

## BSc majors

Applied Physics  
 Biology  
 Biotechnology  
 Cell and Molecular Bioscience  
 Chemistry  
 Computer Science  
 Development Studies  
 Ecology and Biodiversity  
 Electronic and Computer Systems  
 Environmental Science  
 Environmental Studies  
 Geography  
 Geology  
 Geophysics  
 Marine Biology  
 Mathematics  
 Operations Research  
 Physical Geography  
 Physics  
 Psychology  
 Statistics

## First-year example: BSc majoring in Ecology and Biodiversity and Statistics

1/3	2/3
BIOL 111 15 pts	BIOL 113 15 pts
MATH 141 15 pts	BIOL 114 15 pts
MATH 151 15 pts	STAT 193 15 pts
ESCI 111 15 pts	ENVI 114 15 pts
120 points	
<b>First major</b>	<b>Second major</b>
<b>Elective</b>	

## Degree Requirements

- The BSc requires 360 points in total.
- At least 270 points must be taught by the FoS; up to 90 points from other degree schedules can count towards the BSc.
- At least 210 points must be at 200/300 level (second and third year course); of these, at least 150 must be Science points.
- At least 75 points at 300-level from Science subjects
- A major from outside the Science schedule may be permitted as a second major and in this case, a further 60 non-Science points may be allowed (60 + 90 = 150 points maximum).
- A further 30 points from other degree schedules count as Science points if specified in the major subject requirements (e.g. for Environmental Studies). Note these 30 points will contribute towards the maximum of 90 points permitted if a second major is included from outside Science.
- 300-level courses cannot count towards more than one major or minor.
- At least 15 points of MATH, STAT, QUAN or PHYS must be included in your BSc programme if not already specified in your major.
- At least 15 points in courses that demonstrate communication skills. Most majors will incorporate these into the curriculum.

## Majors

- Your major is the subject which you want to specialise in and study throughout your degree.
- You must complete the major requirements in at least one major subject listed on the left. Many students complete two majors.
- Outside majors may require you to complete more than 360 points.

## Minors

- Students may also select up to two minors. A minor subject will be studied throughout your degree, but will include fewer courses than a major.
- As with majors, you may also minor in a subject from outside of the BSc degree subjects.
- You will usually need to take one or two courses as prerequisites in your first year in order to complete a minor.

## Electives

- If you have space in your first year after meeting major or minor requirements, you can include electives.

## Tips

- In your first year we suggest that you open up a few potential majors by taking the first-year major requirements. This way, you can choose which subjects you want to continue with and which subjects you want to drop after your first year.
- Most BSc students will take 7 or 8 courses each year across two trimesters (approximately 120 points per year). These need to be balanced as evenly as possible across the year.

For more information on the BSc, please visit [www.victoria.ac.nz/science](http://www.victoria.ac.nz/science) or refer to the *Guide to Enrolment*. For course details, prescriptions and timetables, visit [www.victoria.ac.nz/coursecatalogue](http://www.victoria.ac.nz/coursecatalogue).

<b>Applied Physics</b>		Introductory Chemistry courses:		<b>Electronic and Computer Systems</b>	
<b>PHYS 114 (1/3)</b> Physics 1A 15 pts	<b>PHYS 115 (2/3)</b> Physics 1B 15 pts	<b>CHEM 113 (1/3)</b> Concepts of Chemistry 15 pts	<b>CHEM 191 (3/3)</b> Introductory Chemistry 15 pts	<b>MATH 151 (1/3)</b> Algebra 15 pts	<b>MATH 142 (2/3)</b> Calculus 1B 15 pts
<b>MATH 151 (1/3)</b> Algebra 15 pts	<b>MATH 142 (2/3)</b> Calculus 1B 15 pts	<b>Computer Science</b>		<b>PHYS 114 (1/3)</b> Physics 1A 15 pts	<b>PHYS 115 (2/3)</b> Physics 1B 15 pts
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>		<b>COMP 102 (1/3) (2/3)</b> Introduction to Computer Program Design 15 pts	<b>COMP 103 (1/3) (2/3)</b> Introduction to Data Structures and Algorithms 15 pts	<b>*COMP 102 (1/3) (2/3)</b> Introduction to Computer Program Design 15 pts	<b>*COMP 102</b> can be taken in the second year
<b>Biology</b>		And one course (15 points) from:		<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
<b>BIOL 111 (1/3)</b> Cell Biology 15 pts	<b>BIOL 113 (2/3)</b> Biology of Plants 15 pts	<b>STAT 193 (1/3) (2/3)</b> Statistics for Natural and Social Sciences 15 pts	<b>QUAN 102 (1/3) (2/3)</b> Statistics for Business 15 pts	<b>Environmental Science</b>	
<b>STAT 193 (1/3) (2/3)</b> Statistics for Natural and Social Sciences 15 pts	<b>BIOL 114 (2/3)</b> Biology of Animals 15 pts	<b>MATH 177 (2/3)</b> Probability and Decision Modelling 15 pts		This major can only be completed alongside the following majors: Biology, Ecology and Biodiversity, Marine Biology, Chemistry, Geography, Physical Geography, Geology, Geophysics, Physics, Mathematics and Statistics.	
<i>Also consider:</i> <b>BIOL 116 (1/3)</b> Human Reproduction, Evolution and Sexuality 15 pts	<i>Also consider:</i> <b>BMSC 117 (2/3)</b> The Biology of Disease 15 pts			You must include two courses (30 points) from first-year (100-level) BIOL, CHEM, ESCI, GEOG, MATH, PHYS or STAT.	
<b>Biotechnology</b>		<b>Development Studies</b>		Your programme must also include STAT 193 and one course (15 points) from MATH.	
<b>BIOL 111 (1/3)</b> Cell Biology 15 pts	<b>CHEM 115 (2/3)</b> Structure and Spectroscopy 15 pts	<b>GEOG 112 (2/3)</b> An Introduction to Human Geography and Development in the Asia Pacific 15 pts		<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
<b>BTEC 101 (1/3)</b> Introduction to Biotechnology 15 pts	<b>CHEM 114 (1/3) (2/3)</b> Principles of Chemistry 15 pts			<b>Environmental Studies</b>	
And one of:		<b>And one regional based course:</b> ASIA 101 (1/3), CHIN 112 (1/3), EURO 101 (1/3), GERM 114 (2/3), HIST 112 (1/3), HIST 118 (2/3), LAWS 121 (1/3), MAOR 122 (2/3) (3/3), MAOR 123 (1/3) (2/3), MAOR 124 (2/3), PASI 101 (1/3) (3/3), POLS 111 (1/3), RELI 103 (2/3), SAMO 111 (1/3) (1/3), SPAN 113 (1/3), TOUR 108 (2/3).		<b>GEOG/ESCI 111 (1/3)</b> The Earth System: An Introduction to Physical Geography and Earth Sciences 15 pts	
<b>PHIL 228</b> Ethics and Genetics <b>Note offered in 2012</b> 20 pts	<b>PHIL 106 (2/3)</b> Contemporary Ethical Issues 20 pts			<b>ENVI 114 (2/3)</b> Environment and Resources: The Foundations 15 pts	
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>		<b>And one subject based course:</b> ANTH 101 (1/3), ANTH 102 (2/3), ECON 130 (1/3) (2/3), ECON 140 (2/3), EPSY 141 (1/3), EPSY 142 (1/3) (2/3), ESCI 132 (2/3), GEOG/ENVI 114 (2/3), GEOG/ESCI 111 (1/3), HIST 120 (1/3), INTP 113 (2/3), MDIA 102 (2/3), PHYS 131 (1/3), POLS 112 (2/3), POLS 114 (1/3), PUBL/SPOL 113 (1/3), RELI 107 (2/3), RELI 108 (1/3), SOSC 111 (2/3), SOSC 112 (1/3), TOUR 101 (1/3).		<b>STAT 193 (1/3) (2/3)</b> Statistics for Natural and Social Sciences 15 pts	
<b>Cell and Molecular Bioscience</b>				<b>GEOG 112 (2/3)</b> An Introduction to Human Geography & Development in the Asia Pacific 15 pts	
<b>BIOL 111 (1/3)</b> Cell Biology 15 pts	<b>BIOL 113 (2/3)</b> Biology of Plants 15 pts	<b>Geography</b>		<b>GEOG/ESCI 111 (1/3)</b> The Earth System: An Introduction to Physical Geography and Earth Sciences 15 pts	
<b>CHEM 114 (1/3) (2/3)</b> Principles of Chemistry 15 pts	<b>BIOL 114 (2/3)</b> Biology of Animals 15 pts	<b>GEOG 114 (2/3)</b> Environment and Resources: The Foundations 15 pts		<b>GEOG 112 (2/3)</b> An Introduction to Human Geography & Development in the Asia Pacific 15 pts	
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>				<b>GEOG 112 (2/3)</b> An Introduction to Human Geography & Development in the Asia Pacific 15 pts	
<b>Chemistry</b>		<b>Ecology and Biodiversity</b>		<i>Also consider:</i> <b>ESCI 132 (2/3)</b> Antarctica: Unfreezing the Continent 15 pts	
<b>CHEM 114 (1/3) (2/3)</b> Principles of Chemistry 15 pts	<b>CHEM 115 (2/3)</b> Structure and Spectroscopy 15 pts	<b>BIOL 111 (1/3)</b> Cell Biology 15 pts	<b>BIOL 113 (2/3)</b> Biology of Plants 15 pts		
And:		<b>STAT 193 (1/3) (2/3)</b> Statistics for Natural and Social Sciences 15 pts	<b>BIOL 114 (2/3)</b> Biology of Animals 15 pts	<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
One course (15 points) from PHYS or MATH. One course (15 points) from BIOL 111, BMSC 117, BTEC 101, GEOG/ESCI 111, GEOG 112, ENVI 114 and TECH 101.					

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Geology	
<b>GEOG/ESCI 111 (1/3)</b> The Earth System: An Introduction to Physical Geography and Earth Sciences 15 pts	<b>ESCI 112 (2/3)</b> Fundamentals of Geology 15 pts
And one approved course (15 points) from MATH 141-177, PHYS (not PHYS 131, 132), CHEM (not CHEM 191) or STAT 193.	
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
	<i>Also consider:</i> <b>ESCI 132 (2/3)</b> Antarctica: Unfreezing the Continent 15 pts
Geophysics	
<b>MATH 151 (1/3)</b> Algebra 15 pts	<b>MATH 142 (2/3)</b> Calculus 1B 15 pts
<b>PHYS 114 (1/3)</b> Physics 1A 15 pts	<b>PHYS 115 (2/3)</b> Physics 1B 15 pts
And one of:	
<b>GEOG/ESCI 111 (1/3)</b> The Earth System: An Introduction to Physical Geography and Earth Sciences 15 pts	<b>ESCI 112 (2/3)</b> Fundamentals of Geology 15 pts
<i>Also consider:</i> <b>COMP 102 (1/3) (2/3)</b> Introduction to Computer Program Design 15 pts	<i>Also consider:</i> <b>MATH 177 (2/3)</b> Probability and Decision Modelling 15 pts
<b>PHYS 131 (1/3)</b> Energy and the Environment 15 pts	
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
Marine Biology	
<b>BIOL 111 (1/3)</b> Cell Biology 15 pts	<b>BIOL 113 (2/3)</b> Biology of Plants 15 pts
<b>STAT 193 (1/3) (2/3)</b> Statistics for Natural and Social Sciences 15 pts	<b>BIOL 114 (2/3)</b> Biology of Animals 15 pts
<i>Also consider:</i> <b>GEOG/ESCI 111 (1/3)</b> The Earth System: An Introduction to Physical Geography and Earth Sciences 15 pts	<i>Also consider:</i> <b>ESCI 132 (2/3)</b> Antarctica: Unfreezing the Continent 15 pts

Mathematics	
<b>MATH 151 (1/3)</b> Algebra 15 pts	<b>MATH 142 (2/3)</b> Calculus 1B 15 pts
	<b>MATH 161 (2/3)</b> Discrete Mathematics and Logic 15 pts
<i>Note: Please refer to page 4 for course prerequisites.</i>	
Additional MATH courses:	
<b>MATH 132 (1/3) (3/3)</b> Introduction to Mathematical Thinking 15 pts	<b>MATH 177 (2/3)</b> Probability and Decision Modelling 15 pts
<b>MATH 141 (1/3)</b> Calculus 1A 15 pts	
Operations Research	
<b>COMP 102 (1/3) (2/3)</b> Introduction to Computer Program Design 15 pts	<b>MATH 142 (2/3)</b> Calculus 1B 15 pts
<b>MATH 151 (1/3)</b> Algebra 15 pts	
<i>Also consider:</i> <b>COMP 103 (1/3) (2/3)</b> Introduction to Data Structures and Algorithms 15 pts	<i>Also consider:</i> <b>MATH 161 (2/3)</b> Discrete Mathematics and Logic 15 pts
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
Physical Geography	
<b>GEOG/ESCI 111 (1/3)</b> The Earth System: An Introduction to Physical Geography and Earth Sciences 15 pts	<b>GEOG 114 (2/3)</b> Environment and Resources: The Foundations 15 pts
	<b>ESCI 112 (2/3)</b> Fundamentals of Geology 15 pts
	<b>GEOG 112 (2/3)</b> An Introduction to Human Geography & Development in the Asia Pacific 15 pts
<b>MATH 151 (1/3)</b> Algebra 15 pts	
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	

Physics	
<b>PHYS 114 (1/3)</b> Physics 1A 15 pts	<b>PHYS 115 (2/3)</b> Physics 1B 15 pts
<b>MATH 151 (1/3)</b> Algebra 15 pts	<b>MATH 142 (2/3)</b> Calculus 1B 15 pts
<i>Also consider:</i> <b>PHYS 131 (1/3)</b> Energy and the Environment 15 pts	<i>Also consider:</i> <b>PHYS 132 (2/3)</b> Introductory Astronomy 15 pts
<b>PHIL 123 (1/3)</b> Critical Thinking 20 pts	<b>PHYS 122 (2/3)</b> Introduction to Physics and Applied Physics 15 pts
	<b>MATH 161 (2/3)</b> Discrete Mathematics and Logic 15 pts
<i>Note: Please refer to page 4 and 5 for course prerequisites.</i>	
Psychology	
<b>PSYC 121 (1/3)</b> Introduction to Psychology 1 15 pts	<b>PSYC 122 (2/3)</b> Introduction to Psychology 2 15 pts
<b>STAT 193 (1/3) (2/3)</b> Statistics for Natural and Social Sciences 15 pts	<i>Also consider:</i> <b>BMSC 114 (2/3)</b> Introduction to Human Biology 15 pts
Statistics	
Two courses (30 points) from MATH 100-199, STAT 100-199.	
(See Mathematics major of MATH courses)	
<i>Also consider:</i> <b>COMP 102 (1/3) (2/3)</b> Introduction to Computer Program Design 15 pts	

## 100-Level Prerequisites for Individual Courses

### BIOLOGICAL SCIENCES, GEOGRAPHY, GEOLOGY, PSYCHOLOGY

100-level courses assume little or no previous knowledge in these subjects, although NCEA Level 2 Biology is strongly recommended for BIOL courses.

### CHEMISTRY

**CHEM 113 – Concepts of Chemistry:** is an open-entry course recommended for those who have studied Chemistry to NCEA Level 2 but have not achieved 14 credits in NCEA Level 3.

**CHEM 114 – Principles of Chemistry:** requires at least 14 NCEA Level 3 Chemistry credits (achievement standards) or approved alternative.

**CHEM 115 – Structure and Spectroscopy:** CHEM 114 is a prerequisite for CHEM 115; however, candidates with an A- or better in CHEM 113 can enrol in CHEM 115 concurrently with enrolment in CHEM 114 in Trimester 2.

**CHEM 191 – Introductory Chemistry:** a bridging course which is offered each summer (Trimester 3) from late November to February or January to February by distance delivery with weekly on-campus tutorials (and lab week in February), for those with little or no previous experience in Chemistry.

### COMPUTER SCIENCE

**COMP 102 – Introduction to Computer Program Design:** assumes good computer skills but does not assume any background in computer programming.

**COMP 103 – Introduction to Data Structures and Algorithms:** you need to pass COMP 102 before enrolling in COMP 103.

### MATHEMATICS

**MATH 132 – Introduction to Mathematical Thinking:** For students with little or no Maths background; will be offered in Trimester 3 of 2011 and Trimester 1 of 2012 and will provide entry to MATH 141, 151 and 161.

**MATH 141 – Calculus 1A:** MATH 132 or at least 16 NCEA Level 3 Maths credits.

**MATH 142 – Calculus 1B:** MATH 141 or at least 18 NCEA Level 3 Maths credits with Calculus.

**MATH 151 – Algebra:** MATH 132 or 16 NCEA Level 3 Maths credits.

**MATH 161 – Discrete Mathematics and Logic:** MATH 132 or 16 NCEA Level 3 Maths credits.

**MATH 177 – Probability and Decision Modelling:** Successful completion of MATH 132 or 16 NCEA level 3 Calculus or Statistics credits, including 12 from Calculus.

### PHYSICS

**PHYS 114 – Physics 1A:** At least 14 credits in achievement standards in NCEA level 3 Physics or PHYS 122 or 131, and at least 14 credits of NCEA level 3 Mathematics (Calculus) or MATH 141, or equivalent backgrounds in Physics and Calculus.

**PHYS 115 – Physics 1B:** PHYS 114 or a B+ pass in PHYS 131 or 122 and at least 14 credits of NCEA level 3 Mathematics (Calculus) or MATH 141, or equivalent backgrounds in Physics and Calculus.

**PHYS 122 – Introduction to Physics and Applied Physics:** This is an open entry course which will meet the Physics prerequisite for PHYS 114.

**PHYS 131 – Energy and Environmental Physics:** This is an open entry course which will meet the Physics prerequisite for PHYS 114.

**PHYS 132 – Introductory Astronomy:** This is an open entry course which provides and elementary introduction to astronomy.

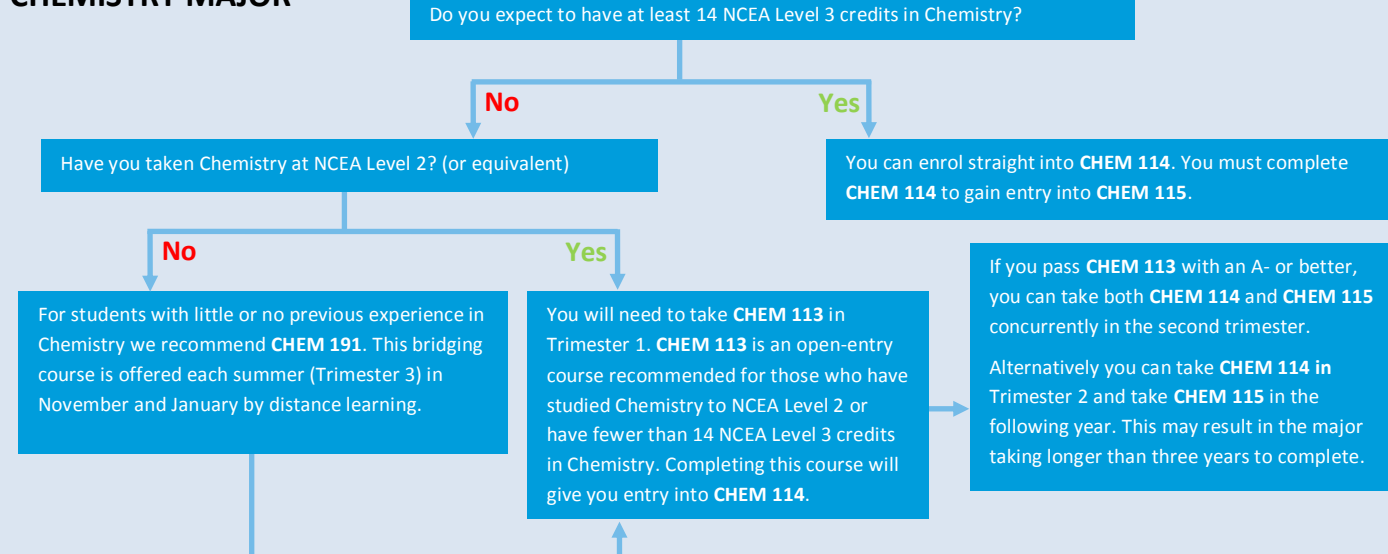
### STATISTICS

**STAT 193 – Statistics for Natural and Social Sciences:** this assumes no previous knowledge of Statistics, but it will be beneficial to have taken NCEA Level 2 Maths.

*Note: QUAN 102 is considered equivalent to STAT 193.*

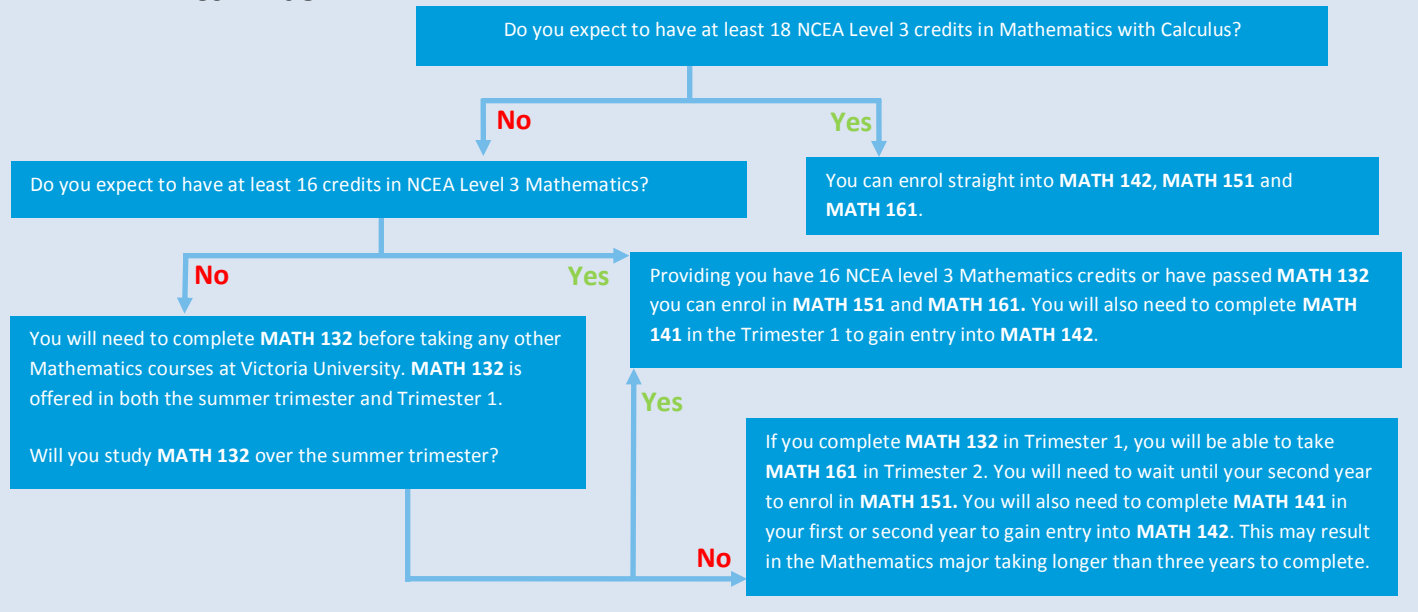
If you are unsure of which courses you need to take in your first year for the Chemistry, Mathematics and Physics majors, please refer to the flowcharts below and on the following page.

### CHEMISTRY MAJOR



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## MATHEMATICS MAJOR



## PHYSICS MAJOR

