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WELCOME TO CHEMISTRY AND PHYSICS

Welcome to the School of Chemical and Physical Sciences at Victoria University. Physics and chemistry are the disciplines that form the basis of much of our technological society, and they also underpin other branches of science, including Earth sciences and biological sciences. This booklet provides you with information on the undergraduate programmes and courses that we offer.

Our School administers outstanding undergraduate programmes in Chemistry and Physics, described in this prospectus, and we also contribute to degrees in Biomedical Sciences and Engineering, which are described in other prospectuses. All our undergraduate teaching is informed by the latest research, and the lecturing staff work at the international forefront of their fields. The School hosts the MacDiarmid Institute for Advanced Materials and Nanotechnology, which is named after Victoria University Chemistry graduate Professor Alan MacDiarmid, co-winner of the Nobel Prize in Chemistry for 2000 for the discovery and development of conducting polymers. The Institute is one of the New Zealand Centres of Research Excellence, and the only one covering chemistry, physics and materials science. The School also has excellent links with the School of Biological Sciences, through the Centre for Biodiscovery, and the Malaghan Institute of Medical Research. Undergraduates in the final year of their degrees benefit from this extensive research environment and have access to state-of-the-art scientific equipment.

The School is housed in the Laby Building on the Kelburn Campus, and also occupies specialised new laboratories in the adjoining Alan MacDiarmid Building. Other new laboratories, including a fully-equipped clean room, are located in an annex to the Laby Building and in the Central Services Building. The new laboratories reflect the expansion of our student numbers and Victoria University's commitment to developing the science disciplines. The laboratories have been built to the highest specification with modern facilities and instruments.

Victoria University is situated close to the centre of Wellington, the political, cultural and intellectual capital of New Zealand. The School enjoys good relationships and numerous collaborations with Crown research institutes and other science-focused organisations that are located in the greater Wellington region. Staff from these institutions frequently offer short lecture courses in our undergraduate and postgraduate teaching programmes. These relationships provide students with an insight into the important scientific work that is currently undertaken in New Zealand, which also helps them to plan their future careers.

I hope you will find this booklet helpful. Please contact the School if you would like further information.



We look forward to helping you develop your career in science.

**Prof Ulrich Zuelicke, Head of School
School of Chemical and Physical Sciences**

IMPORTANT DATES 2015

University re-opens for Trimester 3 and Summer School	5 January
Wellington Anniversary	19 January
Enrolment closes for 2015 courses	10 February
Trimester 3 and Summer School examinations	16–21 February
Trimester 1 begins	2 March
Easter/Mid-trimester break	3 April–19 May
Anzac Day	25 April (public holiday 27 April)
Graduation	12–14 May
Queen's Birthday	1 June
Examinations	12 June–1 July
Mid-year break	2 July–12 July
Trimester 2 begins	13 July
Mid-trimester break	24 August–6 September
Examinations	23 October–14 November
Labour Day	26 October
Trimester 3 begins	16 November
Graduation	9–10 December
Christmas break	22 December–2 January 2016

TIMETABLE

The timetable is online at www.victoria.ac.nz/timetables

**School of Chemical and Physical Sciences
Te Wānanga Matū**

Location: Laby Building (unless otherwise stated)
Phone: 04-463 5335
Fax: 04-463 5237
Email: scps@vuw.ac.nz
Website: www.victoria.ac.nz/scps

STAFF CONTACTS

Head of School	Prof Ulrich Zuelicke	406a	463 6851
Deputy Head of School	A/Prof Richard Tilley	006	436 5016
Manager, School Administration	Kara Eaton kara.eaton@vuw.ac.nz	406	463 5946 027 564 5946
General Enquiries	Maryke Barnard scps@vuw.ac.nz	101	463 5335
Chemistry Enquiries Undergraduate 100-Level	Dr Suzanne Boniface	101a	463 6485
Undergraduate 200 and 300-Levels	Prof James Johnston	303	463 5334
BSc (Hons) and MSc Part I	A/Prof Martyn Coles	413	463 6357
MSc Part II / PhD	Dr Matthias Lein	505	463 6926
Physics Enquiries Undergraduate and 100-Level Coordinator	A/ Prof Gillian Turner	521	463 6478
200-Level Coordinator	Dr Malcolm Ingham	515	463 5216
300-Level Coordinator	Dr Malcolm Ingham	515	463 5216
BSc (Hons) MSc / PhD	Dr Ben Ruck Dr Petrik Galvosas	506 404	463 5089 463 6062
Laboratory Operations Manager	Dr Gordon Heeley	104	463 5955 021 130 1592

CHEMISTRY**Academic Staff**

	Research Areas	Room	Contact
A/Prof Martyn Coles	<i>Catalysis, organometallic chemistry, hydrogen-bonded materials</i>	413	463 6357
Dr Robin Fulton	<i>Inorganic synthesis and mechanisms, environmental chemistry</i>	524	463 9799
Dr Nicola Gaston	<i>Theoretical quantum chemistry, electronic structure in nanomaterials, clusters</i>	514	463 6519
Dr Jonathan Halpert	<i>Nanostructured materials for optoelectronic device applications</i>	AM204	463 5819
Dr Joanne Harvey	<i>Total synthesis, design and synthesis of natural product analogues, organic reaction methodology</i>	AM207	463 5956
Dr Justin Hodgkiss	<i>Ultrafast laser spectroscopy, conjugated polymers, organic solar cells</i>	AM209	463 6983
Prof James Johnston	<i>Applied chemistry; new materials, nano-structured and nano-hybrid materials, new products and technology development and commercialisation</i>	303	463 5334
Dr Rob Keyzers	<i>Natural products, food and wine chemistry, NMR spectroscopy and mass spectrometry</i>	AM208	463 5117
Dr Matthias Lein	<i>Computational and Theoretical chemistry</i>	505	463 6926
Prof Kathryn McGrath	<i>Soft matter, biophysical chemistry and materials science</i>	409	463 5963
A/Prof Peter Northcote	<i>Natural products, NMR spectroscopy</i>	412	463 5960
Prof John Spencer	<i>Organometallic chemistry</i>	403	463 5119
Dr Bridget Stocker	<i>Immunoglycomics, bio-organic, green chemistry</i>	508	463 6481
A/Prof Richard Tilley	<i>Nanoparticle research and electron microscopy</i>	006	463 5016
Dr Mattie Timmer	<i>Immunoglycomics, design and synthesis of glyconjugate probes</i>	507	463 6529

Senior Teaching Fellow

Dr Suzanne Boniface	<i>Chemistry education</i>	101a	463 6485
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Professorial Research Fellows

Prof Kenneth MacKenzie	<i>Materials chemistry, solid-state NMR spectroscopy of inorganic materials, ecologically-friendly materials</i>	511	463 5885
A/Prof Gerald Smith	<i>Photochemistry, protection of materials, heritage science</i>	522	463 5547

Emeritus Professors

E/Prof Neil Curtis		102	463 6514
E/Prof Brian Halton		102	463 5954

PHYSICS

Academic Staff	Research Areas	Room	Contact
Dr Stephen Curran	<i>Astrophysics</i>	504	TBA
Dr Petrik Galvosas	<i>NMR methodologies for molecular dynamics in soft matter and porous material, NMR instrumentation</i>	404 /308	463 6062 /5911
A/Prof Michele Governale	<i>Theoretical condensed-matter physics, quantum transport in nanoscale systems</i>	402	463 5951
Dr Malcolm Ingham	<i>Environmental physics, geophysics</i>	515	463 5216
Dr Melanie Johnston-Hollitt	<i>Astrophysics: Radio astronomy, Galaxy clusters and Large-scale structure</i>	502	463 6543
Prof Eric Le Ru	<i>Electromagnetism, fluorescence and Raman spectroscopy</i>	205	463 5233 ext. 7509
Dr Franck Natali	<i>Novel materials for electronic and optoelectronic applications</i>	516	463 5964
Dr Natalie Plank	<i>Electronic device properties of nanomaterials</i>	503	463 5031
Dr Ben Ruck	<i>Experimental condensed matter physics</i>	506	463 5089
A/Prof Gillian Turner	<i>Geophysics, geomagnetism, palaeomagnetism</i>	521	463 6478
Prof Ulrich Zuelicke	<i>Theoretical condensed-matter physics, nano-electronic transport and spin-electronic devices, cold-atoms systems</i>	406	463 6851

Senior Teaching Fellows

Mr John Hannah		511	463 5223
Dr Howard Lukefahr		AM217	463 5355

Professorial Research Fellow

Dr Grant Williams	<i>Superconductors, magnetic nanoparticles, spin transport electronics, radiation detection and imaging, and nonlinear optics</i>	523	463 5544
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Emeritus Professors

E/Prof Alan Kaiser	<i>Electronic properties of novel materials, esp. nanoscale materials</i>	511	463 5957
E/Prof Joe Trodahl	<i>Ferromagnetic semiconductors for spintronics, ferroelectric oxides, heat flow in sea ice</i>	516	463 5964

MASTER OF ADVANCED TECHNOLOGY ENTERPRISE (MATE)

Prof David Bibby	Programme Director	--	463 5509
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SCIENCE IN CONTEXT

Dr Rebecca Priestley	<i>Science in Context: History of science, Science communication, Creative science writing</i>	AM205	463 5233 ext 7134
Dr Rhian Salmon	<i>Science in Context: Scientist-centred communication, polar science, communication of climate change, interdisciplinary research</i>	AM202	463 5507

THE VICTORIA BACHELOR OF SCIENCE

Victoria's Bachelor of Science (BSc) degree provides the depth of a strong science education in one or two specialised science subjects—**majors**—combined with the breadth of subjects from outside your science major **or** outside science altogether to the extent of a **second major** or **minor** or a variety of interest subjects.

Year 1: EXPLORATION

Workload: 120 points

Major	Major	Major	Major	Elective	Elective	Minor	Minor
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Year 2: CONSOLIDATION

Workload: 120 points

Major	Major	Major	Major	Elective	Elective	Minor	Minor
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Year 3: SPECIALISATION

Workload: 120 points

Major	Major	Major	Major	Elective	Elective	Minor	Minor
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GRADUATION: BSc in Major

BSC REGULATIONS

These regulations apply to all new, returning or transferring students taking up a BSc degree:

- Minimum of 360 approved points:
 - 210 points above 100-level of which 150 points must be science
 - 75 science points at 300-level.
- At least one science major.
- 90 points may be from outside science with an additional 30 points permitted if specified in the major.
- A second major may be from any other first degree with a maximum of 150 points permitted from outside science.

SCIENCE MAJOR REGULATIONS

For specific requirements please see the relevant prospectus. A major indicates your prime area of study in your BSc degree and you need to achieve:

- 60 points at 300-level
- 60–80 points at 200-level
- 45–60 points at 100-level.

Note: For regulations of majors from outside science you need to meet the requirements identified in that degree where the major or subject area is specified.

SCIENCE MINOR REGULATIONS

A minor demonstrates an area of interest which is recorded on your academic transcript and you need:

- 60 points above 100-level specified in the major, of which
- 15 points must be at 300-level.

MINOR IN FORENSIC SCIENCE

A Forensic Science minor is available to students undertaking a semester of exchange at the National University of Singapore (NUS) who meet the pre-requisite requirements. You must:

- be selected as suitable for a trimester of international exchange
- include two core courses in 300-level Forensic Science at NUS (30 Victoria points)
- have passed CHEM 114 and one of BIOL/BMSC 241, 244 or CHEM 201 prior to acceptance.

Please visit <http://vicoe.dotnous.com/#Singapore> for more information.

MINOR IN SCIENCE IN CONTEXT

A Science in Context minor is available to students from all disciplines, enabling them to develop their scientific literacy and appreciation of the role of science in society. The Science in Context minor includes a core 300-level course in Science Communication and a range of other courses often run online, intensively over summer, or face-to-face. See page 35 or www.victoria.ac.nz/scps/research/research-groups/science-in-context for more details.

CONJOINT REGULATIONS FOR ANY TWO VICTORIA DEGREES

Any two Victoria degrees can be completed under conjoint regulations provided that a B-grade point average is maintained each year. This means that fewer points are required than for two degrees not completed under conjoint regulations. For example, under conjoint regulations, two (three year) degrees should be able to be completed in four years and a four year degree and a three year degree should be able to be completed in five years.

CONJOINT BSC/BTEACH

This is a special conjoint programme for science or mathematics students wishing to teach in primary and secondary schools. See www.vuw.ac.nz/education for more information.

The programme requires:

- B- average maintained throughout the programme
- 540 total points
- 240 science points of which 135 are above 100-level
- 280 BTeach points of which 190 are above 100-level.

Note: All BSc graduates require completion of at least 15 points in MATH/STAT/PHYS if not already specified in the major.

COURSE STUDY REQUIREMENTS

In a trimester of study, to ensure success you **must**:

- hand in any required work
- attend compulsory laboratory, field, tutorial or workshop sessions
- sit key tests.

Otherwise you may be considered for suspension for one trimester from the university after your first or any trimester of study. You will then have to **reapply** for admission.

If you achieve an academic progress grade below one over three trimesters of study you may be recommended for suspension from university for one year.

Note: Pulling out of courses after two weeks without due cause will be registered on your academic record as a **fail** grade.

At Victoria we care about the academic progress of our students, and want you to succeed and achieve your potential. The Faculty of Science invites students who are not making good progress to talk to the Associate Dean (Academic), Shona de Sain. Together we decide what support is appropriate and on a suitable programme of study. You can also talk to the student advisers, academic staff and the university student services staff. Email science-faculty@vuw.ac.nz for an appointment with the Associate Dean.

The Faculty has a number of well-established, effective initiatives that focus on students working collectively to succeed and working with communities to improve secondary and tertiary educational outcomes. Te Rōpū Āwhina offers help, mentoring and a whānau environment for study to Māori, Pacific and other students. The Faculty also offers equity-help sessions for core 100-level science courses. For more details see www.victoria.ac.nz/science/study/equity

GRADUATE DIPLOMA IN SCIENCE

The Graduate Diploma in Science (GDipSc) is a flexible programme that caters for students from a wide variety of backgrounds. It enables those with a Bachelor's degree or appropriate work experience in one discipline to transition to postgraduate study in a new area. Alternatively it can provide a refresher course or a short programme of study in an area of interest.

The diploma is an ideal opportunity to specialise at an advanced level in areas not included in your first degree or, if you have been away from study for a while, to learn about new developments in your original discipline.

A GDipSc may be endorsed with the name of one subject (e.g.: a Graduate Diploma in Science in Chemistry) if the course of study meets the 300-level major requirements for that subject.

DURATION

One year full time or up to four years part time.

ENTRY REQUIREMENTS

A Bachelor's degree in any discipline.

COURSE REQUIREMENTS

The GDipSc course is essentially a Bachelor of Science major in a different discipline to your first degree. You can choose your own programme of study—in consultation with the Associate Dean (Academic)—from a wide range of 200- and 300-level courses.

The programme must include:

- 120 science points from 200- and 300-level courses
- At least 75 points at 300-level.

POSTGRADUATE STUDY

As the top New Zealand university for research performance, Victoria is the obvious choice if you are considering studying at postgraduate level.

For specific programmes check the relevant postgraduate prospectus and the Victoria postgraduate study website www.victoria.ac.nz/home/study/postgrad

CHEMISTRY

Chemistry is the study of matter in all its many and varied forms. Chemistry is concerned with the synthesis, composition, structure, properties and reactivity of matter. As such, chemistry intersects with physics and underpins geology and biology.

MAJOR IN CHEMISTRY (CHEM)

For a **Major in Chemistry** you must include:

- CHEM 114, CHEM 115; 15 100-level MATH or PHYS points; 15 points from (BIOL 111, BMSC 117, BTEC 101, ENVI 114, ESCI 111, 112)
- CHEM 201, 202, 203, 205, 206
- 60 points from (CHEM 301, 302, 303, 305, 306).

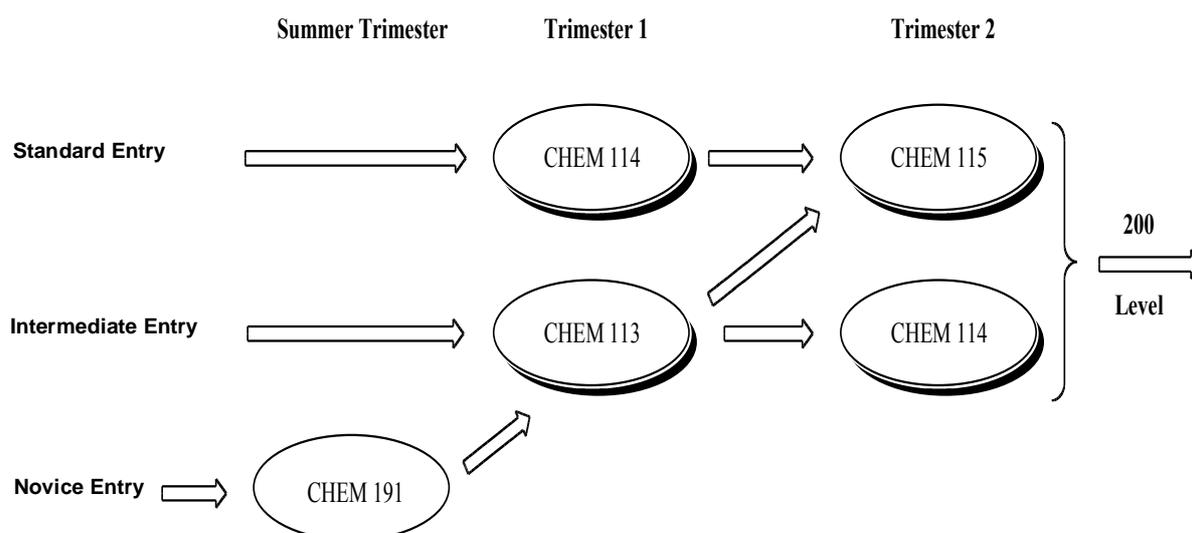
Generic skills: The numeracy and communication skills requirement for the BSc are met through the MATH/PHYS requirement and through extensive laboratory report writing and oral presentations, particularly in 300-level CHEM courses.

ENTRY TO 100-LEVEL CHEMISTRY COURSES

Where you enter a BSc in Chemistry will depend on your previous experience and achievement in Chemistry. If you have achieved 18 credits in Chemistry at NCEA Level 3 which includes at least an achieved grade in all three external achievement standards, then you may enter at CHEM 114 Principles of Chemistry in trimester 1. That is followed by CHEM 115 in trimester 2. Successful completion of CHEM 115 will allow you to enrol in 200-level Chemistry courses the following year.

If you have fewer than 18 credits in Chemistry at NCEA Level 3 including the three external achievement standards then CHEM 113 Concepts of Chemistry (trimester 1) is the starting point for Chemistry. There is no entry requirement for CHEM 113. However, you are strongly advised to take CHEM 191 in the summer trimester if you have not studied Chemistry to at least NCEA Level 2. CHEM 113 may be followed in trimester 2 by CHEM 114 Principles of Chemistry and, if you achieve A- or better in CHEM 113, you may also take CHEM 115 Structure and Spectroscopy concurrently in the second trimester.

The School offers a summer course (trimester 3) in CHEM 191 Introductory Chemistry (15 points), which is taught as a distance course but with a compulsory one-week laboratory programme in February. CHEM 191 is an open entry course and is an excellent preparation for CHEM 113. Note that the first intake for CHEM 191 begins mid-November and a second intake, which covers the same work in half the time, begins in early January.



Standard: 18 Credits in Chemistry at NCEA Level 3 with at least an achieved grade in all three external standards.

Intermediate: NCEA Level 2 Chemistry or less than 18 Credits in Chemistry at NCEA Level 3 or lack of achievement in the Level 3 external achievement standards.

Novice: No specific senior school Chemistry. If you are in this category you are strongly advised to take the summer course CHEM 191 Introductory Chemistry before enrolling in CHEM 113.

SAMPLE DEGREE: BSc IN CHEMISTRY

First year (standard entry with 18 credits at NCEA Level 3 Chemistry, including all 3 externals)

- CHEM 114 (tri 1) and CHEM 115 (tri 2).
- PHYS 114 or MATH 132 (other choices available).
- BIOL 111 or BTEC 101 or ENVI 114 (other choices available).
- Four other courses of your choice, possibly leading to a second major.

First year (intermediate entry with NCEA Level 2)

- CHEM 113 (Tri 1), CHEM 114 (Tri 2) and CHEM 115 (Tri 2) (A- or better in CHEM 113 required).
- PHYS 131 or MATH 151 (other choices available).
- BIOL 111 or BTEC 101 or ENVI 114 (other choices available).
- Three other courses of your choice, possibly leading to a second major.

CHEM 114 and CHEM 115 must be taken before proceeding to 200-level courses. You are strongly advised to include them in your first year if possible.

Second year

- CHEM 201, 202, 203, 205, 206.
- 45 further points which could include CHEM 225.

Third year

- Any four (60 points) from CHEM 301, 302, 303, 305, 306.
- Students considering or wishing to proceed to a BSc (Hons) degree are strongly advised to take all five of these courses (see below)*.
- At least 60 points from other courses (at least one course at 300-level), preferably including the 300-level CHEM course not already taken.

With 360 points including 210 at advanced level and the required courses for the Chemistry major listed above, you will qualify for a BSc in Chemistry. However, you may wish to extend your education by considering postgraduate study, either a BSc(Hons) (one year) or MSc (minimum two years) in Chemistry. The fourth year requirements for both degrees are similar.

Fourth year BSC (Honours) in Chemistry

Five courses are required in an *approved* combination from CHEM 421–441 **plus** CHEM 480 and CHEM 489.

* If you are enrolling for a BSc(Hons) or MSc in Chemistry you should have preferably completed CHEM 301, 302, 303, 305 and 306, but must have completed the requisite laboratory course (CHEM 305 or 306) directly relevant to your CHEM 489 research project.

PHYSICS

Physics seeks to explain how nature works at every level from the sub atomic to the cosmic. As such, it is fundamental to all the other sciences. The methods and principles of physics are important to a wide range of applications including engineering, the energy industry, computer science, earth science and many others.

MAJOR IN PHYSICS (PHYS)

The BSc major in Physics covers all the essential aspects of classical and contemporary physics including classical mechanics, relativity, quantum mechanics, nuclear and atomic physics, condensed matter, electromagnetism, thermal physics and statistical mechanics. Physics graduates are able to apply the principles and concepts of physics to problem solving in a wide range of situations, and are able to communicate scientific ideas clearly in both verbal and written form. Completion of a BSc major in Physics with an average of B or better will allow you to pursue further study in Physics—Honours, MSc, PhD. A major in Physics also opens doors to careers in all walks of life, not just fundamental research and academia, but such areas as commerce, IT, education, industry and public service.

The required courses for a major in Physics are:

- MATH 142, 151, PHYS 114, 115
- MATH 243, PHYS 221, 222, 223; 15 further points from (ECEN 201–203, PHYS 200–299)
- PHYS 304, 305, 307, 309.

MAJOR IN APPLIED PHYSICS (APHS)

The BSc major in Applied Physics gives a sound foundation in all aspects of physics but allows more flexibility to include selected ‘applied’ courses from outside the core physics offering—electronics, environmental physics, geophysics, architectural and building studies, materials science, medical physics. A BSc in Applied Physics teams up well with other subjects such as earth and environmental sciences, electronics and computer science and leads to a diverse range of employment opportunities in these and other fields.

The required courses for a major in Applied Physics are:

- MATH 142, 151, PHYS 114, 115
- 30 points from PHYS 201–299; 30 further points from (ECEN 201–203, MATH 243, 244, PHYS 201–299)
- PHYS 343; 30 further points from (ECEN 301 or ECEN 303; PHYS 301–399), 15 further approved 300-level points in Physics or a related subject.

Physics courses also contribute significantly to the BSc majors in Geophysics (GPHS) and Electronics and Computer Systems (ELCO), which are administered by the School of Geography, Earth and Environmental Sciences and the School of Engineering and Computer Science respectively. For more details of the GPHS or ELCO major see the prospectus of the appropriate school.

ENTRY TO 100-LEVEL PHYSICS COURSES

PHYS 114 and PHYS 115 form the core 100-level programme in physics, and are pre-requisite for students continuing to 200-level physics, applied physics or geophysics. To gain entry to PHYS 114 or 115 students should have studied both physics and maths (calculus) to NCEA Level 3, and achieved:

- at least 18 credits in PHYS achievement standards including the units on mechanics (AS91524) and electricity (AS91526) and either waves or the practical unit (AS91523 or AS91521);
- At least the differentiation and integration achievement standards in level 3 MATHS (AS91578 and AS91579).

Students without the necessary physics background (or its equivalent in other qualification systems) will need to enrol in PHYS 131 or PHYS 122 (BE students only) in the first trimester. A pass in either PHYS 131 or PHYS 122 together, with the required level of calculus will enable enrolment in PHYS 115 in the second trimester. Students without the necessary calculus will need to pass either MATH 141 or ENGR121 (BE students) in the first trimester. This with either the required NCEA level in physics, or a pass in PHYS 131 or PHYS 122 will allow entry into PHYS 115.

PHYS 132 Introductory Astronomy is an elective 100-level course offered to broaden students' experience in physics. PHYS 131 may be taken as an elective in energy and environmental physics. There are no formal entry requirements for either PHYS 131 or PHYS 132.

Students who are very well prepared and who have achieved a majority of excellence grades at NCEA Level 3 may be exempted from PHYS 114 and/or offered direct entry to certain 200-level courses. Students interested in exploring this option should contact the Physics programme director as soon as their school results become available.

Students who have not completed NCEA level 3, but who have a very high level of achievement at level 2, should contact the Physics programme director to discuss the appropriate point of entry in physics and maths.

SAMPLE PROGRAMMES

BSc MAJORING IN PHYSICS

First year (120 points)

- PHYS 114, 115.
- MATH 142, 151.
- A further four courses which may count towards another major or minor, or broaden your physics and/or maths programme (popular examples are PHYS 131, 132, CHEM 113, 114, 115, COMP 102, 103, STAT 193, WRIT 101).

Second year (120–135 points)

- PHYS 221, 222, 223.
- MATH 243.
- One of PHYS 209, 217, ECEN 201–203.
- Three or four further courses.

Third year (105–120 points)

- PHYS 304, 305, 307, 309.
- A further three or four courses including at least one at 300-level. Unless taking a second major, good options are PHYS 339, 343.

BSc MAJORING IN APPLIED PHYSICS

First year (120 points)

- PHYS 114, 115.
- MATH 142, 151.
- A further four courses which may count towards another major or minor, or broaden your physics and/or maths programme (popular examples are PHYS 131, 132, CHEM 113, 114, 115, COMP 102, 103, STAT 193, WRIT 101).

Second year (120–135 points)

- PHYS 209, 217, 222, 223 (other options available).
- A further four courses.

Third year (105–120 points)

- PHYS 343, 305, 309, 339 (other options available).
- A further four courses including at least one at 300-level.

COMBINING CHEMISTRY AND PHYSICS

There are various ways in which you can combine study of Physics and Chemistry in a BSc degree. The most intensive is to complete majors in both subjects—this will give you a very full programme that leaves little room for any other interest subjects. In order to make it possible to fit the requirements of both majors into a three year programme, some concessions are allowed at 200-level: CHEM 205 Chemical Synthesis Laboratory Course) is waived from the chemistry major requirement, and the elective 200-level physics course (normally PHYS 217 or PHYS 209) is waived from the Physics major. This concession applies only to students completing majors in both Physics and Chemistry. Alternatively you can complete a major in one subject and a minor in the other subject. This entails completion of all the required courses of the major subject and 60 points above 100-level, including at least 15 points at 300-level, in the minor.

SAMPLE PROGRAMMES

BSC WITH MAJORS IN PHYSICS AND CHEMISTRY

First year (120 points)

- CHEM 114, 115, MATH 142, 151, PHYS 114, 115.
- A further two courses one of which should be in Earth or Biological Sciences.

Second year (120 points)

- CHEM 201, 202, 203, 206, MATH 243, PHYS 221, 222, 223.

Third year (120 points)

- CHEM 301, 302, 303, 306, PHYS 304, 305, 307, 309.

BSc WITH MAJOR IN CHEMISTRY, MINOR IN PHYSICS

First year (120 points)

- CHEM 114, 115, MATH 142, 151, PHYS 114, 115.
- A further two courses one of which should be in Earth or Biological Sciences.

Second year (120 points)

- CHEM 201, 202, 203, 205, 206.
- Three courses from PHYS 221, 222, 223, 209, 217, MATH 243 (other options are also possible).

Third year (120 points)

- Four or five of CHEM 301, 302, 303, 305, 306.
- At least one of PHYS 304, 305, 307, 309, 339, 343.
- Further courses to reach at total of 360 points for the BSc degree.

BSc WITH MAJOR IN PHYSICS, MINOR IN CHEMISTRY

First year (120 points)

- CHEM 114, 115, MATH 142, 151, PHYS 114, 115.
- A further two courses e.g. from COMP, MATH, ESCI, BIOL, WRIT.

Second year (120 points)

- PHYS 221, 222, 223, MATH 243, one of PHYS 209, 217.
- Three courses from CHEM 201, 202, 203, 205, 206 (other options are also possible).

Third year (120 points)

- PHYS 304, 305, 307, 309.
- At least one of CHEM 301, 302, 303, 305, 306.
- Further courses to reach at total of 360 points for the BSc degree.

CHEMISTRY COURSES

Any enquiries about undergraduate Chemistry courses should be directed to the course coordinator, the relevant level coordinator, or Reception in room Laby 101 (phone 04-463 5335. See page 3 for contact details. Approval of an overall programme is required from the Head of the School. For lecture timetables see www.victoria.ac.nz/timetables

100-LEVEL COURSES

CHEM 191	CRN (SEE STREAMS)	INTRODUCTORY CHEMISTRY	15 PTS	3/3
Restrictions:		CHEM 113, 114		
Assessment:		Internal: assignments 35%, laboratory 25%, theory tests 40%		
Coordinator:		Dr Suzanne Boniface		
Tutorials:		TBA at the initial course meetings		
Laboratories:		1 week duration 16–19 February 2016, 9am–4pm		
Streams:		Stream 1: starting 16 November 2015 (CRN 7193) Stream 2: starting 4 January 2016 (CRN 23006)		
Text:		Course notes are available online		

This summer bridging course, taught by flexible (distance) delivery, may be used either to provide the basic chemical concepts and laboratory skills desirable for the study of chemistry at university level or as a refresher course for those who have studied some chemistry in the past. It is highly recommended for BBmedSc students who do not have an adequate background in chemistry. While CHEM 191 is designed for students with little or no previous experience of chemistry, it may be taken for credit by any student who has not already passed a higher level chemistry course.

Note: There will be two intakes for CHEM 191 (see streams above). While this does provide an opportunity for late enrolment, the second intake must finish at the same time as the November intake meaning students will be expected to complete two modules per week.

CHEM 113	CRN 17147	CONCEPTS OF CHEMISTRY	15 PTS	1/3
Prerequisites:		We strongly recommend students who have not completed level 2 NCEA Chemistry take CHEM 191 over the summer		
Restrictions:		CHEM 114, 115		
Assessment:		In-course tests (2) 20%, assignments 20%, laboratory course 20%, final examination 40%		
Coordinator:		Dr Suzanne Boniface		
Lecturers:		Dr Suzanne Boniface, TBA		
Tutorials:		1 hour per week TBA		
Laboratories:		1 x 3 hour lab per week		
Text:		Blackman, Bottle, Schmid, Mocerino and Wille, <i>Chemistry</i> , John Wiley & Sons, Inc., Australia, 2 nd Ed.		
Course notes:		Available online or printed copies can be purchased from the Laby reception office		

This course covers the fundamental concepts of Chemistry—the electronic structure and properties of atoms, periodic trends, chemical bonding, the relationship between structure and reactivity, chemical equilibria and thermodynamics, acids and bases, redox reactions, organic nomenclature and isomerism, the identification and reactivity of a selection of organic functional groups.

CHEM 114	CRN 17148 CRN 17170	PRINCIPLES OF CHEMISTRY	15 PTS	1/3 2/3
Prerequisites:	CHEM 113 or 18 AS credits at NCEA Level 3 Chemistry including: AS91390, AS91391, AS91392 or AS91393 and equivalent background in Chemistry			
Restriction:	CHEM 104			
Assessment:	In-course tests (2) 20%; assignments 10%, laboratory programme 20% final examination 50%			
Coordinator:	TBA (1/3), Dr Suzanne Boniface (2/3)			
Lecturers:	(1/3) Dr Nicola Gaston, Dr Rob Keyzers, (2/3) TBA			
Tutorials:	1 hour per week TBA			
Laboratories:	1 x 3 hour lab per week			
Text:	Burrows, Holman, Parsons, Pilling and Price, <i>Chemistry3 introducing inorganic, organic and physical chemistry</i> , Oxford University Press 2009.			
Course notes:	Available online or printed copies can be purchased from the Laby reception office			
Equipment:	Molecular model kit—suitable kits can be purchased from Laby reception office			

Principles of atomic and molecular structure; thermodynamics and kinetics; an introduction to the systematic chemistry of the main group of elements and transition metals and applications; and to a mechanistic interpretation of organic chemistry.

CHEM 115	CRN 17149	STRUCTURE AND SPECTROSCOPY	15 PTS	2/3
Prerequisites:	CHEM 114 or A- or better in CHEM 113 and concurrent enrolment in CHEM 114			
Restrictions:	CHEM 204			
Assessment:	Laboratory (20%), workshop (20%), 2 x 1 hour in-course tests, (2 x10%), final 3-hour examination (40%)			
Coordinator:	Dr Robin Fulton			
Lecturers:	Dr Rob Keyzers, A/Prof Peter Northcote, Dr Suzanne Boniface, Dr Robin Fulton, Prof Kathryn McGrath, Dr Justin Hodgkiss			
Tutorials:	TBA			
Laboratories:	TBA			
Text:	Burrows, Holman, Parsons, Pilling, Price, <i>Chemistry³ introducing inorganic, organic and physical chemistry</i> , Oxford University Press.			

This is a unifying chemistry course in which we use a skills-based approach to chemical structural elucidation using electromagnetic radiation (i.e. light). In particular electronic, vibrational and rotational excitations, electron spin alignment and complete ejection of an electron, i.e. UV-Vis, IR, Raman, Microwave, NMR spectroscopies and X-ray diffraction will be explored from fundamentals to practical. Mass spectrometry will also be introduced.

200-LEVEL COURSES

CHEM 201	CRN 8607	ORGANIC CHEMISTRY	15 PTS	2/3
Prerequisite:		CHEM 114, 115 or equivalent		
Assessment:		In-class tests 30%, assignments 10%, final examination 60%		
Coordinator:		Dr Mattie Timmer		
Lecturers:		A/Prof Peter Northcote, Dr Joanne Harvey, Dr Rob Keyzers, Dr Mattie Timmer, Dr Bridget Stocker		
Tutorials:		1 hour per week mandatory attendance TBA		
Text:		Clayden, Greeves, Warren & Wothers. <i>Organic Chemistry</i> , Oxford University Press, 2 nd Ed., 2012.		
Equipment:		Molecular model kit—suitable kits can be purchased from the Laby Reception office		

This programme builds on CHEM 114 and CHEM 115 with a molecular orbital approach to the mechanisms of fundamental organic chemical reactions, leading to a survey of the chemistry of conjugated systems, aromatic compounds and carbonyl chemistry.

CHEM 202	CRN 8608	INORGANIC AND MATERIALS CHEMISTRY	15 PTS	1/3
Prerequisite:		CHEM 114, 115 or equivalent		
Assessment:		Library-based project 4%, in-course test (60 minutes) 16%, assignments (5) 20%, final examination (3 hours) 60%		
Coordinator:		Dr Matthias Lein		
Lecturers:		Prof John Spencer, A/Prof Martyn Coles, Dr Robin Fulton, Dr Matthias Lein, A/Prof Richard Tilley		
Tutorials:		TBA		
Text:		Shriver & Atkins, <i>Inorganic Chemistry</i> , 5th ed. Oxford 2010. Tilley, <i>Understanding Solids</i> , Wiley.		

The course addresses the principles and applications of the chemistry of the p-block and d-block elements, the symmetry and shape of molecules, organometallic chemistry and the principles and applications of solid state inorganic chemistry, including the chemistry of inorganic materials.

CHEM 203	CRN 7598	PHYSICAL AND PROCESS CHEMISTRY	15 PTS	2/3
Prerequisite:		CHEM 114, 115 or equivalent		
Assessment:		2 hour in-course test 25%, assignments 15%, final 3 hour examination 60%		
Coordinator:		Prof Kathryn McGrath		
Lecturers:		Prof Kathryn McGrath, Dr Justin Hodgkiss, Dr Matthias Lein, Dr Nicola Gaston, Dr Jonathan Halpert		
Tutorials:		1 tutorial per week TBA		
Hyperchem tutorials:		These tutorials will be timetabled separately and will be in addition to the set 1-hour weekly tutorials. There will be a total of three computational chemistry tutorials.		
Text:		Atkins & de Paula, <i>Physical Chemistry</i> , Oxford University Press, 9th ed.		

We will explore a number of different topics, all aimed at building up a framework in which we can describe chemical systems. Thermodynamics and kinetics enable us to determine not only whether a transformation (e.g. a reaction) will occur but at what rate the transformation occurs, and if there is a choice of outcomes from the process which one will predominate. Computation chemistry is a tool that helps us to understand how and why molecules exist in the forms that they do and to explain their reactivities. This theory is essential in our understanding of chemistry. In the course we will also introduce the foundations of optical spectroscopy, enabling us to understand how spectra such as IR and UV/Vis appear as they do. We will also use many of the fundamental concepts introduced in the other sections of the course to explore the area of surface chemistry.

CHEM 205	CRN 8610	CHEMICAL SYNTHESIS LABORATORY COURSE	15 PTS	2/3
Prerequisite:		CHEM 114, 115 or equivalent		
Assessment:		Internal assessment based on written laboratory reports, quality of experimental work and samples 80%, in-course examination 20%		
Coordinator:		Dr Rob Keyzers		
Demonstrators:		Dr Rob Keyzers, A/Prof Peter Northcote, A/Prof Martyn Coles, Dr Robin Fulton, Dr Joanne Harvey		
Laboratories:		1 x 4 hour and 2 hour lab per week		

Note: It is strongly recommended that CHEM 201 and CHEM 202 are taken concurrently or have been passed previously.

CHEM 205 provides the opportunity to develop practical skills, competence and confidence in the chemistry laboratory with particular reference to the synthesis and purification of molecules and compounds; functional group transformations; physical, chemical and spectroscopic characterisation; and multi-step chemical syntheses. The programme provides an introduction to the nature of research involving organic and inorganic bench chemistry.

CHEM 206	CRN 8611	CHEMICAL METHODS AND PROCESS LABORATORY COURSE	15 PTS	1/3
Prerequisite:		CHEM 114, 115 or equivalent		
Assessment:		Internal assessment based on written laboratory reports, quality of experimental work and samples 70%, in-course examination 20%, assignments 10%		
Coordinator:		Dr Nicola Gaston		
Demonstrators:		TBA		
Laboratories:		1 x 4 hour lab per week		

The laboratory programme provides the opportunity to develop laboratory skills, competence and confidence in the chemistry laboratory with particular reference to experimental methods and procedures in chemistry and materials science. This includes the measurement and characterisation of chemical phenomena, properties and systems and chemical processes and their emulation.

CHEM 225	CRN 6730	ANALYTICAL CHEMISTRY	15 PTS	1/3
Prerequisites:		CHEM 114 or equivalent background		
Assessment:		Internally assessed: laboratory 35%, in-trimester test 20%, assignments (2) 10%, final course test 35%		
Coordinator:		Dr Robin Fulton		
Lecturer:		Dr Rob Keyzers		
Demonstrator:		TBA		
Laboratory:		1 x 3 hour lab per week		

The major methods of chemical analysis used by analytical chemists are presented. The emphasis in the lecture and the practical component is on the analysis of real samples and the solving of practical and environmental problems.

300-LEVEL COURSES

CHEM 301	CRN 9058	ORGANIC CHEMISTRY	15 PTS	1/3
Prerequisite:		CHEM 201		
Assessment:		In class tests and assignments 40%, final examination 60%		
Coordinator:		Dr Mattie Timmer		
Lecturers:		Dr Mattie Timmer, Dr Rob Keyzers, Dr Joanne Harvey, A/Prof Peter Northcote, Dr Bridget Stocker		
Tutorials:		TBA		
Text:		Clayden, Greeves, Warren & Wothers. <i>Organic Chemistry</i> , Oxford University Press, 2 nd Ed., 2012.		

Advanced topics in organic chemistry such as biosynthesis of biologically important molecules, chemistry of reactive intermediates, pericyclic reactions, organometallic reactions in synthesis, retrosynthetic analysis and carbohydrate chemistry.

CHEM 302	CRN 7600	INORGANIC AND MATERIALS CHEMISTRY	15 PTS	2/3
Prerequisite:		CHEM 202		
Assessment:		Final examination 60%, 1 in-term test plus assignments 40%		
Coordinator:		A/Prof Richard Tilley		
Lecturers:		Prof John Spencer, Assoc Prof Martyn Coles, Dr Robin Fulton, Dr Matthias Lein, Prof James Johnston, A/Prof Richard Tilley		
Tutorials:		TBA		
Text (recommended):		Either of Shriver & Atkins, <i>Inorganic Chemistry</i> , (5 th ed.) Oxford 2010 or Housecroft and Sharpe, <i>Inorganic Chemistry</i> , (2 nd or 3 rd ed.)		
Recommended reading:		Tilley, <i>Understanding Solids</i> , Wiley		

Advanced topics in molecular and solid state inorganic chemistry including bio-inorganic, organometallic and materials chemistry, and techniques associated with the elucidation of chemical structure and reactivity.

CHEM 303	CRN 7602	PHYSICAL AND PROCESS CHEMISTRY	15 PTS	1/3
Prerequisite:		CHEM 203		
Assessment:		Executive report 10%, assignments 10%, in-trimester test 20%, final examination 60%		
Coordinator:		Prof James Johnston		
Lecturers:		Prof James Johnston, Prof Kathryn McGrath, Dr Justin Hodgkiss, Dr Nicola Gaston, Dr Jonathan Halpert		
Text:		Heaton, C.A., <i>An Introduction to Industrial Chemistry</i> (Leonard Hill); Atkins and De Paula, <i>Physical Chemistry</i> , (9 th ed.) Oxford University Press Written material will also be provided during the course.		
Recommended reading:		Snook, G. A., <i>Handbook for Pulp and Paper Technologists</i> , (2 nd ed.) Tappi Press		

Advanced topics in physical and process chemistry including dynamic electrochemistry; photochemistry and photophysics; colloids, surface chemistry and rheology; quantum chemistry; process chemistry including chemical reactors and kinetics, unit operations, heat and mass balance; chemical process development with examples from the chemical and energy industries.

CHEM 305	CRN 9059	CHEMISTRY SYNTHESIS LABORATORY	15 PTS	1/3
Prerequisites:		CHEM 201, 205		
Assessment:		In-term assessment based on laboratory reports 65%, 1 in-course test 15%, 1 in-course assignment and performance in the laboratory 20% (including record keeping and safe working practices)		
Coordinator:		A/Prof Peter Northcote		
Demonstrators:		Appropriate academic staff and teaching assistants		
Laboratories:		2 x 4 hour labs per week		

This course involves the synthesis, isolation and purification of organic compounds. The programme provides for the development of advanced laboratory skills and the use of sophisticated techniques, including working under inert atmospheres and the application of advanced 2D NMR spectroscopy. Research principles and methodology are illustrated with an emphasis on problem solving in organic chemistry.

CHEM 306	CRN 9060	CHEMISTRY MATERIALS AND METHODS LABORATORY	15 PTS	2/3
Prerequisites:		CHEM 202, 203, 206		
Assessment:		Internal assessment based on performance in the laboratory experimental programme, laboratory reports and presentations, an assignment and a test		
Coordinators:		Prof John Spencer, Dr Gordon Heeley		
Demonstrators:		Appropriate staff members and teaching assistants		
Laboratories:		2 x 4 hour labs per week plus 2 hours at times TBA		

An introduction to advanced techniques and instrumentation used in modern inorganic chemistry, materials science and physical chemistry. The emphasis will be on synthetic methods and instrumental techniques for structure determination and material characterisation and the principles of measurement.

PHYSICS COURSES

All enquiries about undergraduate physics courses should be directed to the Physics Programme Director, Associate Prof Gillian Turner (gillian.turner@vuw.ac.nz). For lecture timetables see www.victoria.ac.nz/timetables

100-LEVEL COURSES

PHYS 114	CRN 7534	PHYSICS 1A	15 PTS	1/3
Prerequisites:		12 credits of Mathematics including standards AS91578 (differentiation) and AS91579 (integration) or MATH 141 or ENGR 121; 18 credits of NCEA level 3 Physics including standards AS91524 (mechanical systems) and AS91526 (electrical systems) and either AS91523 (wave systems) or AS91521 (practical investigation); or PHYS 122 or 131 or SARC 122; or equivalent		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester tests, 60% final examination		
Coordinator:		Dr Ben Ruck		
Lab Coordinator:		Dr Howard Lukefahr		
Format:		3 x 1 hour lectures, 1 x 1 hour tutorial, 1 x 3 hour laboratory per week		
Text:		Serway, Jewett, Wilson and Wilson. <i>Physics</i> , volume 1 (Asia and Pacific Edition), Cengage Learning. ISBN 9780170189309. Hard copy from Vic Books. Ebook available from www.cengagebrain.co.nz/shop/isbn/9780170189309		

This course covers non-relativistic mechanics, wave motion and quantum mechanics using calculus-based mathematics. Topics include kinematics and dynamics, fundamental conservation laws, rotational motion and oscillations, mechanical waves and an introduction to quantum physics

PHYS 115	CRN 7535	PHYSICS 1B	15 PTS	2/3
Prerequisites:		12 credits of Mathematics including standards AS91578 (differentiation) and AS91579 (integration) or MATH 141 or ENGR 121; 18 credits of NCEA level 3 Physics including standards AS91524 (mechanical systems) and AS91526 (electrical systems) and either AS91523 (wave systems) or AS91521 (practical investigation); or PHYS 122 or 131 or SARC 122; or equivalent		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester tests, 60% final examination		
Coordinator:		A/Prof Gillian Turner		
Format:		3 x 1 hour lectures, 1 x 1 hour tutorial, 1 x 3 hour laboratory per week		
Text:		Serway Jewett, Wilson and Wilson. <i>Physics</i> , volumes 1 and 2. (Asia and Pacific Edition), Cengage Learning. ISBN 9780170189309 and 9780170189408. Hard copy from Vic Books. Ebook available from www.cengagebrain.co.nz/shop/isbn/9780170189309 and www.cengagebrain.co.nz/shop/isbn/9780170189408		

This course builds on NCEA-level electromagnetism, electric circuits, geometric and physical optics, thermal properties of matter and thermodynamics, and their applications using calculus-based mathematics.

PHYS 122	CRN 18194	INTRODUCTION TO PHYSICS FOR SCIENTISTS AND ENGINEERS	15 PTS	1/3
Restrictions:		PHYS 114, 115, 130, 131, 134, SARC 122		
Assessment:		15% class exercises, 30% laboratory work, 10% in- trimester test, 45% final examination		
Coordinator:		John Hannah		
Format:		3 x 1 hour lectures, 1 x 3 hour laboratory per week		
Text:		Hewitt, <i>Conceptual Physics</i> , Harper Collins		

PHYS 122 provides students who have little previous study in physics and/or mathematics with an introduction to physics, applied physics and quantitative methods. The course will include modules designed for students aiming to specialise in physics and engineering.

PHYS 131	CRN 1177	ENERGY AND ENVIRONMENTAL PHYSICS	15 PTS	1/3
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Assessment:	5% assignments, 25% laboratory work, 15% in-trimester tests, 55% final examination
Coordinator:	John Hannah
Format:	3 x 1 hour lectures, 1 x 2 hour laboratory per week
Text:	There is no set text, but we recommend a basic 100-level physics textbook e.g. Hewitt, <i>Conceptual Physics</i> , Harper Collins.

This course uses basic physical concepts to study energy, Earth's energy resources and the physical environment. The advantages, disadvantages and environmental impact of various renewable and non-renewable energy resources are investigated, with particular emphasis on the New Zealand situation. Other environmental topics covered include thermal radiation, the greenhouse effect and global warming, atmospheric circulation and climate patterns, properties of the ozone layer, noise pollution, the physics of earthquake and extreme weather hazards, and radiation.

PHYS 132	CRN 1179	INTRODUCTORY ASTRONOMY	15 PTS	1/3
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Assessment:	20% project work, 15% in-trimester tests, 65% final examination
Coordinator:	TBA
Format:	3 x 1 hour lectures, 1 x 2 hour laboratory per week (includes field work)
Text:	Michael A. Seeds, <i>Horizons: Exploring the Universe</i> , Brooks/Cole

An elementary introduction to astronomy and astrophysics. Topics include classical and historical astronomy, elementary spherical astronomy, astronomical observations and techniques, the physics of the sun, stars, compact stars and the planets, and elementary cosmology. The laboratory component of the course introduces the process of observing the skies, through the use of portable eight-inch telescopes and visits to the Wellington Planetarium at the Carter Observatory.

200-LEVEL COURSES

PHYS 209	CRN 6732	PHYSICS OF THE EARTH AND PLANETS	15 PTS	2/3
Prerequisites:	MATH 142, PHYS 114			
Assessment:	5% assignments, 20% laboratory work, 15% in-trimester test, 60% final examination			
Format:	3 x 1 hour lectures per week, 6 x 3 hour laboratories (to be assigned)			
Text:	Lowrie, <i>Fundamentals of Geophysics</i> , Cambridge University Press; Zeilik & Smith, <i>Introductory Astronomy and Astrophysics</i> , Saunders			

An introduction to the physical properties of the Solar System, including planetary dynamics, the effects of differential gravitational forces, planetary atmospheres, surfaces and the internal structures of planetary bodies. The internal structure of Earth is studied in some detail, combining information from geodesy, seismology, geomagnetism and heat flow. The course provides a comprehensive background in planetary physics and geophysics for students interested in or intending to pursue astrophysics, astronomy, geophysics or geology.

PHYS 217	CRN 10023	APPLIED PHYSICS	15 PTS	1/3
Prerequisites:	PHYS 115 or ENGR 142 and one of (PHYS 114, 122, 131)			
Restrictions:	CSEN 201 in 2007-10, ECEN 201 in 2010-13			
Assessment:	10% assignments, 20% laboratory work, 10% oral and written presentations, 20% in-trimester tests, 40% final examination			
Format:	3 x 1 hour lectures per week, 1 x 3 hour lab per week			
Text:	TBA			

This course introduces students to a number of topics in applied physics, including the acquisition of experimental data, data analysis techniques and the oral and written presentation of research results.

PHYS 221	CRN 18011	RELATIVITY AND QUANTUM PHYSICS	15 PTS	1/3
Prerequisites:	MATH 142, MATH 151, PHYS 114			
Restrictions:	PHYS 214			
Assessment:	5% assignments, 15% laboratory work, 20% in-trimester tests, 60% final examination			
Format:	3 x 1 hour lectures per week, 4 x 3 hour laboratories (to be assigned)			
Text:	Kenneth Krane, <i>Modern Physics</i> , John Wiley & Sons, 1996, or (more advanced) Stephen Thornton and Andrew Rox, <i>Modern Physics for Scientists and Engineers</i> , Thomson, 2006			

PHYS 221 provides students with a knowledge and understanding of the theory of special relativity, the foundations of quantum mechanics and its application to atoms, nuclear physics, and an introduction to the key concepts of elementary particles, general relativity and astrophysics.

PHYS 222	CRN 18012	ELECTRONS AND PHOTONS	15 PTS	2/3
Prerequisites:		(MATH 142, 151) or ENGR 122; PHYS 114; (ENGR 142 or PHYS 115)		
Restrictions:		PHYS 214, 215		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester test, 60% final examination		
Format:		3 x 1 hour lectures per week, 6 x 3 hour laboratories (to be assigned)		
Text:		Purcell, <i>Electricity and Magnetism</i> , McGraw-Hill, 1984; Pedrotti & Pedrotti, <i>Introduction to Optics</i> , Prentice Hall, 2007		

PHYS 222 deals with a variety of topics related to electronic and optical properties of materials. These include AC and LRC circuit theory, electronic devices, geometrical and physical optics, optical spectra and lasers.

PHYS 223	CRN 18013	CLASSICAL PHYSICS	15 PTS	1/3
Prerequisites:		MATH 142, 151, PHYS 114, 115		
Restrictions:		PHYS 215		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester test, 60% final examination		
Format:		3 x 1 hour lectures per week, 6 x 3 hour laboratories (to be assigned)		
Text:		Tabor, <i>Gases, Liquids & Solids</i> , Cambridge University Press, 1991		

PHYS 223 extends the treatment of kinetic theory, Boltzmann and Maxwell distributions, thermodynamics, potential fields (gravity, electric and magnetic) and classical mechanics.

300-LEVEL COURSES

PHYS 304	CRN 1198	ELECTROMAGNETISM	15 PTS	2/3
Prerequisites:		MATH 243, PHYS 222, 223		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester tests, 60% final examination		
Format:		2 x 1 hour lectures, 1 x 1 hour tutorial per week, 4 x 4 hour laboratories (to be assigned)		
Text:		Griffiths, <i>Introduction to Electrodynamics</i> , Prentice-Hall		

Electromagnetism using vector calculus methods. Topics covered include electrostatics, (including methods of solution for Laplace's equation), dielectrics, magnetostatics, magnetic materials, induction, electrodynamics, Maxwell's equations and plane electromagnetic waves.

PHYS 305	CRN 1199	THERMAL PHYSICS	15 PTS	1/3
Prerequisites:		MATH 243, PHYS 223		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester tests, 60% final examination		
Format:		2 x 1 hour lectures, 1 x 1 hour tutorial per week, 4 x 4 hour laboratories (to be assigned)		
Text:		Kittel & Kroemer, <i>Thermal Physics</i> , Freeman		

A development of statistical mechanics, thermodynamics, and heat propagation. The Fermi-Dirac, Bose-Einstein, and classical distributions are derived and illustrated with examples taken from thermal radiation, solid state physics, astrophysics and chemical physics.

PHYS 307	CRN 1201	QUANTUM PHYSICS	15 PTS	1/3
Prerequisites:		MATH 243, PHYS 221, 222		
Assessment:		5% assignments, 20% laboratory work, 15% in-trimester tests, 60% final examination		
Format:		2 x 1 hour lectures, 1 x 1 hour tutorial per week, 4 x 4 hour laboratories (to be assigned)		
Text:		Griffiths, D.J., <i>Introduction to Quantum Mechanics</i> , Prentice Hall, (2 nd ed.) 1996		

Quantum theory, including orbital and spin angular momentum. Quantum systems including the hydrogen atom, vibrational and rotational states of molecules, the deuteron.

PHYS 309	CRN 7608	SOLID STATE AND NUCLEAR PHYSICS	15 PTS	2/3
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Prerequisites:	MATH 142, 151, PHYS 221
Restrictions:	ECEN 330
Assessment:	5% assignments, 20% laboratory work, 15% in-trimester tests, 60% final examination
Format:	2 x 1 hour lectures, 1 x 1 hour tutorial per week, 4 x 4 hour laboratories (to be assigned)
Text:	Jiles, David, <i>Introduction to the electronic properties of materials</i> , Chapman & Hall, 1994; Lilley, J., <i>Nuclear Physics: Principles and Applications</i> , Wiley, 2001

Topics to be covered will include the electronic properties of solid materials, the physics of electronic devices (diodes, transistors, field effect transistors) and nuclear physics with an emphasis on the development of basic theory and some applications to materials science, environmental science and medicine.

PHYS 339	CRN 1207	EXPERIMENTAL TECHNIQUES	15 PTS	1/3
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Prerequisites:	One course from (PHYS 217, 221, 222, 223)
Assessment:	40% laboratory work, 15% in-trimester test, 45% final examination
Format:	2 x 1 hour lectures per week, 4 x 4 hour laboratories (to be assigned)
Text:	TBA

A lecture and laboratory based course covering vacuum, optical, cryogenic, electrical and data analysis techniques for experimental physics, and their theoretical background

PHYS 343	CRN 18317	TOPICS IN APPLIED PHYSICS	15 PTS	2/3
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Prerequisites:	30 200-level PHYS points
Assessment:	50% internal assessment, 50% final examination
Format:	3 x 1 hour lectures per week

Students will study three topics in applied physics. A minimum of four topics will be offered in each year. Topics may include: heat and the global greenhouse; fluids, percolation and pollution management; medical imaging techniques; solar technology; wind and wave energy resources; weather systems and climate change; applications of opto-electronic devices; applications of nuclear physics; physics education.

ENVIRONMENTAL SCIENCE

Environmental Science is a science major which may be taken only in conjunction with another approved science major. It is for students wishing to acquire the mathematical and scientific background necessary to become environmental scientists.

A BSc graduate in ENSC will have the following attributes:

- a broad understanding of the general principles of environmental science across a range of sciences
- expertise about how their other major links with and is informed by Environmental Science
- an ability to analyse critically and understand environmental issues; a capability of working in teams and preparing information for a wide range of audiences
- an ability to undertake basic research in an area of Environmental Science
- an ability to contribute to the analysis of an issue in Environmental Science.

The ENSC major is overseen from the School of Geography, Environment and Earth Sciences and requires the following:

- must be linked to a partner Science Major from Biological (BIOL, BMAR, EBIO), Physical (CHEM, APHS, PHYS), Mathematical (MATH, OPRE, STAT) or Earth Sciences (GEOG, GEOL, GPHS, PHYG)
- a 300-level independent research project (ENSC 302 or 303)
- a 300-level modular course (ENSC 301) on a variety of environmental science topics that will allow students to link in the partner major to an environment science context.

Specific major requirements are:

- STAT 193, 15 points from MATH courses and 30 further points from 100-level BIOL, CHEM, PHYS, GEOG, ESCI, MATH, STAT
- ENVI 214, *40 points at 200-level from an approved list of courses not required by the partner major
- ENSC 301, (302 or 303) and further approved 300-level courses to achieve at least 60 points.

***Note:** with approval, up to 30 points may be shared at 200-level with the partner major.

School contact: Dr Malcolm Ingham malcolm.ingham@vuw.ac.nz 04-463 5216

Faculty contact: Shona de Sain, Associate Dean (Academic) shona.desain@vuw.ac.nz
04-463 5092

ENSC 301	CRN 18345	TOPICS IN ENVIRONMENTAL SCIENCE	20 PTS	1/3
Prerequisite:		90 points of 200-level study in approved subjects from the science schedule		
Corequisite:		ENSC 302 or 303 and admission to the major in environmental science		
Workload:		The workload should average 16 hours per week in total of which up to 7 hours will be scheduled lectures, tutorials or labs		
Assessment:		Internally assessed, including assignments relating to laboratories and tutorials, presentations and an essay		
Coordinator:		Dr John Collen, SGEES		
Text:		Material will be provided during the course		

The aim of this course is to enable students to integrate their primary science discipline into an environmental framework in order to discuss, analyse and apply a range of concepts important in environmental science. This is done through a lecture course taught by experts from across the faculty and external organisations and covers a range of subjects including energy use and supply (including nuclear energy), the physics of climate change, resource use including natural waters, pollution and environmental management. The tutorial, seminar and lab content complements the lectures and links them to the student's primary science major, and allows the introduction of other relevant material.

ENSC 302/303	DIRECTED INDIVIDUAL	20/15 PTS	2/3
CRN 18346/18347	STUDY		
Prerequisite:	Permission of Head of School		
Workload:	The workload should average 16 hours per week in total		
Assessment:	Internally assessed: completion of programme approved by course coordinator		
Coordinator:	Dr John Collen, SGEES		

Students will pursue a programme of individual research focused on an aspect of environmental science and agreed with the course coordinator.

SAMPLE PROGRAMMES

For the CHEM major with the ENSC major

Year 1	Pts	Year 2	Pts	Year 3	
CHEM 114	15	CHEM 201	15	CHEM 302	15
CHEM 115	15	CHEM 202	15	CHEM 303	15
ESCI 112	15	CHEM 203	15	CHEM 305	15
MATH 141	15	CHEM 205	15	CHEM 306	15
MATH 142	15	CHEM 206	15	ENSC 301	20
PHYS 114	15	MATH 243	15	ENSC 303	15
PHYS 115	15	PHYS 209	15	PHYS 339	15
STAT 193	15	PHYS 223	15	PHYS 343	15
Total	120		120		125

For the PHYS major with the ENSC major

Year 1	Pts	Year 2	Pts	Year 3	Pts
CHEM 114	15	GEOG 220	20	ENSC 301	20
ENVI 114	15	GEOG 2xx	20	ENSC 303	15
ESCI 111	15	MATH 243	15	ESCI 301	20
MATH 142	15	PHYS 209	15	PHYS 304	15
MATH 151	15	PHYS 221	15	PHYS 305	15
PHYS 114	15	PHYS 222	15	PHYS 307	15
PHYS 115	15	PHYS 223	15	PHYS 309	15
STAT 193	15			MATH 313	15
Total	120		115		130

For the APHS major with the ENSC major:

Year 1	Pts	Year 2	Pts	Year 3	Pts
PHYS 114	15	PHYS 209	15	PHYS 343	15
PHYS 115	15	PHYS 234	15	PHYS 339	15
MATH 151	15	PHYS 221	15	PHYS 340	15
MATH 142	15	PHYS 217	15	PHYS 342	15
STAT 193	15	ESCI 202	20	ESCI 305	20
ESCI 111	15	ESCI 203	20	ESCI 344	10
ESCI 112	15	GEOG 215	20	ENSC 301	20
MATH 141	15	ESCI 241	10	ENSC 303	15
Total	120		130		125

SCIENCE IN CONTEXT

Enhance your degree with a minor in Science in Context

A minor in Science in Context requires SCIE 311 plus 45 points from SCIE 201, 211, 302, 310, ESCI 201, CREW 352 or other approved points (e.g. MAOR 317 or PHIL 318) above 100-level.

Science in Context interdisciplinary courses explore the relationships between science and technology, scientists and society, the history and philosophy of science, and the communication of scientific ideas and issues to different audiences and through a range of media. These courses provide **science students** with a broader perspective on their discipline and provide **non-science students** with an introduction to scientific concepts and issues. Most courses are fully online and feature pre-recorded lectures and online discussion forums, allowing students to work at their own pace, and from wherever they want. For more information please contact Rhian Salmon (rhian.salmon@vuw.ac.nz) or Rebecca Priestley (rebecca.priestley@vuw.ac.nz).

SCIE 101	CRN 15470 17043	SPECIAL TOPIC: SCIENCE IN EVERYDAY LIFE	15 PTS	2/3 3/3
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Assessment: Online quizzes 60%, short written assignments and blogs 40%
Coordinator: Dr Rebecca Priestley

This **fully online** course examines the science that is part of everyday life. Students will gain an understanding in a broad range of contemporary scientific concepts relevant to everyday life. This course will integrate social, cultural and historical perspectives around the scientific concepts presented in this course.

SCIE 201	CRN 25133	SPECIAL TOPIC: ENERGY, SOCIETY AND THE FUTURE	15 PTS	2/3
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Prerequisite: 60 points
Assessment: Online quizzes and short assignments 55%, blog posts 25%, essay 20%
Coordinator: Dr Rebecca Priestley

This **fully online** course overviews different energy sources, past, present (including thermal, gravity and fluid, and solar) and future and examines associated scientific, environmental and social issues. On completion, students will be able to assess energy-related issues and arguments with reference to sound scientific and historical information.

SCIE 211	CRN (SEE STREAMS)	CONTEMPORARY ISSUES IN SCIENCE AND SOCIETY	15 PTS	3/3
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Prerequisite: 60 points
Restrictions: SCIE 201 in 2011–12
Streams: Stream A (CRN 25172) 5 January 2015–22 February 2015
Stream B (CRN 26250) 17 November 2014–22 February 2015
Assessment: Online quizzes and short assignments 50%, blog posts 25%, essay 20%, library 5%
Coordinator: Dr Rhian Salmon

This **fully online** course provides an introduction to a range of contemporary science research areas and examines associated scientific and social issues. Modules include philosophy of science, nature's patterns and ingredients, climate change, genes and gene therapy, and the psychology of everyday life.

SCIE 310	CRN 26078	INNOVATION AND ENTREPRENEURSHIP IN SCIENCE	20 PTS	2/3
Prerequisite:		60 points of science above 100-level		
Assessment:		Course logs 36%, case study report 24%, final examination 40%		
Coordinator:		A/Prof Paul Teesdale-Spittle		

This **classroom-based** course covers the generic processes in the development of a technology or technological products and connects scientific and technological perspectives with business perspectives such as economic analysis, entrepreneurship, project management, marketing and an introduction to tools for business planning. The course incorporates lectures, workshops and tutorials.

SCIE 311	CRN 26112	SCIENCE COMMUNICATION	15 PTS	2/3
Prerequisite:		60 points including at least 30 science points above 100-level or approval of the course coordinator		
Assessment:		In-class tests 30%, two pieces of science communication 50%, reflective contribution 20%		
Coordinators:		Dr Rhian Salmon and Dr Rebecca Priestley		

This **classroom-based** course covers theoretical and practical aspects of science communication. In the theoretical strand, students will learn about the purpose of science communication and the different audiences for science communication, and will assess and evaluate different forms of science communication, with an emphasis on the written form. In the practical strand, students will develop their own science communication skills through a range of exercises involving communicating to different audiences and using different media.

SCIE 312	CRN 27046	REVOLUTIONS IN SCIENCE	15 PTS	1/3
Prerequisite:		60 points of 200-level study		
Restriction:		SCIE 302 in 2013–14		
Assessment:		Online quizzes and short assignments 40%, blog posts 10%, essays 50%		
Coordinator:		Dr Rebecca Priestley		

This course reviews major theories in science history, from classical Greek science to the European enlightenment to 20th century revolutions in physics, biology and earth sciences including New Zealand science history. On completion, students will be able to put current scientific events, and their own academic or professional field, in historical context.

GENERAL INFORMATION

Students are encouraged to visit www.victoria.ac.nz for current information.

CLASS FORMATS

Lectures: Each course usually includes weekly lectures at which new material is presented. Lectures starting before 1pm start on the hour and last 50 minutes or 1 hour 50 minutes; lectures from 1pm start 10 minutes after the hour and finish on the hour.

Tutorials: These generally last 50 minutes and involve small groups of students meeting with a staff member or graduate student tutor. Tutorials provide the opportunity to discuss course content, course work and readings, to exchange ideas and become acquainted with other course members.

Field trips: Field trips may constitute one entire course or be only a part of it and visit a variety of locations and sites. Extra costs are normally included in the course materials fee. However, students may have to contribute towards the costs for some trips.

Laboratory sessions: Many courses in science have laboratory sessions. Laboratory session information can be found at www.victoria.ac.nz/timetables and will also be provided to students at the start of the trimester.

COMPUTER USE

All enrolled students receive a computer username and password (details are printed on Confirmation of Study forms), and an email address which is used for all official electronic correspondence from the University. Students may redirect their student email to another email address if preferred.

ITS-Student provides all enrolled students with access to electronic resources that support communication, learning and research needs. Most resources are accessible on- and off-campus using www.my.victoria.ac.nz, the student portal. The website provides secure access to:

- student email
- Workspace (an allocated space quote for storage of personal files)
- Blackboard (online teaching and learning tool)
- Student Records Library Catalogue and Databases.

COURSE INFORMATION

Course readings: Textbooks may either be bought from Vic Books or from other bookshops. Student notes (otherwise known as course materials) are available from Vic Books and are sold at both the Kelburn and Pipitea stores.

A second-hand book sale is held by VUWSA in the first week of March. Second-hand books may be bought and sold through www.vicbooks.co.nz/secondhand-textbooks

Course outlines: At the beginning of each course, students receive a course outline. This contains information about the course including the number of class meetings, their types

and times, booklists, assignments, tests and examinations and mandatory course requirements (minimum class work in order to complete the course).

EXAMS

Students enrolled in courses with a final examination are expected to be available to sit their exams during the relevant examination period. Exam timetables are normally published after the mid-term break and can be viewed at www.victoria.ac.nz/timetables

LIBRARY SERVICES FOR SCIENCE

The library supports the learning and research needs of students at all levels in the Faculty of Science. Services offered by the library can be accessed via their website at <http://library.victoria.ac.nz/library-v2/>

PRIZES AND SCHOLARSHIPS

Information about prizes and scholarships available to students studying at Victoria is available at www.victoria.ac.nz/study/student-finance/scholarships

Āwhina also offers scholarships to Māori and Pasifika students for postgraduate study. See www.victoria.ac.nz/science/awhina

SUMMER SCHOLARS SCHEME

Summer Research Scholarships offer a unique opportunity for students to gain experience in research and get an insight into what studying for a research degree entails. Each scholarship gives a student the experience of working with established researchers on a specified project.

Students are expected to conduct a research project of approximately 10 weeks duration (400 hours) under the supervision of an academic staff member or a research team.

Students interested in applying for a Summer Research Scholarship should contact margot.neas@vuw.ac.nz for further information.

VICTORIA UNIVERSITY OF WELLINGTON CALENDAR

The Victoria University Calendar contains the official statutes which govern degrees and courses. It can be viewed at www.victoria.ac.nz/about/publications/calendar

VICTORIA OVERSEAS EXCHANGE (VIC OE)

Vic OE (Victoria Overseas Exchange) is a student exchange programme offering students the opportunity to broaden their horizons while studying towards their Victoria University degree at one of 100 partner universities around the world.

If you are interested in applying for Vic OE you **must**:

- complete a year of full-time study by the date of your intended departure
- achieve a B average overall in your studies at Victoria
- demonstrate that you would be a good ambassador for Victoria.

Information on how to apply, who to contact, timelines and exchange partners is available at www.victoria.ac.nz/exchange

WHO TO CONTACT

Victoria University offers a range of services that covers all student-related matters from applications/enrolment to graduation.

STUDENT AND ACADEMIC SERVICES—FACULTY OF SCIENCE

Te Wāhanga Pūtaiao

Address: Level 1, Cotton Building
Phone: 04-463 5101
Email: **science-faculty@vuw.ac.nz**
Web: **www.victoria.ac.nz/science**
Hours: 8.30am–5pm Monday, Wednesday, Thursday, Friday
9.30am–5pm Tuesday

At the Faculty of Science Student Administration Office, student advisers can help with admission requirements, degree planning, changing courses and transfer of credit from other tertiary institutions. They also deal with other aspects of student administration such as enrolment, exams organisation and the maintenance of student records.

Area	Student Advisor	Email	Contact
UG	Nique Nacu	nique.nacu@vuw.ac.nz	04-463 5101
UG	Annemarie Thorby	annemarie.thorby@vuw.ac.nz	04-463 5983
UG	Cristina Sebold	cristina.sebold@vuw.ac.nz	04-463 5981

Johan Barnard Manager, Student and Academic Services 04-463 5980
Shona de Sain Associate Dean (Academic) 04-463 5092

TE RŌPŪ ĀWHINA

Address: Cotton Building, Kelburn Parade, Room 148,
Phone: 04-463 5987
Email: **teropuawhina@gmail.com**
Web: **www.victoria.ac.nz/science/awhina**

Te Rōpū Āwhina whānau in the Faculties of Science, Engineering and Architecture and Design at Victoria University was established in 1999. Āwhina is about people and collective success. The kaupapa of Āwhina is to produce Māori and Pacific science, engineering, architecture and design professionals to contribute to Māori and Pacific community and leadership development. Anyone who assists the building of Āwhina is part of the whānau.

STUDENT SUPPORT SERVICES

ACCOMMODATION SERVICE

Advice on our Halls of Residence, renting and other accommodation options.

www.victoria.ac.nz/accommodation

CAMPUS CARE

24/7 campus security.

0800 VIC 8888 (if calling from outside University)

8888 (if calling from within University)

CAREER DEVELOPMENT AND EMPLOYMENT

Vic Careers—find out what you need to know to get a job, what career options are open to you and what your ideal future might look like.

www.victoria.ac.nz/careers

CAREER HUB

24/7 access to part time jobs, graduate jobs, contract work, tutoring positions, internships, work experience opportunities and a CV building tool. Use your student computing account to log in.

www.victoria.ac.nz/careerhub

COUNSELLING SERVICE

Professional, confidential counselling available at all campuses for any issue that is impacting on your personal or academic success.

www.victoria.ac.nz/counselling

DISABILITY SERVICES

If you have a temporary or ongoing impairment you can access coaching and advice, liaison with academic staff, adaptive equipment, technology and training, sign language interpreting, note-taking assistance, mobility parking, ergonomic furniture and access to rest and study rooms.

www.victoria.ac.nz/disability

EARLY CHILDHOOD SERVICES

Victoria Kids has been providing excellent childcare for families for more than 30 years and offer a range of childcare options to suit your needs.

www.victoriakids.co.nz

ENROLMENT OFFICE

If you are a prospective student, you can get information, advice and support with enrolment.

www.victoria.ac.nz/2015

If you are a current student go to www.victoria.ac.nz/reenrol for information on how to re-enrol for 2015.

FEES AND PAYMENTS

Get information and advice related to fees, payments, student levies, scholarships and liaising with StudyLink.

www.victoria.ac.nz/fees

FINANCIAL SUPPORT AND ADVICE

Get information on all money matters, and in particular, StudyLink. Financial Support and Advice also manages the Hardship Fund.

www.victoria.ac.nz/finadvice

HEALTH SERVICES

Get access to a full range of general practice medical services.

www.victoria.ac.nz/studenthealth

INFORMATION TECHNOLOGY SERVICES

ITS supports the use of technology for learning, research and administration across all campuses. ITS also provides access to student focused applications, shared computer suites, personal laptop clinics and Office 365, the student email and collaboration service.

www.victoria.ac.nz/its

LANGUAGE LEARNING CENTRE

Self-study facilities, resources and friendly advice on independent language learning.

www.victoria.ac.nz/llc

MARAE

Te Herenga Waka Marae, the University marae on our Kelburn campus, is a gathering place as well as a teaching facility. Resources, support and activities include Te Whanake Mauri Tū Computer Suite, lunches in the wharekai (Tuesday to Thursday) and whānau housing.

www.victoria.ac.nz/marae

OVERSEAS EXCHANGE

See page 38.

PHYSIOTHERAPY CLINIC

The on-campus physiotherapy clinic is run by Willis Street Physiotherapy. Appointments are available at Kelburn campus, Pipitea campus and at 57 Willis Street, Wellington. Our experienced physiotherapists specialise in treating all kinds of pain, discomfort and injury. No GP referral necessary. Same day/next day appointments are usually available. Freephone 0800 842 749.

www.victoria.ac.nz/physio

VICTORIA RECREATION

Get access to recreation, fitness and sports, to stay healthy and happy during your studies.

www.victoria.ac.nz/recreation

STUDENT INTEREST AND DISPUTE ADVISOR

If you need support or guidance on any matter involving safety, conflict or misconduct, make contact to discuss what assistance is available to deal with the problem.

www.victoria.ac.nz/disputes-advice

STUDENT LEARNING SUPPORT SERVICE

Group and one-to-one academic support—useful at any stage of your study.

www.victoria.ac.nz/slss

STUDENT RECRUITMENT, ADMISSION AND ORIENTATION

If you are a prospective or new student, get course advice and your admission questions answered.

www.victoria.ac.nz/study

VIC BOOKS AND STUDENT NOTES

Buy your textbooks (new and used), and student notes online or in store.

www.vicbooks.co.nz

VICTORIA CLUBS

There are over 130 clubs at Victoria providing a unique extracurricular community for students to get involved.

www.victoria.ac.nz/clubs

VICTORIA INFO IHONU!

Victoria Info Ihonui are places where you can ask questions and get the information you need. They are located in the Hunter Building and at the Kelburn Library entrances on Levels 1 and 2 of the Hub. Friendly staff will answer your questions and refer you to the right place as needed.

VICTORIA INTERNATIONAL

If you are an international student, Victoria International is here to help while you are studying and living in Wellington. We can help with personal, cultural adjustment or academic support, connecting with other students, advice of university services, specialised scholarship support, student visa renewal, insurance claims and advocacy.

www.victoria.ac.nz/students/international

VICTORIA UNIVERSITY OF WELLINGTON STUDENTS' ASSOCIATION (VUWSA)

Victoria University of Wellington Students' Association (VUWSA) is a Victoria student association that provides advocacy, support and advice for all students.

www.vuwsa.org.nz