Undergraduate courses 2022
Chemical and Physical Sciences

School of Chemical and Physical Sciences
Te Wānanga Matū

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Updated August 2021

VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA

THE BACHELOR OF SCIENCE

Bachelor of Science Degree Requirements

- A total of 360 points
- 210 points above 100-level, of which 150 points must be Science
- 75 points at 300-level
- 90 points can be from outside science (some majors also permit an additional 30 outside points).
- At least one Major, and a second Major may be from science or from any other first degree with a maximum of 150 points permitted from outside science.

Science Major Requirements

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

Science Minor Requirements

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

COMBINING CHEMISTRY AND PHYSICS

If you complete majors in both subjects you will have a very full programme that leaves little room for any other interest subjects.

To make it possible to fit the requirements of both majors into a three-year programme, at 200 level: CHEM 205 is waived from the chemistry major requirement, and the elective 200-level physics course (15 points from 200-level EEEN or PHYS) 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.

PLEASE NOTE

Cancellation of courses
The courses offered by the University and listed in this prospectus may be cancelled by the University because of insufficient resources or student demand, or if other unforeseen circumstances arise.

Timetable changes
Check the timetable online for confirmation of course times.
http://www.wgtn.ac.nz/students/study/timetables

HOW TO USE THIS GUIDE

Course code	Course reference number	Title	Points	Trimester
↓	↓	↓	↓	↓
CHEM114	**CRN 17148**	**PRINCIPLES OF CHEMISTRY**	**15 PTS**	**1/3**

YOUR PROGRAMME

Use this template to plan your programme. Start by adding in the core papers for your degree.

Year 1							120 points

Year 2							120 points

Year 3							120 points

CHEMISTRY

Chemistry is everywhere. It is fundamental to all living beings, physical processes, materials and the environment. Chemistry underlies all the functions of the human body, our food, the consumer goods we use, the buildings we live and work in, the energy we generate and consume and the air we breathe. Understanding chemistry is the basis for understanding the function and structure of all of these, and also for developing new materials, pharmaceuticals, consumer products, technologies and processes to enhance our lives.

MAJOR REQUIREMENTS FOR CHEMISTRY

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

ENTRY TO 100-LEVEL CHEMISTRY COURSES

Advanced entry
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), you may enter at CHEM 114 in Tri 1

Intermediate entry
If you have fewer than 18 credits in Chemistry at NCEA Level 3 you will start with CHEM 113. If you achieve A- or better, you may take both CHEM 114 and CHEM 115 in Tri 2.

Novice entry
If you have not studied Chemistry to at least NCEA Level 2 you are strongly advised to take CHEM 191 in trimester three (the summer trimester) (see page 4).

WHO TO CONTACT

First year enquiries: A/Prof Robin Fulton (j.robin.fulton@vuw.ac.nz)
Second- and third-year enquiries: Prof Martyn Coles (martyn.coles@vuw.ac.nz)

100-LEVEL COURSES

CHEM 191	(SEE STREAMS)	INTRODUCTORY CHEMISTRY	15 PTS	3/3

Restrictions: CHEM 113, 114
Streams: Stream 1: CRN 7193, stream 2: CRN 23006.

This summer bridging course, taught mostly online, 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. We strongly recommend students who have not completed level 2 NCEA Chemistry take CHEM 191 over the summer.

Note: There will be two intakes for CHEM 191.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

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: 3.4 AS91390 (thermochemical principles and the properties of particles and substances), 3.5 AS91391 (properties of organic compounds) and 3.6 AS91392 (equilibrium principles in aqueous systems), or equivalent background in Chemistry

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 reactivity.

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)

This is a unifying chemistry course in which we use a skills-based approach to chemical structural elucidation using electromagnetic radiation (i.e. light). Electronic, vibrational and rotational excitations, electron spin alignment and complete ejection of an electron, i.e. UV-Vis, IR, 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 background

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 background

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 background

Describing and understanding chemical systems and reactivity is explored through thermodynamics, kinetics and computational chemistry. Optical spectroscopy provides insight into molecular structure and behaviour. The introduction of surfaces or enhanced interactions between molecules modifies chemical reactivity as explored in surface chemistry and electrolyte behaviour. Real-world examples illustrate chemical applications.

CHEM 205	CRN 8610	CHEMICAL SYNTHESIS LABORATORY COURSE	15 PTS	2/3

Prerequisite: (CHEM 114, 115) or equivalent background

Note: It is strongly recommended that CHEM 201 and CHEM 202 are taken at the same time as CHEM 205 or have been passed previously.

CHEM 205 provides the opportunity to develop practical skills, competence and confidence in the chemistry laboratory with 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 introduces 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 background

The laboratory programme provides the opportunity to develop laboratory skills, competence and confidence in the chemistry laboratory with 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

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

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

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

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

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

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

Physics is about understanding nature at its most fundamental, from elementary particles to complex materials, from the kinetic energy of a speeding missile to the nuclear energy released in the core of a star. The concepts of physics - the effect of a force for example – apply to multitudes of different situations, in all imaginable contexts: mechanical, electrical, magnetic, astronomical, chemical, geological, biological … the list goes on forever. Physics is one of the foundations on which other branches of science are built. An understanding of the principles of physics is essential to applied disciplines such as engineering, architecture, environmental studies, medicine and information technology.

MAJOR REQUIREMENTS FOR PHYSICS

a. (MATH 142, 151) or (ENGR 121 and B+ or better in ENGR 122), PHYS 114, 115
b. MATH 243; three courses from PHYS 241, 242, 243, 245; 15 further points from (EEEN 201–204, PHYS 201–259)*
c. PHYS 304, 305, 307, 345.

* For students completing majors in both Physics and Chemistry, the requirement for 15 further points will be waived.

MAJOR REQUIREMENTS FOR APPLIED PHYSICS*

a. (MATH 142, 151) or (ENGR121 and B+ or better in ENGR 122), PHYS 114, 115
b. PHYS 245, two of PHYS 241–243; 15 further points from (PHYS 241-243, EEEN 201–204, MATH 243-245, ENGR 222)
c. PHYS 343; 30 further points from (EEEN 301-399, PHYS 301–399); 15 further approved 300-level points in Physics or a related subject.

*** not accepting new students in 2022.**

ENTRY TO 100-LEVEL PHYSICS COURSES

- **NCEA:** Automatic entry to PHYS 114 and PHYS 115 is available to students who have studied physics and maths to Year 13 and gained:
  - 14 NCEA Level 3 credits in Physics, and 14 NCEA Level 3 credits in Mathematics including:
    - 3.6 Differentiation (91578)
    - 3.7 Integration (91579)
- Or one of the following:
  - 1 externally assessed standard with Excellence in each of NCEA Level 3 Mathematics and Physics or 2 externally assessed standards with Merit in each of NCEA Level 3 Mathematics and Physics
  - 2 externally assessed standards with Excellence in NCEA Level 3 Calculus

Note: 18 NCEA Level 3 standards in both Mathematics and Physics are strongly recommended.

- **A Level:** a minimum of D at A level or A at AS level (or better) in both Physics and Mathematics in the A level Cambridge International Examinations.; or
- **International Baccalaureate:** a minimum of 4 at HL or 6 at SL (or better) in the IB grade scale in both Physics and Mathematics.
- If you have studied physics and maths at school, but you don't meet the requirements for automatic entry, or you have other qualifications (e.g. from overseas schooling, or other tertiary education institutions), then you may still qualify. Please contact the Programme Director as early as possible, giving full details of your qualifications.

- Intermediary level physics and maths courses, PHYS 131, MATH 132, MATH 141 provide alternative routes to PHYS 114 and PHYS 115.
- Students who have achieved excellent high school and/or scholarship results across a broad range of physics and mathematics topics may be eligible for acceleration to one or more 200-level physics courses in their first year of study. Students interested in exploring this option should contact the Programme Director in mid-February or as soon as their results become available.

WHO TO CONTACT

All enquiries about undergraduate physics courses should be directed to the Physics Programme Director, A/Prof Petrik Galvosas (petrik.galvosas@vuw.ac.nz).

PHYS 114 CRN 7534 PHYSICS 1A 15 PTS 1/3

Prerequisites: NCEA Level 3 or equivalent in physics and calculus (see page 8 for details)

PHYS 114 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: NCEA Level 3 or equivalent in physics and calculus (see page 7 for details)

PHYS 115 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 131 CRN 1177 ENERGY AND ENVIRONMENTAL PHYSICS 15 PTS 1/3

PHYS 131 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 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 2/3

An elementary introduction to astronomy and astrophysics. Topics include the solar system and orbits, astronomical observations and techniques, the physics of the sun, stars, compact objects (black holes & neutron stars), as well as extragalactic astronomy and elementary cosmology. The laboratory component of the course introduces concepts in modern astronomical research and data analysis and includes an optional visit to the Carter Planetarium and Observatory.

ENGR 141 CRN 30094 ENGINEERING SCIENCE 15 PTS 1/3

Prerequisites: 16 Achievement Standard credits NCEA level 3 mathematics or physics or equivalent
NOTE: In 2022, due to COVID-19 disruption to study, students may enter ENGR 141 with 12 Achievement Standard credits at NCEA level 3 mathematics/statistics or physics or equivalent

ENGR 141 provides students with an introduction to the key skills and concepts in physics and chemistry, which underpin electronic engineering and computer systems design. Through studying areas such as energy, the structure and properties of matter, heat, battery chemistry and even some introductory rocket science ENGR 141 highlights the close relationship between modern electronics and the physical sciences.

ENGR 142 CRN 27045 ENGINEERING PHYSICS 15 PTS 2/3

Prerequisites: Either ENGR141 and (ENGR121 or MATH141) or approved levels of achievement in NCEA level 3 in each of Physics and Calculus or equivalent

ENGR 142 introduces Newton's laws and the basic rules of kinematics before moving on to the physics of wave motion and ending with the basics of DC and AC circuit theory. Lectures, assignments, and laboratory work will all focus on the application of physics to engineering situations.

200-LEVEL COURSES

PHYS 241	CRN 33240	QUANTUM MECHANICS AND KINETIC THEORY	15 PTS	2/3

Prerequisites: (MATH 142, 151) or B+ or better in ENGR 122; PHYS 114, 115
Restrictions: PHYS 221, 223; either of PHYS 260, 261 as determined by the Head of School

PHYS 241 will provide students with an introductory-level understanding of quantum mechanics and its applications. The course will also introduce students to the microscopic description of temperature, pressure and other properties of matter based on kinetic theory.

PHYS 242	CRN 33241	ELECTROMAGNETISM	15 PTS	2/3

Prerequisites: (MATH 142, 151) or B+ or better in ENGR 122; (PHYS 114, 115) or (ENGR 141, 142)
Restrictions: PHYS 222; either of PHYS 260, 261 as determined by the Head of School

PHYS 242 will provide a comprehensive foundation in electromagnetic theory using vector calculus, from the laws of electrostatics and magnetostatics to the time-varying Maxwell equations. The course will also introduce applications of these concepts to electrical circuits, as well as electromagnetic waves, interference and diffraction.

PHYS 243	CRN 33242	CLASSICAL MECHANICS AND RELATIVITY	15 PTS	1/3

Prerequisites: (MATH 142, 151) or B+ or better in ENGR 122; PHYS 114
Restrictions: PHYS 221, 223; either of PHYS 260, 261 as determined by the Head of School

An introduction to classical mechanics and relativity at an intermediate level, including Lagrangian mechanics, Hamiltonian mechanics, special relativity and a conceptual introduction to general relativity.

PHYS 245	CRN 33243	METHODS OF EXPERIMENTAL PHYSICS	15 PTS	1/3

Prerequisites: (MATH 142 (or B+ or better in MATH 141), MATH 151) or B+ or better in ENGR 122; (PHYS 114, 115) or (ENGR 141, 142)
Restrictions: PHYS 217; either of PHYS 260, 261 as determined by the Head of School

PHYS 245 will focus on skills required for experimental physics in laboratory environments. This will include planning of experimental designs and the processing, interpretation, documentation and presentation of experimental results. The course will also introduce basic concepts of programming and numerical physics

PHYS 260	CRN 33244 CRN 33245	TOPICS IN PHYSICS 1	15 PTS	1/3 2/3

Prerequisites: Permission of Head of School
Restrictions: Any of PHYS 209-245 as determined by the Head of School

A supervised programme of study approved by the Head of School for students not majoring in physics.

PHYS 261	CRN 33246 CRN 33247	TOPICS IN PHYSICS 2	15 PTS	1/3 2/3

Prerequisites: Permission of Head of School
Restrictions: Any of PHYS 209-245 as determined by the Head of School

A supervised programme of study approved by the Head of School for students not majoring in physics.

300-LEVEL COURSES

PHYS 304	CRN 1198	ELECTROMAGNETISM AND WAVE OPTICS	15 PTS	2/3

Prerequisites: MATH 243; PHYS 242 (or 222 and 223)
Restrictions: Either of PHYS 360, 361 as determined by the Head of School

The course presents Maxwell's theory of classical electromagnetism, with full use of vector calculus in cartesian, cylindrical and spherical coordinates. The course builds upon electric and magnetic phenomena introduced in PHYS 115 and PHYS 242, and includes the response of materials to static and time-varying electromagnetic fields. The derivation of electromagnetic waves and their polarisation properties is followed by modern applications such as waveguides and multilayer optics.

PHYS 305	CRN 1199	THERMAL AND STATISTICAL PHYSICS	15 PTS	1/3

Prerequisites: MATH 243; PHYS 241 (or 223)
Restrictions: Either of PHYS 360, 361 as determined by the Head of School

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, heat engines, solid state physics, astrophysics, and chemical physics. Concepts of nuclear decays as probabilistic processes will be developed and applied to the early universe and thermonuclear reactions.

PHYS 307	CRN 1201	QUANTUM PHYSICS	15 PTS	1/3

Prerequisites: MATH 243; PHYS 241, 242 (or 221 and 222)
Restrictions: Either of PHYS 360, 361 as determined by the Head of School

An advanced course on quantum mechanics based on Dirac bra-ket notation, covering the fundamentals as well as current applications.

PHYS 343	CRN 18317	TOPICS IN APPLIED PHYSICS	15 PTS	2/3

Prerequisites: 30 200-level PHYS points

Students will study four different topics in applied physics. 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.

PHYS 345	CRN *TBC*	ADVANCED METHODS OF EXPERIMENTAL PHYSICS	15 PTS	1/3

Prerequisites: 15 pts from (PHYS 245, EEEN 201 – 204) or (MATH 243 and one of PHYS 221-223)
Restrictions: Either of PHYS 360, 361 as determined by the Head of School

PHYS 345 will extend the skills and knowledge acquired at 200 level and explore experimental and numerical methods relevant to modern physics and data acquisition/analysis. Common physics laboratory equipment and computational methods (for example vacuum systems, spectrometers, or software tools) will be used for more complex experimental set ups data processing. The course will extend guidance for good laboratory practice including the planning of experimental designs, data processing, interpretation, documentation, and presentation of experimental results.

PHYS 360	CRN *TBC*	TOPICS IN ADVANCED PHYSICS I	15 PTS	1/3, 2/3

Prerequisites: Permission of Head of School
Restrictions: Any of PHYS 300-349 as determined by the Head of School

A supervised programme of study approved by the Head of School for students not majoring in physics.

PHYS 361	**CRN *TBC***	**TOPICS IN ADVANCED PHYSICS II**	**15 PTS**	**1/3, 2/3**

Prerequisites: Permission of Head of School
Restrictions: Any of PHYS 300-349 as determined by the Head of School

A supervised programme of study approved by the Head of School for students not majoring in physics.

WHO TO CONTACT

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
Website: www.wgtn.ac.nz/science
Hours: 8.30am–4.00pm Monday, Wednesday, Thursday, Friday
9.30am–4.00pm Tuesday
Please note at busy times of the year the office may close at 3:00pm.

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.

Student Advisor	Email	Contact
Anna Franceschini	anna.franceschini@vuw.ac.nz	04-463 5983
Lissa Harrop	lissa.harrop@vuw.ac.nz	04-463 5799
Annemarie Thorby	annemarie.thorby@vuw.ac.nz	04-463 7473
Cristina Sebold	cristina.sebold@vuw.ac.nz	04-463 5981

Johan Barnard	Manager, Student and Academic Services	04-463 5980
Kevin Gould	Associate Dean - Academic (Undergraduate)	04-463 5101

SCHOOL STAFF CONTACTS

		Room	Contact
Head of School	A/Prof Ben Ruck	LB506	463 5089
Deputy Head of School (Physics)	Dr Natalie Plank	LB503	463 5031
Deputy Head of School (Chemistry)	A/Prof Rob Keyzers	AM208	463 5117
School Manager	Kara Eaton	LB406	463 5946
General Enquiries	TBC	LB103	463 5335
	Gabrielle Holmes	LB103	463 6517
Chemistry Enquiries			
Undergraduate 100-level	A/Prof Robin Fulton	LB104	463 6485
Undergraduate 200- and 300-levels	Prof Martyn Coles	LB406a	463 6357
BSc(Hons) and MSc Part 1	Dr Kim McKelvey	LB504	463 5957
MSc Part 2 and PhD	Prof Patricia Hunt	LB405	463 5954
Physics Enquiries			
Programme Director	A/Prof Petrik Galvosas	LB521	463 6478
Deputy Programme Director	Prof Uli Zuelicke	LB413	463 6851
BSc(Hons) and MSc Part 1	Dr Stephen Curran	LB504	463 6109
MSc Part 2 and PhD	Prof Uli Zuelicke	LB308	463 6062
Technical Services Manager	TBC	LB108a	463 5955

CHEMISTRY

Academic Staff	**Research Areas**	**Room**	**Contact**
Dr Mat Anker	*Inorganic chemistry, catalysis, small molecule activation*	AM201	463 6760
Prof Martyn Coles	*Catalysis, main group chemistry, hydrogen-bonded materials*	LB406a	463 6357
Dr Nathanial Davis	*Photophysics and solar energy, nanocrystals, organic chromophores, up and down conversion, light harvesting antenna complexes*	AM206	463 5233 ext 7134
A/Prof Robin Fulton	*Inorganic synthesis and mechanisms, environmental chemistry*	LB514	463 9799
Dr Joanne Harvey	*Total synthesis, design and synthesis of natural product analogues, organic reaction methodology*	AM207	463 5956
Prof Justin Hodgkiss	*Ultrafast laser spectroscopy, conjugated polymers, organic solar cells*	LB409	463 6983
Prof Patricia Hunt	*Theoretical and Computational Chemistry*	LB405	463 5954
Prof James Johnston	*Applied chemistry; new materials, nano-structured and nano-hybrid materials, new products and technology development and commercialisation*	LB303	463 5334
Dr Rob Keyzers	*Natural products, food and wine chemistry, NMR spectroscopy and mass spectrometry*	AM208	463 5117
Dr Luke Liu	*Synthesis of crystalline porous solids*	AM202	463 5591
Dr Kim McKelvey	*Nanoscale electrochemistry for energy storage and conversion technologies*	LB504	463 5957
Prof Emily Parker	*Enzyme-catalysed reactions*	LB312	463 9055
A/Prof Bridget Stocker	*Immunoglycomics, bio-organic, green chemistry*	LB508	463 6481
A/Prof Mattie Timmer	*Immunoglycomics, design and synthesis of glyconjugate probes*	LB507	463 6529
Professional Teaching Fellow			
Dr Courtney Davy		LB117A	463 5962
Professorial Research Fellow			
A/Prof Gerald Smith	*Solar Energy for Water Purification*	LB519	463 5959
Emeritus Professors			
E/Prof Neil Curtis		LB403	463 5119
E/Prof John Spencer		LB403	463 5119

PHYSICS

Academic Staff	Research Areas	Room	Contact
Dr Baptiste Auguie	*Nano-optics and spectroscopy*	LB522	463 5547
Dr Stephen Curran	*Astrophysics*	LB504	463 6109
A/Prof Petrik Galvosas	*NMR methodologies and instrumentation*	LB308	463 5911
Prof Michele Governale	*Theoretical condensed-matter physics, quantum transport in nanoscale systems*	LB402	463 5951
Dr Malcolm Ingham	*Environmental physics, geophysics*	LB515	463 5216
Prof Eric Le Ru	*Electromagnetism, fluorescence and Raman spectroscopy*	LB205	463 5233 ext. 7509
Dr Franck Natali	*Novel materials for electronic and optoelectronic applications*	LB516	463 5964
Dr Tulasi Parashar	*Astrophysics*	LB503	463 5804
Dr Yvette Perrott	*Astrophysics*	LB523	463 6543
Dr Natalie Plank	*Electronic device properties of nanomaterials*	LB503	463 5031
A/Prof Ben Ruck	*Experimental condensed matter physics*	LB506	463 5089
A/Prof Gillian Turner	*Geophysics, geomagnetism, palaeomagnetism*	LB521	463 6478
Dr Krista Steenbergen	*Theoretical/Computational Physics (material properties)*	LB505	463 6926
Prof Ulrich Zuelicke	*Theoretical condensed-matter physics, nano-electronic transport and spin-electronic devices, cold-atoms systems*	LB413	463 6851
Professional Teaching Fellow			
Dr Andrew Ross	*Physics Education*	LB204	463 5819
Professorial Research Fellow			
Dr Grant Williams	*Superconductors, magnetic nanoparticles, spin transport electronics, radiation detection and imaging, and nonlinear optics*	LB502	463 5544
Emeritus Professors			
E/Prof Alan Kaiser	*Electronic properties of novel materials, esp. nanoscale materials*	LB511	463 5957
E/Prof John Lekner	*Electrodynamics, quantum theory, fluid mechanics. Theory of reflection of waves*	LB519	463 5949
E/Prof Joe Trodahl	*Ferromagnetic semiconductors for spintronics, ferroelectric oxides, heat flow in sea ice*	LB516	463 5964