

Section 5: Comparison of Biology units of study at the Universities of Sydney and Melbourne

General Overview of units of study

	University of Melbourne	University of Sydney
Semester 1	<ul style="list-style-type: none"> • Biology of Cells and Organisms • Biomedical Biology: Molecules, Cells and Organisms (specific service teaching) 	<ul style="list-style-type: none"> • Concepts in Biology • Concepts in Biology(Adv) • Agricultural Concepts (specific service teaching)
Semester 2	<ul style="list-style-type: none"> • Genetics and the Evolution of Life • Biomedical Biology: Genetics and Biodiversity(specific service teaching) 	<ul style="list-style-type: none"> • Human Biology • Human Biology(Adv) • Human Biosciences (specific service teaching) • Living Systems • Living Systems(Adv) • Agricultural Systems(specific service teaching)

Students may enter university biology at both universities without any specific requirement for senior biology to have been taken at school, except for the Advanced streams in the Sydney programs which require a high level of achievement in 2 unit Biology at the NSW High School Certificate (HSC).

Both campuses offer biology to a range of students. Service teaching is a normal component of most first year science teaching in the higher education sector in Australia. At Sydney service teaching caters for Pharmacy students, Nursing students, Agriculture students (in Agricultural Concepts and Agricultural Systems) and Education students (Human Biosciences), and at Melbourne for Biomedical Science students (Biomedical Biology: Molecules, Cells and Organisms and Biomedical Biology: Genetics and Biodiversity) and Institute of land and Food Resources (Agriculture and Forestry).

At both universities the units of study are full time on campus and this supports the majority of students who are school leavers taking a full time load. For purposes of administration, Sydney has the greater load with nine units of study for the two semesters compared with six units of study at Melbourne.

At Sydney, in addition to teaching in semester 1 and 2, two units of study (Concepts in Biology and Human Biology) are also offered in the Summer School (January/February) for full fee paying students who have either failed, or wish to accelerate their degree. Melbourne does not offer Summer School units.

Student Demographics - 2003

	University of Melbourne		University of Sydney
	Regular	Biomedical	
Male	30%	50%	31%
Female	70%	50%	69%
HSC Biology	36%	42%	51%
School leavers	95%	95%	85%
Full time	97%	100%	99%

The student demographics at the two universities are very similar, with large classes comprising primarily full time students who are school leavers, with the majority being female. More than 50% of the students do not have a prior Biology background from High School.

Student Enrolment 2003

	Semester 1		Semester 2	
	Melbourne	Biology of Cells and Organisms	Biomedical Biology: Molecules, Cells and Organisms	Genetics and the Evolution of Life
	1040	183	1000	183
Total	1223		1183	
Sydney	Concepts in Biology/ Advanced/ Agricultural Concepts/		Living Systems/ Advanced/ Agricultural Systems	Human Biology/ Advanced/ Human Biosciences
	1606		319	1438
Total	1606		1757	

The total numbers of students was similar until 2003 when the enrolment at Sydney was increased by about 500 students.

Objectives of the biology units

University of Melbourne	University of Sydney
<ul style="list-style-type: none"> * plan effective work schedules to be prepared for tutorials, practical classes and examinations. * be familiar with electronic forms of communication and be discerning in the use of the web for seeking information. 	<ul style="list-style-type: none"> * possess a sense of enquiry * apply knowledge and a sense of lateral thinking * use information and apply technology * develop self-worth and confidence * develop a sense of autonomy and

<ul style="list-style-type: none"> * integrate the computer software packages into the course to assist learning. * be able to complete basic manipulations with laboratory equipment, in particular use of microscopes. * develop skills in recording observations, analysis and interpretation of data. * develop skills in dissection techniques. * develop skills in preparing slides of fresh material. * develop skills in completing biological drawings. * access basic information from the library both electronically and in a traditional way. * begin to develop skills in working collaboratively with other students in a practical class. 	<ul style="list-style-type: none"> organising ability * able to communicate * able to understand concepts within the discipline * use appropriate learning strategies * develop willingness and capacity to continue learning beyond the formal education framework * develop an ability to critically analyse information * develop an understanding of concepts of modern biology * develop a sense of responsibility and independence as a learner and a future scientist * adopt a deeper approach to learning * develop enhanced skills in written, oral and interpersonal communication * use a team approach both to scientific endeavour and the process of learning * attain generic skills in computing, numeracy and data handling
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Load/course components

	University of Melbourne		University of Sydney
	Regular	Biomedical	All units
Semester length	12 week	12 week	13 week
% full time load	12.5%	12.5%	12.5%
Hours of lectures	36 x 1 hour	36 x 1 hour	38 x 1 hour
Hours of tutorials	11 x 1 hour	11 x 1 hour	Nil
Hours of practicals	10 x 3 hours = 33	11 x 3 hours = 36	12 x 3 hours = 36
Field trips	Nil	Nil	Nil

On balance students undertake the same lecture and practical load at both universities. However, at Melbourne students have an additional weekly one-hour tutorial session.

Facilities

	University of Melbourne	University of Sydney
Lecture theatres	500 seater	500 seater
Student laboratories <ul style="list-style-type: none"> • Usage • Computers in labs • Preparation rooms 	1 x 126 seater; 1 x 110 seater <ul style="list-style-type: none"> • Monday pm – Friday pm • Nil • 1 large (very old), 2 small 	4 x 60 seater <ul style="list-style-type: none"> • Monday pm – Friday am • 18 networked per lab • 1 large, 2 small - new
Computer access facilities	University access labs provide computers, Internet, printing facilities	University access labs provide computers, Internet, printing facilities
Learning Centre <ul style="list-style-type: none"> • Space • Computer facilities • Opening hours • Tutor support 	New from 2003 <ul style="list-style-type: none"> • 3 small breakout rooms; 1 wet tutorial room (35 seats); 2 dry tutorial rooms (40 seats in each) • 2 access labs with 60 computers (seats 90) • Open: 9-4.30 daily • 37.5 hours per week • 23 – 25 hours per week 	Since early 1970's <ul style="list-style-type: none"> • Nil • 15 computers (seats 30) • Open: 9.30-4.00 Monday-Thursday • 28 hours per week • 12– 14 hours per week

Laboratory

The major difference in laboratory facility is the size of the student lab, which has an impact on the management of teaching.

At the University of Melbourne one academic is required to run a practical session (supervise) of 120 students. This person has three supervising demonstrators (who are the dedicated 4 FTE Level A staff) each of whom has an assisting demonstrator (usually a postgrad). It is mostly a team of seven that teaches the 120 students (ratio 1:20), whilst the academic supervisor is responsible for communicating all the teaching and general notices to the students. They do with the support of a central teaching console, an overhead camera, compound and dissecting microscopes, microphone and video, which are all transmitted to TV screens throughout the laboratory. The supervising demonstrator runs a “show and tell” session throughout the entire lab time. The demonstrators are there to supplement the central teaching.

At the University of Sydney in each lab of 60 students there is a supervisor and three other demonstrators. The supervisor also demonstrates in the lab (ratio 1:15). In contrast at the University of Sydney, there is no central teaching console, and much of the teaching responsibility falls on the demonstrators with the supervisor responsible for general announcements and some discussion from the front. In 2003 a proportion of lab supervisors were casual demonstrators due to a shortage of available academic staff.

Learning Centre

At the University of Sydney there has been an in-house resource room/learning centre near the academic offices since the early 1970's. It is currently equipped with microscopes, computers linked to the Internet, teaching graphics, prepared microscope slides, lecture tapes for student use. A casual laboratory attendant acts as a "librarian".

At the University of Melbourne in 2003 a learning centre was established. It is an extensive facility comprising a small comfortable lounge, two computer rooms, three small collaborative learning rooms for students to meet in, one wet tutorial room and two dry tutorial rooms and 7 tutor offices. The learning centre was set up to provide an informal work space for the large numbers of first year students. It is envisaged that the learning centre will become a meeting space for students to work together, have lunch etc.

Assessment

	University of Melbourne	University of Sydney
Exam	80%	60 – 65%
Exam format	<ul style="list-style-type: none"> • 44% MCQ* • 33% short answers • 22% for 4 essays 	<ul style="list-style-type: none"> • 50% MCQ • 50% short answers
Lab work	20% (2% per prac – quizzes, lab book, techniques)	10 – 15% for prac quizzes
Tutorial work	Nil	Nil
Poster/oral	Nil	7%
Scientific Report/Paper	Nil	15 – 18%

* 2004, 10% mid-semester test; 70% exam

In Sydney there is a greater emphasis on continual assessment with 20% more of the total mark being allocated for this type of work. Within this continual assessment there is a considerable proportion of the marks assigned to the demonstration of written and oral communication skills.

The formal exam format in Melbourne has a greater range of formats for questions.

Class sizes

	University of Melbourne	University of Sydney
Lectures	500	500
Practical	126	60
Prac group sizes	20	15
Tutorial group sizes	30 - 35	N/A

At both universities the large lecture theatre model is used with up to 500 students being taught in lectures at the same time. Because of the physical size of the laboratories the class sizes are different. At both universities, within the large practical class groups,

small groups have been created for teaching purposes. At the University of Melbourne the staff-student ratio is 1:20 whilst at the University of Sydney it is 1:15.

Staffing arrangements - 2003

	Melbourne	Sydney
Technical support	Lab manager 3 technical staff	Lab manager 2 technical staff 1 lab assistant
Administrative support	1 administrative assistant	1 administrative assistant
IT support	1 of the above as part of their duties	1 computer support person/administrative assistant
Web support	Casual staff maintain web site/uploads materials	Administrative assistant maintains web site/uploads materials
Coordinator	Director of First Year Studies	Director of First Year Studies
First Year Biology Unit Academic Staff	Academic staff from Departments 0.4FTE Level A (7 people who are 0.8FTE during semester)	Deputy Director 0.5 Level B 2.5 full time Level A
Head demonstrator/supervisor in lab	One per lab session – academic staff (tutor) - with 3 assistant demonstrators	One per lab session (often a casual staff member) with assistant demos
Casual teaching staff in labs	None	50+ per semester

Print resources

	Melbourne	Sydney
Textbook	Mainstream biology - Knox <i>et al.</i> 2001 Biology Biomedical - Purves <i>et al.</i> Life the science of biology	Concepts/Living Systems - Knox <i>et al.</i> 2001 Biology Human Biology - Seeley <i>et al.</i> 2002 Essentials of anatomy and physiology
Student notes per semester	Laboratory manual - \$16 Lecture summaries - \$6	Laboratory manual + FYBCD-ROM - \$36 Skills book - \$6

At Melbourne student notes are printed at Melbourne Central Printing and sold in-house, whilst at Sydney student notes are both printed and sold through the University Copy Centre.

ICT learning resources

	Melbourne	Sydney
Management systems	WebRaft	<i>WebCT</i> and an in-house Virtual Learning Environment (VLE)
E-mail	All students have a free university account	All students have a free university account
Web site materials	Lecture notes, administration information, list of practical class assessment, subject descriptions, information for new students	VLE provides a “room” for each unit of study and within the room are lecture notes, learning modules, self-assessment modules, administration information, information for new students, discipline descriptions
CAL + multimedia	<i>See Appendix 5A for list.</i>	Online materials: 25 learning modules 23 self-assessments modules <i>See Appendix 5A for list.</i>

Management systems

At Sydney *WebCT* was adopted in 2001 as the campus-based management system. In Biology, prior to 2002, an in-house Virtual Learning Environment served in part as a management system for delivery of learning materials and communication. From 2002, *WebCT* has been introduced in biology units to manage marks, and a link to the VLE serves all other functions.

At Melbourne WebRaft is used. This is a management system linked to student record. It has a private and public domain and has features which allow development of tests and tutorials.

CAL

At both universities CAL materials are used to complement the teaching program as either essential curriculum materials or voluntary additional/revision/self-assessment material. The materials at Sydney are all online and since 2001 most of the materials have also been available on a CD-ROM in response to student comments (See Appendix 5A for list of modules).

Access to orientation and support services

	Melbourne	Sydney
Welcome days	Staff run separate days for these activities	Administrative assistant in office to deal with enquiries
Orientation day		
Ongoing support	Consultation with academic staff	Consultation with academic staff

Student evaluation and feedback of experience in biology

	Melbourne	Sydney
Questionnaires	University Quality of Teaching Questionnaire	
	Biology Questionnaire (content, staff organisation) <i>See Appendix 5B</i>	Biological Sciences Course Evaluation Questionnaire (content, staff, organisation) <i>See Appendix 5B</i>
		Laboratory Teaching Staff Questionnaire
Focus Groups		First Year Biology meeting with a representative from each lab session
Committee	Student-Staff Liaison Committee (meets once a semester)	Student-Staff Liaison Committee (meets once a semester)

At both universities the information gathered in by the various surveys is used to make improvements in the teaching and learning experience of first year students. As well as helping the teaching staff to assess their performance the data are used to inform senior management of the status quo and the recommendations for change.