755-BB Bachelor of Science

Year and Campus:	2008
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Undergraduate
Duration & Credit Points:	
Contact:	Faculty of Science Office Ground Floor Old Geology Building University of Melbourne Victoria 3010 AUSTRALIA Telephone +61 3 8344 6404 Facsimile +61 3 8344 5803
Course Overview:	There is no first year intake into this course from 2008. The Bachelor of Science degree is a three year program offering exciting and challenging opportunities in a wide range of areas at the cutting-edge of new technology and knowledge. All students are required to complete a major in a scientific discipline.
Objectives:	The Bachelor of Science has the objective of preparing graduates who embody the University of Melbourne graduate attributes, as well as additional attributes more specific to the BSc.
Subject Options:	A minimum (and maximum) of 300 points is required, which must include at least 237.5 science points, comprising: # between 75 and 125 science points at the 100-level; # completion of 50 points of a prescribed science major at the 300-level. All subjects attracting **science points** are indicated as such within the individual subject description. Note that: # at least 75 science points at 100-level must be completed; # a maximum of 125 points of science and non-science subjects at 100-level can be included; # at least 50 points at the 100-level must be completed before proceeding to 200-level subjects; # there are no 200-level requirements; # the 300 points can include up to 62.5 non-science points. Of the 62.5 non-science points, up to 25 points can be at the 100-level. The only exception to this is if students undertake a sequence of 100-level language subjects: in these cases the 62.5 non-science points can include up to 37.5 points at the 100-level; # students completing a major in psychology must complete 50 science points at 300-level (37.5 points of prescribed 300-level psychology subjects plus an additional 12.5 points of 300-level science subjects) All students in the BSc are required to complete a science major. A science major is defined as 50 points at 300-level in a discipline. # The psychology major is the clear exception to this rule as the psychology major requires completion of nine compulsory subjects and at least one elective (a minimum of 125 points in total) # The biotechnology major is also comprised of less than 50 points at 300-level, but it can only be undertaken in conjunction with another life sciences major. # The environmental science major can only be undertaken in conjunction with a second science major (which cannot be biotechnology or history and philosophy of science). # The history and philosophy of science major can only be undertaken in conjunction with a second science major (which cannot be environmental science). To complete a major, students complete one of the science majors listed below. Students may not complete alternative combinations of subjects to major unless written approval is obtained from the Associate Dean (Undergraduate Programs), Faculty of Science. The descriptions of science majors may vary from year to year. Students may complete a major as defined by the current structure or structure detailed in a previous year's handbook (e.g. The

2007 Undergraduate Studies Handbook) applicable to any year the student was enrolled in the course.

The following science majors are available to single degree BSc students:

Anatomy
Atmosphere and Ocean Sciences
Biochemistry and Molecular Biology
Biotechnology
Botany
Cell Biology
Chemistry
Computer Science
Conservation and Australian Wildlife
Ecology
Environmental Science
Genetics
Geography
Geology
History and Philosophy of Science
Immunology
Marine Biology
Mathematics and Statistics
Microbiology
Neuroscience
Pathology
Pharmacology
Physics
Physiology
Psychology
Reproduction and Development
Vision Science
Zoology

Anatomy major

Major study in **Anatomy**.

Completion of 50 points of study at 300-level.

Compulsory subjects: 516-304, 516-305, 516-308. Plus one of 516-302, 516-306, 516-307*, 536-308. *Research project must be related to anatomy.

Subject	Study Period Commencement:	Credit Points:
516-304 Functional and Applied Anatomy	Semester 2	12.50
516-305 Neuroscience: Systems & Higher Functions	Semester 2	12.50
516-308 Advanced Studies in Human Anatomy	Semester 1	12.50
516-302 Developmental Biology	Semester 2	12.50
516-306 Developmental Neurobiology	Semester 1	12.50
516-307 Research Project	Semester 1, Semester 2, Summer	12.50
536-308 Physiology of Muscle & Exercise	Semester 1	12.50

Atmosphere and Ocean Sciences major

Major study in **Atmosphere and Ocean Sciences**.

Completion of 50 points of study at 300-level.

Compulsory subjects: 625-331 and 625-332.

Subject	Study Period Commencement:	Credit Points:
625-331 Atmosphere-Ocean Interaction	1	25.000
625-332 Climate: Mechanisms & Variability	2	25.000

Biochemistry and Molecular Biology major

Major study in **Biochemistry and Molecular Biology**.

Completion of 50 points of study at 300-level.

Compulsory subject: one of 521-321 or 521-322.

Plus three of 521-301, 521-302, 521-303, 521-304, 521-305, 521-307.

Subject	Study Period Commencement:	Credit Points:
521-321 Gene Technology & Protein Expression	1	12.500
521-322 Protein Biochemistry and Proteomics	2	12.500
521-301 Protein Structure and Function	Semester 2	12.50
521-302 Functional Genomics and Bioinformatics	Semester 1	12.50
521-303 Molecular Aspects of Cell Biology	Semester 1	12.50
521-304 Cell Signalling and Neurochemistry	Semester 2	12.50
521-305 Biochemistry of Metabolism & Nutrition	Semester 1	12.50
521-307 Biomolecular Structure & Bioinformatics	Not offered 2008	12.50

Biotechnology major

Major study in **Biotechnology**.
Students may only complete this major in conjunction with another life sciences major selected from anatomy, biochemistry and molecular biology, botany, cell biology, chemistry, genetics, immunology, microbiology, neuroscience, pathology, pharmacology, physiology, reproduction and development or zoology.

Completion of 600-205 plus 37.5 points of study at 300-level in biotechnology.

Biotechnology subjects: 521-301, 521-302, 521-303, 521-307, 606-306, 606-309, 610-332, 610-333, 652-301, 652-302, 652-303, 652-305, 526-301, 526-302, 526-304, 531-303, 136-337.
Biotechnology practical laboratory subjects: 521-321, 521-322, 610-399, 652-304, 652-306, 526-321, 526-324, 526-326, 526-327, 534-306, 516-302, 654-304.
At least 25 points of the 37.5 points in the biotechnology major must be taken from a department different from that responsible for teaching the student's other major.
At least 25 points of the combined 87.5 points at 300-level for the biotechnology major and the student's other major must be practical laboratory subjects.

Subject	Study Period Commencement:	Credit Points:
600-205 Biotechnology in Practice	Semester 2	12.50
521-301 Protein Structure and Function	Semester 2	12.50
521-302 Functional Genomics and Bioinformatics	Semester 1	12.50
521-303 Molecular Aspects of Cell Biology	Semester 1	12.50
521-307 Biomolecular Structure & Bioinformatics	Not offered 2008	12.50

606-306 Plant Molecular Biology & Biotechnology	Semester 2	12.50
606-309 Frontiers of Cell Biology	Semester 1	12.50
610-332 Bio-organic Chemistry	Semester 1	12.50
610-333 Molecular Technology	Semester 2	12.50
652-301 Evolutionary Genetics and Genomics	Semester 1	12.50
652-302 Genes: Organisation and Function	Semester 1	12.50
652-303 Developmental and Cellular Genetics	Semester 2	12.50
652-305 Human and Medical Genetics	Semester 2	12.50
526-301 Microbial Cells and Genomes	Semester 2	12.50
526-302 Microbial Biotechnology	Not Offered	
526-304 Principles of Immunology	Semester 1	12.50
531-303 Molecular/Genetic Basis of Disease-Lect	Semester 2	12.50
136-337 Biotechnology in Modern Society (Sci.3)	Semester 2	12.50
521-321 Gene Technology & Protein Expression	1	12.500
521-322 Protein Biochemistry and Proteomics	2	12.500
610-399 Chemical Research Project	Semester 2, Summer	12.50
652-304 Genetic Analysis	Semester 2	12.50
652-306 Experimental Genetics	2	12.500
526-321 Molecular Microbiology Techniques	Semester 1	12.50
526-324 Immunological Techniques	Semester 1	12.50
526-326 Projects: Immunology	Semester 2	12.50
526-327 Projects: Microbiology	Semester 2	12.50
534-306 Drug Discovery	Semester 2	12.50
516-302 Developmental Biology	Semester 2	12.50
654-304 Reproduction	Semester 2	12.50

Botany major

Major study in **Botany**.

Completion of 50 points of study at 300-level selected from 606-302, 606-303, 606-304, 606-305, 606-306, 606-309, 606-310, 121-306, 600-311*, 600-312*.

*Research project must be related to botany.

Students may only include one of 600-311 and 600-312 towards this major.

Subject	Study Period Commencement:	Credit Points:
606-302 Marine Botany	Semester 2	12.50
606-303 Plant Systematics and Evolution	Semester 1	12.50
606-304 Environmental Plant Physiology	Semester 1	12.50
606-305 Vegetation Management and Conservation	Semester 2	12.50

606-306 Plant Molecular Biology & Biotechnology	Semester 2	12.50
606-309 Frontiers of Cell Biology	Semester 1	12.50
606-310 Field Botany	Summer	12.50
121-306 Applied Ecology	Semester 2	12.50
600-311 Research Project A	Semester 1	12.50
600-312 Research Project B	Semester 2, Summer	12.50

Cell Biology major

Major study in **Cell Biology**.
Completion of 50 points of study at 300-level selected from 516-302, 516-306, 521-303, 606-306, 606-309, 652-303, 516-307*, 600-311*, 600-312*.
*Research project must be related to cell biology.
Students may only include one of 516-307, 600-311 and 600-312 towards this major.

Subject	Study Period Commencement:	Credit Points:
516-302 Developmental Biology	Semester 2	12.50
516-306 Developmental Neurobiology	Semester 1	12.50
521-303 Molecular Aspects of Cell Biology	Semester 1	12.50
606-306 Plant Molecular Biology & Biotechnology	Semester 2	12.50
606-309 Frontiers of Cell Biology	Semester 1	12.50
652-303 Developmental and Cellular Genetics	Semester 2	12.50
516-307 Research Project	Semester 1, Semester 2, Summer	12.50
600-311 Research Project A	Semester 1	12.50
600-312 Research Project B	Semester 2, Summer	12.50

Chemistry major

Major study in **Chemistry**.
Completion of 50 points of study at 300-level.

50 points selected from 300-level chemistry subjects and including a minimum of two of the following core branches of chemistry (List A) plus a minimum of one of the following key chemistry subjects (List B) - noting that some combinations from List A and List B are mutually exclusive.
LIST A (core branches of chemistry) - choose a minimum of two branches:

Physical chemistry: Either 610-310 or both of 610-311 and 610-315
Organic chemistry: Either 610-320 or both of 610-321 and 610-325
Inorganic chemistry: Either 610-340 or both of 610-341 and 610-345
Analytical and environmental chemistry: 610-360

LIST B (key chemistry subjects) - choose a minimum of one of 610-310, 610-311, 610-320, 610-321, 610-340, 610-341, 610-360.

Subject	Study Period Commencement:	Credit Points:
610-311 Physical Chemistry IIIB	Semester 1	12.50
610-315 Physical Chemistry Practical III	Semester 1	6.25
610-310 Physical Chemistry IIIA	Semester 1	12.50
610-321 Organic Chemistry IIIB	Semester 2	12.50

610-320 Organic Chemistry IIIA	Semester 2	12.50
610-325 Organic Chemistry Practical III	Semester 2	6.25
610-341 Inorganic Chemistry IIIB	Semester 1	12.50
610-345 Inorganic Chemistry Practical III	Semester 1	6.25
610-340 Inorganic Chemistry IIIA	Semester 1	12.50
610-360 Analytical & Environmental Chemistry	Semester 2	12.50
610-332 Bio-organic Chemistry	Semester 1	12.50
610-333 Molecular Technology	Semester 2	12.50

Computer Science major

Major study in **Computer Science**.
Completion of 50 points of study at 300-level selected from 433-303, 433-313, 433-330, 433-332, 433-341, 433-351, 433-352, 433-353, 433-361, 433-371, 433-380.

Note: This science major is not available to students enrolled in the software engineering stream of the BE/BSc or the BE(IT)/BSc. These students will be required to complete a major in an alternative science discipline.

Subject	Study Period Commencement:	Credit Points:
433-303 Artificial Intelligence	Semester 2	12.50
433-313 Computer Design	Semester 2	12.50
433-330 Theory of Computation	Semester 1	12.50
433-332 Operating Systems	Semester 1	12.50
433-341 Software Engineering Process & Practice	Semester 1	12.50
433-351 Database Systems	Semester 1	12.50
433-352 Data on the Web	Semester 2	12.50
433-353 Networks and Communications	Semester 2	12.50
433-361 Programming Language Implementation	Not offered 2008	12.50
433-371 Interactive System Design	Semester 2	12.50
433-380 Graphics and Computation	Semester 1	12.50

Conservation and Australian Wildlife major

Major study in **Conservation and Australian Wildlife**.
Completion of 50 points of study at 300-level.
Compulsory subjects: 606-310, 654-308, 654-309, 654-313.

Subject	Study Period Commencement:	Credit Points:
606-310 Field Botany	Summer	12.50
654-308 Conservation Biology	Semester 2	12.50
654-309 Field Biology of Australian Wildlife	Semester 2	12.50
654-313 Ecology in Changing Environments	Semester 1	12.50

Ecology major

Major study in **Ecology**.

Completion of 50 points of study at 300-level selected from 121-033, 121-306, 606-304, 654-302, 654-312, 654-313.

Subject	Study Period Commencement:	Credit Points:
121-033 Environmental Hydrology	Not offered 2008	25
121-306 Applied Ecology	Semester 2	12.50
606-304 Environmental Plant Physiology	Semester 1	12.50
654-302 Experimental Marine Ecology	Summer	12.50
654-312 Marine Ecology	Semester 2	12.50
654-313 Ecology in Changing Environments	Semester 1	12.50

Environmental Science major

Major study in **Environmental Science**.

Students may only complete this major in conjunction with another science major that cannot be biotechnology or history and philosophy of science.

Compulsory subjects: 600-303 and 600-301.

Completion of 50 points of study at 300-level.

Plus 25 points selected from 121-033, 451-312, 121-306, 610-360, 620-371, 654-308.

Note: Available as a single major only to students enrolled in a BSc combined degree with either the Faculty of Engineering or the Faculty of Land and Food Resources.

Subject	Study Period Commencement:	Credit Points:
600-303 Environmental Risk Assessment	Semester 1	12.50
600-301 Problem Solving in Environmental Science	Semester 2	12.50
121-033 Environmental Hydrology	Not offered 2008	25
121-306 Applied Ecology	Semester 2	12.50
451-312 GIS & Remote Sensing for Enviro Science	Not offered 2008	12.500
610-360 Analytical & Environmental Chemistry	Semester 2	12.50
620-371 Linear Models	Semester 1	12.50
654-308 Conservation Biology	Semester 2	12.50

Genetics major

Major study in **Genetics**.

Completion of 50 points of study at 300-level.

Compulsory subjects: 652-302 and 652-304. Plus two of 652-301, 652-303, 652-305, 652-306, 600-312*.

*Research project must be related to genetics.

Subject	Study Period Commencement:	Credit Points:
652-302 Genes: Organisation and Function	Semester 1	12.50
652-304 Genetic Analysis	Semester 2	12.50
652-301 Evolutionary Genetics and Genomics	Semester 1	12.50
652-303 Developmental and Cellular Genetics	Semester 2	12.50

652-305 Human and Medical Genetics	Semester 2	12.50
652-306 Experimental Genetics	2	12.500
600-312 Research Project B	Semester 2, Summer	12.50

Geography major

Major study in **Geography**.

Completion of 50 science points of geography study at 300-level selected from 121-033, 121-071, 121-306, 121-307, 121-310, 121-316, 121-317, 121-320, 671-347, 207-330.

Only geography subjects with science status can be included in this major.

Subject	Study Period Commencement:	Credit Points:
121-033 Environmental Hydrology	Not offered 2008	25
121-071 Coastal Geomorphology	1	12.500
121-306 Applied Ecology	Semester 2	12.50
121-307 Geographical Thought	Semester 1	12.50
121-310 Fluvial Geomorphology	Semester 2	12.50
121-316 Environmental Change	Semester 2	25
121-317 Africa: Environment, Development, People	Semester 2	12.50
121-320 China Field Class	Semester 2	25
671-347 Sustainable Development	Semester 1	12.50
207-330 GIS and Remote Sensing	Semester 1	12.50

Geology major

Major study in **Geology**.
Completion of 50 points of study at 300-level.
Compulsory subjects: 625-301, 625-302.
Plus two of 625-303, 625-304, 625-305, 625-307, 625-308, 625-313, 600-311*, 600-312*.
*Research project must be related to geology.

Subject	Study Period Commencement:	Credit Points:
625-301 Structural Geology & Geodynamics	Semester 1	12.50
625-302 Sedimentary Geology	Semester 2	12.50
625-303 Geochemistry & Petrogenesis	Semester 1	12.50
625-304 Geophysics	Semester 2	12.50
625-305 Economic Geology	Semester 2	12.50
625-307 Hydrogeology	Semester 1	12.50
625-308 Digital Geoscience	1	12.500
625-313 Advanced Field Geology	Semester 2	12.50
600-311 Research Project A	Semester 1	12.50
600-312 Research Project B	Semester 2, Summer	12.50

History and Philosophy of Science major

Major study in **History and Philosophy of Science** (HPS).

Students may only complete this major in conjunction with another science major that cannot be biotechnology or environmental science.

Completion of 50 science points of HPS study at 300-level

Only HPS subjects with science status can be included in this major.

Subject	Study Period Commencement:	Credit Points:
136-307 Philosophy of Biology (Science 3)	Semester 2	12.50
136-310 Minds&Madness (Science 3)	Semester 1	12.50
136-333 Science, Reason and Reality (Science 3)	Semester 1	12.50
136-360 God and the Natural Sciences (Science 3)	Semester 2	12.50
136-388 Astronomy: The Universe in World History	Semester 1	12.50

Immunology major

Major study in **Immunology**.
Completion of 50 points of study at 300-level.
Compulsory subjects: 526-304, 526-305, 526-324, 526-326.
Students unable to obtain a place in 526-326 may complete an alternative 300-level subject taught by the Department of Microbiology and Immunology, with approval of the department.

Subject	Study Period Commencement:	Credit Points:
526-304 Principles of Immunology	Semester 1	12.50
526-305 Medical and Applied Immunology	Semester 2	12.50
526-324 Immunological Techniques	Semester 1	12.50
526-326 Projects: Immunology	Semester 2	12.50

Marine Biology major

Major study in **Marine Biology**.

Completion of 50 points of study at 300-level selected from 121-071, 606-302, 610-360, 654-302, 654-306, 654-312, 654-313, 600-311*, 600-312*.

Notes.

*Research project must be related to marine biology

Only one of 600-311 and 600-312 can count towards this major.

Only one of 610-360 and 121-070 can count towards this major.

Subject	Study Period Commencement:	Credit Points:
121-071 Coastal Geomorphology	1	12.500
606-302 Marine Botany	Semester 2	12.50
610-360 Analytical & Environmental Chemistry	Semester 2	12.50
654-302 Experimental Marine Ecology	Summer	12.50
654-306 Marine Zoology	Summer	12.50
654-312 Marine Ecology	Semester 2	12.50
654-313 Ecology in Changing Environments	Semester 1	12.50
600-311 Research Project A	Semester 1	12.50

600-312 Research Project B	Semester 2, Summer	12.50

Mathematics and Statistics major (Applied Mathematics)
Major study in **Mathematics and Statistics**, specializing in Applied Mathematics.
Completion of 50 points of study at 300-level.
Compulsory subject: 620-331.
Plus three of 620-332, 620-342, 620-352, 620-353, 620-381.

Subject	Study Period Commencement:	Credit Points:
620-331 Applied Partial Differential Equations	Semester 1	12.50
620-332 Integral Transforms & Asymptotics	Semester 2	12.50
620-342 Industrial & Applied Mathematics	Semester 2	12.50
620-352 Graph Theory	Semester 1	12.50
620-353 Discrete Mathematics	Semester 2	12.50
620-381 Computational Mathematics	Semester 1	12.50

Mathematics and Statistics major (Pure Mathematics)
Major study in Mathematics and Statistics, specializing in Pure Mathematics.
Completion of 50 points of study at 300-level.
Three of 620-311, 620-312, 620-321, 620-322.
Plus either the fourth of the subjects listed above or one of 620-351, 620-352, 620-353.

Subject	Study Period Commencement:	Credit Points:
620-311 Metric Spaces	Semester 1	12.50
620-312 Linear Analysis	Semester 2	12.50
620-321 Algebra	Semester 1	12.50
620-322 Topology	Semester 2	12.50
620-351 Number Theory	Semester 2	12.50
620-352 Graph Theory	Semester 1	12.50
620-353 Discrete Mathematics	Semester 2	12.50

Mathematics and Statistics major (Statistics)
Major study in Mathematics and Statistics, specializing in Statistics.
Completion of 50 points of study at 300-level.
Compulsory subject: 620-371.
Plus at least two of 620-301, 620-302, 620-372, 620-374.
Plus any other 300-level subject offered by the Department of Mathematics and Statistics (if only two of the above subjects are included).

Subject	Study Period Commencement:	Credit Points:
620-371 Linear Models	Semester 1	12.50
620-301 Stochastic Modelling	Semester 1	12.50
620-302 Chance and Options Pricing	Semester 2	12.50
620-372 Applied Statistical Inference	Semester 2	12.50
620-374 Sampling and Forecasting	Semester 2	12.50

Mathematics and Statistics major (Mathematical Physics)
Major study in Mathematics and Statistics, specializing in Mathematical Physics.
Completion of 50 points of study at 300-level.

Compulsory subject: 620-331.
Plus one of 620-332, 620-342, 620-353.
Plus one of 640-321 and 620-341.
Plus one of 640-322 and 640-342.

Subject	Study Period Commencement:	Credit Points:
620-331 Applied Partial Differential Equations	Semester 1	12.50
620-332 Integral Transforms & Asymptotics	Semester 2	12.50
620-342 Industrial & Applied Mathematics	Semester 2	12.50
620-353 Discrete Mathematics	Semester 2	12.50
640-321 Quantum Mechanics (Adv)	Semester 1	12.50
640-341 Quantum Mechanics	Semester 1	12.50
640-342 Statistical Physics	Not offered 2008	12.50

Mathematics and Statistics major (Operations Research)
Major study in Mathematics and Statistics, specializing in Operations Research.
Completion of 50 points of study at 300-level.
Compulsory subjects: 620-361 and 620-362.
Plus two other 300-level subjects offered by the Department of Mathematics and Statistics.

Subject	Study Period Commencement:	Credit Points:
620-361 Operations Research: Techniques	Semester 1	12.50
620-362 Applied Operations Research	Semester 2	12.50

Mathematics and Statistics major (Financial Mathematics)
Major study in Mathematics and Statistics, specializing in Financial Mathematics.
Completion of 50 points of study at 300-level.
Compulsory subjects: 620-301, 620-302, 620-381.
Plus one of 620-361, 620-371, 620-374.

Subject	Study Period Commencement:	Credit Points:
620-301 Stochastic Modelling	Semester 1	12.50
620-302 Chance and Options Pricing	Semester 2	12.50
620-381 Computational Mathematics	Semester 1	12.50
620-361 Operations Research: Techniques	Semester 1	12.50
620-371 Linear Models	Semester 1	12.50
620-374 Sampling and Forecasting	Semester 2	12.50

Mathematics and Statistics major (Discrete Mathematics)
Major study in Mathematics and Statistics, specializing in Discrete Mathematics.
Completion of 50 points of study at 300-level.
Compulsory subjects: 620-352 and 650-353.
Plus at least one of 620-351 and 620-381.
Plus another 300-level subject offered by the Department of Mathematics and Statistics (if only one of the above subjects is included).

Subject	Study Period Commencement:	Credit Points:
620-352 Graph Theory	Semester 1	12.50
620-353 Discrete Mathematics	Semester 2	12.50

620-351 Number Theory	Semester 2	12.50
620-381 Computational Mathematics	Semester 1	12.50

Microbiology major

Major study in **Microbiology**.
Completion of 50 points of study at 300-level.
Compulsory subject: 526-321.
Plus three of 526-301, 526-302, 526-313, 526-314, 526-327.

Subject	Study Period Commencement:	Credit Points:
526-321 Molecular Microbiology Techniques	Semester 1	12.50
526-301 Microbial Cells and Genomes	Semester 2	12.50
526-302 Microbial Biotechnology	Not Offered	
526-313 Medical Microbiology: Cellular Pathogens	Semester 1	12.50
526-314 Medical Microbiology: Viruses	Semester 2	12.50
526-327 Projects: Microbiology	Semester 2	12.50

Neuroscience major

Major study in **Neuroscience**.
Completion of 50 points of study at 300-level.
Compulsory subjects: 516-305 and 536-303.
Plus two of 516-306, 516-307*, 521-304, 534-302, 536-302, 654-305.
*Research project must be related to neuroscience.

Subject	Study Period Commencement:	Credit Points:
516-305 Neuroscience: Systems & Higher Functions	Semester 2	12.50
536-303 The Brain: Neurophysiology of Behaviour	Semester 1	12.50
516-306 Developmental Neurobiology	Semester 1	12.50
516-307 Research Project	Semester 1, Semester 2, Summer	12.50
521-304 Cell Signalling and Neurochemistry	Semester 2	12.50
534-302 Neuropharmacology	Semester 1	12.50
536-302 Molecular Neurophysiology	Semester 2	12.50
654-305 Experimental Animal Behaviour	Semester 1	12.50
512-350 Brain, Cognition and Behaviour 3	Semester 1	12.50
512-330 Human Psychophysiology 3	Semester 2	12.50
512-335 Advanced Cognition 3	Semester 1	12.50

Neuroscience major (Behavioural Neuroscience)

Major study in Neuroscience, specializing in Behavioural Neuroscience.
Completion of 50 points of study at 300-level.
Compulsory subjects: 516-305, 536-303, 512-350.
Plus one of 512-330, 512-335.

Subject	Study Period Commencement:	Credit Points:
516-305 Neuroscience: Systems & Higher Functions	Semester 2	12.50
536-303 The Brain: Neurophysiology of Behaviour	Semester 1	12.50

512-350 Brain, Cognition and Behaviour 3	Semester 1	12.50
512-330 Human Psychophysiology 3	Semester 2	12.50
512-335 Advanced Cognition 3	Semester 1	12.50

Pathology major
Major study in **Pathology**.
Completion of 50 points of study at 300-level.
Compulsory subjects: 531-301, 531-302, 531-303, 531-304.

Subject	Study Period Commencement:	Credit Points:
531-301 Cellular Basis of Disease	Semester 1	12.50
531-302 Techniques for Investigation of Disease	Semester 1	12.50
531-303 Molecular/Genetic Basis of Disease-Lect	Semester 2	12.50
531-304 Molecular/Genetic Basis of Disease-Prac	Semester 2	12.50

Pharmacology major
Major study in **Pharmacology**.
Completion of 50 points of study at 300-level.
Compulsory subject: 534-301.
Plus 25 points selected from 534-304, 534-305, 534-306, 516-307.
*Research project must be related to pharmacology.

Subject	Study Period Commencement:	Credit Points:
534-301 Cellular and Molecular Pharmacology	Semester 1	25
534-304 Pharmacology of Therapeutic Substances	Semester 2	25
534-302 Neuropharmacology	Semester 1	12.50
534-305 Toxicology	Semester 2	12.50
534-306 Drug Discovery	Semester 2	12.50
534-311 Drug Development Techniques	Not offered 2008	12.500
516-307 Research Project	Semester 1, Semester 2, Summer	12.50

Physics major
Major study in **Physics**.
Completion of 50 points of study at 300-level.
Compulsory subject: either 640-321 or 640-341.
Plus one of 640-393, 640-394, 640-364.
Plus two other 300-level physics subjects.

Subject	Study Period Commencement:	Credit Points:
640-321 Quantum Mechanics (Adv)	Semester 1	12.50
640-341 Quantum Mechanics	Semester 1	12.50
640-393 Laboratory Work A	Semester 1, Semester 2	12.50
640-394 Laboratory Work B	Semester 1, Semester 2	12.50
640-364 Computational Physics	Semester 2	12.50

Physics major (Mathematical Physics)
Major study in Physics, specializing in Mathematical Physics.
Completion of 50 points of study at 300-level.

Compulsory subject: 620-331.
Plus one of 620-332, 620-342, 620-353.
Plus one of 640-321 and 620-341.
Plus one of 640-322 and 640-342.

Subject	Study Period Commencement:	Credit Points:
620-331 Applied Partial Differential Equations	Semester 1	12.50
620-332 Integral Transforms & Asymptotics	Semester 2	12.50
620-342 Industrial & Applied Mathematics	Semester 2	12.50
620-353 Discrete Mathematics	Semester 2	12.50
640-321 Quantum Mechanics (Adv)	Semester 1	12.50
640-341 Quantum Mechanics	Semester 1	12.50
640-342 Statistical Physics	Not offered 2008	12.50

Physiology major

Major study in **Physiology**.
Completion of 50 points of study at 300-level selected from 536-301, 536-302, 536-303, 536-304, 536-308, 536-311, 516-307*.
*Research project must be related to physiology.

Subject	Study Period Commencement:	Credit Points:
536-301 Cardiovascular Health: Genes & Hormones	Semester 1	12.50
536-302 Molecular Neurophysiology	Semester 2	12.50
536-303 The Brain: Neurophysiology of Behaviour	Semester 1	12.50
536-304 Advanced Experimental Physiology	Semester 2	12.50
536-308 Physiology of Muscle & Exercise	Semester 1	12.50
536-311 Molecular/Cellular Basis of Physiology	Semester 2	12.50
516-307 Research Project	Semester 1, Semester 2, Summer	12.50

Psychology major

Major study in **Psychology**.
A major study in psychology, accredited by the Australian Psychological Society, consists of nine compulsory subjects and at least one elective subject (a minimum of 125 credit points).
Compulsory subjects
Level 1: 512-120, 512-121.
Level 2: 512-220, 512-221, 512-222, 512-223, 512-224.

Level 3: 512-320, 512-324.
Electives at Level 3: 512-322, 512-330, 512-335, 512-345, 512-350, 512-360, 512-370, 512-380.

Students undertaking a major in Mathematics and Statistics may complete 620-371 Linear Models instead of 512-320.

Although the major study in psychology only requires 37.5 points at 300-level, undergrduate science students must complete 50 points of 300-level science subjects to satisfy their degree requirements.

Subject	Study Period Commencement:	Credit Points:
512-220 Quantitative Methods for Psychology 2	Semester 1	12.50
512-221 Developmental Psychology 2	Not offered 2008	12.50

512-222 Behavioural Neuroscience 2	Not offered 2008	12.50
512-223 Personality and Social Psychology 2	Not offered 2008	12.50
512-224 Cognitive Psychology 2	Not offered 2008	12.50
512-320 Research Methods 3	Semester 1, Semester 2	12.50
512-324 Intro. to Psychological Disorders 3	Semester 1	12.50
512-322 Industrial/Organisational Psychology 3	Semester 2	12.50
512-330 Human Psychophysiology 3	Semester 2	12.50
512-335 Advanced Cognition 3	Semester 1	12.50
512-345 Environmental Psychology 3	2	12.500
512-350 Brain, Cognition and Behaviour 3	Semester 1	12.50
512-360 Personality and Social Psychology 3	Semester 2	12.50
512-370 Cognitive and Neuropsych. Development 3	Semester 2	12.50
512-380 Personal and Social Development 3	Semester 1	12.50

Reproduction and Development major

Major study in **Reproduction and Development**.
Completion of 50 points of study at 300-level.
Compulsory subjects: 654-304 and 516-302.
Plus two of 606-309, 652-303, 516-306, 521-304, 654-307, 654-309, 516-307*, 600-311*, 600-312*.
*Research project must be related to reproduction and development.
Students may only include one of 516-307, 600-311 and 600-312 towards this major.

Subject	Study Period Commencement:	Credit Points:
654-304 Reproduction	Semester 2	12.50
516-302 Developmental Biology	Semester 2	12.50
606-309 Frontiers of Cell Biology	Semester 1	12.50
652-303 Developmental and Cellular Genetics	Semester 2	12.50
516-306 Developmental Neurobiology	Semester 1	12.50
521-304 Cell Signalling and Neurochemistry	Semester 2	12.50
654-307 Evolution and the Human Condition	Semester 1	12.50
654-309 Field Biology of Australian Wildlife	Semester 2	12.50
516-307 Research Project	Semester 1, Semester 2, Summer	12.50
600-311 Research Project A	Semester 1	12.50
600-312 Research Project B	Semester 2, Summer	12.50

Vision Science major

Major study in **Vision Science**.
Completion of 50 points of study at 300-level selected from 655-321, 655-328, 655-341, 655-351, 600-311*, 600-312*.
*Research project must be related to vision science.
Students may only include one of 600-311 and 600-312 towards this major.

Subject	Study Period Commencement:	Credit Points:
655-321 Practical Problems in Vision	Semester 2	12.50
655-328 Neural Basis of Vision	Semester 1	12.50
655-341 Ocular Histopathology	Semester 1	12.50
655-351 Ophthalmic Lenses and Dispensing	Semester 2	12.50
600-311 Research Project A	Semester 1	12.50
600-312 Research Project B	Semester 2, Summer	12.50

Zoology major

Major study in **Zoology**.
Completion of 50 points of study at 300-level.
Compulsory: 25 points selected from one of the following subject pairs:

- 654-302 and 654-312
- 654-304 and 516-302
- 654-305 and 654-315
- 654-309 and 654-313

Plus 25 points selected from any of the above subjects and/or 654-306, 654-307, 654-308.

Subject	Study Period Commencement:	Credit Points:
654-302 Experimental Marine Ecology	Summer	12.50
654-312 Marine Ecology	Semester 2	12.50
654-304 Reproduction	Semester 2	12.50
516-302 Developmental Biology	Semester 2	12.50
654-305 Experimental Animal Behaviour	Semester 1	12.50
654-315 Animal Behaviour	Semester 1	12.50
654-309 Field Biology of Australian Wildlife	Semester 2	12.50
654-313 Ecology in Changing Environments	Semester 1	12.50
654-306 Marine Zoology	Summer	12.50
654-307 Evolution and the Human Condition	Semester 1	12.50
654-308 Conservation Biology	Semester 2	12.50

Entry Requirements:	There is no first year intake into this course in 2008. For enquiries about admission requirements for later year entry into this program, please contact the Faculty of Science office.
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Further Study:	Further study into an Honours program is an option available for graduates of the Bachelor of Science through the Bachelor of Science (Degree with Honours) course.
Graduate Attributes:	In science at the University of Melbourne we expect to educate our students in the fundamental skill of transforming information into knowledge. This outcome is fully consistent with the

	University's general ambition for our graduates, and emphasises the transferability of the skills practised in science. Throughout their course students will find that many of the abilities that they develop are shared by, and so are valued by and are applicable to, activities in all walks of life. In particular, these are the skills that are essential to providing leadership to the science-technology base of the Australian economy and culture. Bachelor of Science graduates have a broad knowledge of science across a range of disciplines, with a higher level of understanding in one or more of these disciplines. They also have an appreciation of the historical background and evolution of scientific concepts. They have the knowledge, skills and attitude to enable them to adapt to scientific, technological and social change and have a sense of intellectual curiosity and a desire for lifelong learning. Science graduates are particularly strong in their cognitive skills. They are able to: synthesize information from a range of sources, evaluate this, and add new ideas to their existing knowledge; observe, record and evaluate data or evidence appropriately; deal with complex data sets and apply their strong numerical competence to identify and analyse key factors and components; make effective use of information to identify and solve problems; and synthesize and integrate disparate elements into a meaningful whole. Graduates take these skills further in the creative realm, formulating hypotheses which can be tested for validity. They are used to extrapolating from the known to the unknown and are comfortable working with analogues rather than needing to deal with literal situations. They understand the need to question and clarify before developing a response to a particular issue or problem, enabling them to analyse critically. Having undertaken laboratory and tutorial classes, science graduates are adept at activity planning as well as the application of theory to practice. They understand the principles of project and experimental design. Some students will have found collaborative learning an efficient tool, while others will find their practical work enhanced by effective teamwork. Science disciplines value clear reporting. Consequently, the science graduate has developed skills of efficient and effective communication of ideas and results, whether in the accepted modes of scientific report writing or through more informal oral presentations. Graduates recognise the need to present information and ideas in an effective written form that is appropriate to the purpose and the reader. The need to manage the multiplicity of tasks (lectures, laboratory and assignment work) means that science graduates are aware of the need to structure and manage time effectively and efficiently, to retain balance and to prioritise their activities. They are able to juggle several tasks simultaneously, take responsibility for their own work independently or within a group, and to plan their schedule appropriately. The breadth of the Science @ Melbourne program, which allows students to undertake other disciplines such as humanities or commerce within the science degree, means that many science graduates will have been exposed, directly or indirectly, to thoughts and ideas from all parts of knowledge. These graduates are aware of the breadth and depth of knowledge in areas beyond their specific areas of specialisation. In the longer term, these graduates have the knowledge, skill and attitude to enable adaptation to scientific, technological and social change. They have a sense of intellectual curiosity and a desire for lifelong learning and a capacity to be creative and innovative. These attributes enable them to continue to develop their own professional abilities as well as contributing to the development of the profession in which they are employed.
Generic Skills:	Bachelor of Science graduates: # have a broad knowledge of science across a range of disciplines, with a higher level of understanding in one or more of these disciplines; # when solving scientific problems: - are capable of applying appropriate knowledge, - are able to access relevant information, - understand the principles of project and experimental design, - have a capacity to apply practical skills and technology; # are able to communicate the results of their studies in both written and oral form; # have an appreciation of the historical background and evolution of scientific concepts; # have the knowledge, skill and attitude to enable adaptation to scientific, technological and social change, have a sense of intellectual curiosity and a desire for lifelong learning, and a capacity to be creative and innovative.