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<td>Emotional intelligence (self-awareness, character, confidence, motivation)</td>
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<td>7</td>
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<td>Teamwork skills</td>
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<td>Activities (including intra and extra curricular)</td>
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<td>Leadership skills</td>
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G/D/H = Government/Defence/Health, C/M/E = Construction/ Mining/Engineering, A/F = Accounting/Finance, M = Manufacturing,
L/PS = Legal/Professional Services, C/T/U = Communication/Technology/Utilities
A couple of examples

**Jenny Gray**
- MEng (Civil)
- MBA
- Master of Ethics
- Transport ministry in South Africa
- CEO, Zoos Victoria
- Communication, leadership, strategy ...

**Tim Flannery**
- BA (majoring in English)
- MSc (Earth Sciences), PhD
- Australian of the Year, 2007
- Chief Councillor, Climate Council
- Writing, research capacities, strategy ...

Next steps

**Bachelor of Science – Next Steps**

Use your university experience:
- **Science core:**
  - choice of major – relevance to future career?
  - skill development?
  - meeting prerequisites for graduate entry?
- **Breadth:**
  - Focus on demonstrating diverse range of skills – communication, critical reasoning, teamwork and leadership
- **Co-curricular activities**
  - Volunteering, leadership, work experience

Next steps

**Bachelor of Science – Next Steps**

- **First year:**
  - Students choose from several “packages” of subjects, each underpinning several majors
  - These provide a range of skills and knowledge
- **Second year:**
  - Refining choice, with at least two majors kept open to the end of second year – if you choose to
  - Complementary or contrasting subjects
- **Third year:**
  - Major – a coherent package of subjects, capping off the degree
  - Single discipline or multidisciplinary majors are available

Next steps

**By the end of your degree**

Make sure you have …
- Completed all the degree requirements
  - Check the handbook!
- **Enriched your degree** with … (more later)
- Completed the prerequisites for graduate programs you are seeking to enter

You can add flexibility in second year … with a cost of less flexibility in third year

Next steps
**Bachelor of Science – structure**

Overall requirements ... 300 points
- ≤ 125 points at first year level

50 points
- ≤ 37.5 pts at first year level

225 points
- ≥ 62.5 points at level 1 (no more than 37.5 pts in one area)
- ≥ 62.5 points at level 2
- ≥ 75 points at level 3 (including major)

25 points
- Science or Breadth

**What is a major?**

- Coherent body of study (50pts) undertaken at third year level.
- Reflects an enhanced depth of understanding in a chosen field.
- Contains a Capstone experience.
  - Pulling together the strands of study in the major.
  - Opportunities for application.
  - Preparation for your future work, further study, research.
- Majors do not guarantee or enhance selection into health science graduate programs (but may provide acceleration in other areas, e.g. Engineering, Veterinary Medicine).
- Majors do enhance areas for research training programs (Honours and Masters).

[http://www.capstonebranding.com/about/capstone.php](http://www.capstonebranding.com/about/capstone.php)

**Choosing a major**

- Think about
  - Your interests
  - Your future plans for a career
  - Making sure you have a back-up plan
- Explore
  - Majors info opportunities
  - The SSC majors page

**Chemistry**
- Reactivity and Mechanism
- Advanced Practical Chemistry
- Specialised topics in Chemistry A and/or
- Specialised topics in Chemistry B or …

**Electrical Systems**
- Electrical Network Analysis & Design
- Electrical Device Modelling
- Signals and Systems
- Digital Systems Design

**Food Science**
- Advanced Food Analysis
- Food Processing and Preservation
- Food Research and Development
- Functional Foods and Nutrition

**Microbiology (Infection & …)**
- Principles of Immunology
- Medical Microbiology: Bacteriology
- Medical Microbiology: Virology
- Techniques in Microbiology or …

Bolded: capstone experience
Plan A, B, C

Next steps

Plan A: Career in Chemistry
- Take the required prerequisites in the BSc
- Careers in chemical and materials industries, from drug design to environmental science
  and at the same time you could also ...

Plan B: Master of Biotechnology
- Use your Chemistry knowledge in the applied sciences.
  or you could ...

Plan C: Master of Teaching
- Teach Chemistry in secondary schools

Next steps

From BSc to a career in Chemical Sciences

Completing breadth ...

Think about really using the development opportunities, search for:

- **Communication**
  - Communicating Science and Technology
  - Intercultural communication
- **Leadership, Leading, Lead**
  - Leading in a complex world
  - Creativity and knowledge enhancement
- **Work Experience**
  - Science and Technology Internship
  - School Experience as Breadth
- **Ethics**
  - Matters of Life and Death
  - Understanding Australian media
- **Global**
  - Community Volunteering for Change
  - Sustainability in Developing Communities
Completing breadth – **tracks**

**Science, Technology and Society**
- Science and Pseudoscience
- Social Technologies
- Science and Society

**Knowing and Learning**
- Understanding Knowing & Learning
- Knowledge, Learning and Culture
- Knowing and Learning in the Professions

**Entrepreneurship & Innovation**
- Managing and Leading Organisations
- Managing Operations
- Managing Entrepreneurship & Innovation

Bachelor of Science – **common pattern**

**First year**
- Level 1
- Level 1
- Level 1
- Level 1 breadth

**Second year**
- Level 2
- Level 2
- Level 2
- Level 2 breadth

**Third year**
- Level 3 - major
- Level 3 - major
- Level 3
- Level 3 breadth

Bachelor of Science – **variations**

**First year**
- Level 1
- Level 1
- Level 1
- Level 1 breadth

**Second year**
- Level 2
- Level 2
- Level 1
- Level 1 breadth

**Third year**
- Level 3 - major
- Level 3 - major
- Level 3
- Level 3 breadth

Concurrent diplomas

**Concurrent diplomas – 1-year equivalent**
- Fast track - overload in second and third years (if you maintain a 70% average)

**Diploma in Informatics**
- Skills for the use of computers to gather, use, store, retrieve, and visualise digital information – relevant to all areas of science & engineering
- 100 points of Informatics subjects, including Foundations of Computing, Algorithms

**Diploma in Mathematical Sciences**
- Enrich and broaden your mathematics experience
- 100 points of Mathematics/Statistics subjects, including 50 points at third-year level
Concurrent diplomas

Concurrent diplomas – 1-year equivalent
Diploma in Languages
For students seeking to begin language study, or further develop their language skills
Entry: Complete two first-year language subjects in first year.

Diploma in Music (Practical)
Practical, ensemble and elective subjects, alongside Bachelor of Music students
Entry: By audition

Concurrent diploma – with cross credit
First year
Diploma
Diploma

Second year
Diploma
Diploma

Third year
Diploma
Diploma

Major

Bachelor of Science – enrichment
Make the most of other opportunities:
- Develop your CV through
  - Work experience
  - Internships
  - Volunteering
  - Leadership
- But don’t forget BALANCE!!!!!
Bachelor of Science – enrichment

- Leaders in Communities
  (msl.unimelb.edu.au/awards-grants-initiatives/leaders)
- Exchange - study overseas for a semester or a year
  (www.mobility.unimelb.edu.au)
- Careers experience
  (careers.unimelb.edu.au)
  • Internships
    (SCIE30002)
- Research experience
  (SCIE30001; within majors, see SSC website)

Next steps

Careers and Employment

- Part-time and casual work
- Students@Work
- Internships and work experience
- Volunteering
- Resume Review
- Interviews
- Careers Consultation
- Careers Drop-in Service
  (Monday to Thursday 12pm – 2pm)

Contact us / Find us:
- 8344 0100 @ Alan Gilbert building

BSc pathways: Careers resources
individual support

BSc pathways

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

Graduates programs for graduates of all degrees:
Law, Accounting, 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

BSc pathways: Careers resources
online career tools

Contact us / Find us:
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Next steps
**BSc pathways: Careers resources**

**Careers online**

careersonline.unimelb.edu.au

**Next steps**

**BSc pathways**

**Straight to employment:**
- Resources, Technology, Environment, Finance, Health
- "I work full time as a quantitative researcher in a hedge fund in America." - Pongphat Taptapapon BSc (Mathematics & Statistics)

**Graduates programs for graduates of all degrees:**
- Law, Accounting, Management, Teaching, Information Systems
- "I am an analyst for the Victorian Department of Treasury and Finance in the budget and financial management area." - Elizabeth Griffiths BSc (Biochemistry)

**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**

**Next steps**

**BSc pathways: a career in Environmental or Plant Sciences**

**My Plan A?**
- Finish my BSc and start working straight away

**My Plan B: Where I am now**
- **Master of Science (Botany)**
  - Why? Because I did more research and discovered my dream jobs require further study!

**My Plan C?**
- **Master of Environment** or a **Master of Forest Ecosystem Science**

**Next steps**

**BSc pathways: Pathways to research**

- **Pursue** an area of study that fascinates you
- **Check the prerequisites** for honours/MSc (they vary in how specific they are)
- **Seek out research experiences**
  - Research project subjects
  - Vacation studentships
  - UROP
- **Attend seminars** in departments of interest
- **Talk** to people!
BSc pathways

- Straight to employment: Resources, Technology, Environment, Finance, Health
- Graduates programs for graduates of all degrees: Law, Accounting, 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

Next steps

**How to become eligible for Engineering**

**First year**
- Engineering Systems Design 1
- Calculus 2
- Physics 1
- Breadth

**Second year**
- Mechanical Systems
- Engineering Computation
- Science elective
- Breadth
- Engineering Mathematics
- Science elective
- Breadth or elective

**Third year**
- Electrical Network Analysis and Design
- Digital Systems Design
- Science elective
- Breadth
- Signals and Systems
- Science elective
- Breadth
- Electrical Systems Major

Next steps

BSc pathways: Pathways to the Master of Engineering

- **Master of Engineering**
  - Biomedical Engineering
  - Biochemical Engineering
  - Chemical Engineering
  - Civil Engineering
  - Electrical Engineering
  - Environmental Engineering
  - Spatial
  - Mechanical Engineering
  - Mechatronics
  - Software Engineering
  - Structural Engineering

- **BSc major for fastest path**
  - Bioengineering Systems
  - Chemical Systems
  - Chemical Systems
  - Civil Systems
  - Electrical Systems
  - Civil, Chemical, Mechanical Systems
  - Spatial Systems (previously Geomatics)
  - Mechanical Systems
  - Mechanical, Electrical, Software Systems
  - Software Systems
  - Civil Systems

Next steps

**How to become eligible for Engineering**

**First year**
- Engineering Systems Design 1
- Calculus 2
- Physics 1
- Breadth

**Second year**
- Foundations of Electrical Networks
- Engineering Mathematics
- Science elective
- Breadth or elective

**Third year**
- Electrical Network Analysis and Design
- Digital Systems Design
- Science elective
- Breadth
- Electrical device Modelling
- Signals and Systems
- Science elective
- Breadth

Next steps
How to become eligible for Engineering

- Guaranteed CSP, or international fee places in the Master of Engineering (ME) are available for
  - All New Generation degree students who complete an Engineering Systems major with a weighted average of 65%* for the last two years, and meet the ME entry requirements, and commence the ME by 2019 (inclusive).
  - *students with ATAR >99.9 exempted from GPA requirement
- The ME is structured as follows:
  - Three year Masters degree
  - BSc & BBiomed graduates with Engineering Systems majors are eligible for 100 points credit, i.e. require only 2 years to complete ME
  - 3-year ME available for other NG graduates with relevant maths/science

Next steps

How to become eligible for Medicine, Dentistry, Physiotherapy

- Three subjects at level 2
- These subjects can be done in year 2 or year 3
  - Principles of Human Structure (ANAT20006)
    - Prerequisites: Biology of Cells and Organisms, Genetics and the Evolution of Life
  - Human Physiology (PHYS20008)
    - Prerequisites: Biology of Cells and Organisms, Genetics and the Evolution of Life
  - Biochemistry and Molecular Biology (BCMB20002)
    - Not required for Physiotherapy
    - Prerequisites: Chemistry 1, Chemistry 2

Next steps

How to become eligible for Optometry

- Three subjects at level 2 or 3
- Three subjects at second or third year level (or equivalent) from one or more relevant biological science disciplines
  - Prerequisites: Biology of Cells and Organisms, Genetics and the Evolution of Life
  - Possible additional prerequisites, depending in subject choice:
  - Chemistry 1 and Chemistry 2

Next steps

From BSc to a career in: Health Sciences

Plan A: Doctor of Medicine
- Take the required prerequisites in the BSc. and at the same time you could also ….

Plan B: Major in Cell and Developmental Biology
- Complete a major in Cell and Developmental Biology and possibly go on to Honours study and at the same time you could also ….

Plan C: Research & Development
- Cell and Developmental Biology can lead to an MSc in Biomedical and Health Sciences, Zoology, Botany or Genetics
- Work on research programs in cancer research, neuroscience and much more

Next steps
### From BSc (Cell & Developmental Biology) to a career in Health Sciences

**First year**
- Biology of Cells and Organisms
- Chemistry 1
- Calculus
- Breadth

**Second year**
- Fundamentals of Cell Biology
- Principles of Genetics
- Biochemistry & Molecular Biology
- Breadth or elective

**Third year**
- Concepts in Cell and Developmental Biology
- Molecular Aspects of Cell Biology
- Functional Genomics and Bioinformatics
- Cell Signalling and Neurochemistry
- Breadth

### From BSc to a career in Animal Health or Animal Science

**Plan A: Major in Animal Health and Disease**
- Veterinary Bioscience specialisation, then three-year DVM

**Plan B: Further pathway to DVM**
- Four year DVM following a degree with an approved major in the Biological Sciences

**Plan C: Alternative majors and career in animal science**
- Animal Health and Disease – Biotechnology specialisation; Animal Science and Management; Zoology
- Careers in Animal Welfare, Animal breeding, Animal behaviour research, Biotechnology

### BSc pathways: to the Doctor of Veterinary Medicine

**Selection for guaranteed entry for students completing:**
- Three subjects at **second year level**
  - Foundations of Animal Health 1, Foundations of Animal Health 2, Biochemistry and Molecular Biology
  - Note prerequisites – 25 points of Biology, Chemistry CHEM10003 & CHEM10004, 12.5 points of Physics if not completed in Year 12.
- If selected, you complete the Veterinary Bioscience specialisation of the Animal Health and Disease major
  - four subjects at **third year level** for the major
  - plus two further Veterinary Bioscience subjects
  - Continue to complete the final 3 years of the DVM

**Additional pathways:**
- Students completing a Biological science major, with level-2 Biochemistry subject, and Physics as above
  - eligible to apply for entry to the 4-year DVM
So, now …

• Ask for lots of advice:
  – Major info sessions/expos through to October.
• Really explore! … think outside the box
• Check out the course planning web page
• Plan carefully … with flexibility in mind
• Ask the Science Student Centre Advisors to check your plans
• Course plan online (from late October)
• Now ask questions!