Welcome to UNSW. Science is the gateway to the future, underpinning society’s advancement and pioneering the unknown. I hope you will enjoy exploring the diverse range of talks and activities we have on offer today, and continue developing your passion for discovery. A scientific education is the first step to a rewarding career where you will work on exciting projects with people who share your values, here or anywhere in the world.

**Professor Merlin Crossley**
Dean, UNSW Science
Aviation

Flight Simulator in room 225, Old Main Building, map reference K15
UNSW Aviation has a purpose-built general aviation flight simulator. The simulator comprises a replica training aircraft flight deck, complete with instrument panels and navigation equipment. Come and experience it for yourself!

Biotechnology and Bimolecular Sciences (BABS)

Science Lawn, map reference G13
Visit the School exhibit and explore the following:
- Have you ever seen DNA? Have you ever eaten DNA? What does it look like? Would you like to take some home in a special test tube? Today you can! Visit our display and make some DNA.
- The medical, pharmaceutical and food industry all rely on the use of biopolymers for drug delivery and food processing. What do biopolymers look like? You can find out and make some biopolymer beads at our display.
- Bugs are everywhere, even on your hands! Come and see how well you can remove them with commercial hand sanitisers. We’ll test this with our special glow-in-the-dark detection solution.

Biological, Earth and Environmental Sciences (BEES)

Science Lawn, map reference G13
The world’s environments are fascinating and incredibly diverse, and BEES researchers are leaders in discovering how our Earth works. Come along to the BEES display and find out what an environmental scientist does. We’ll have a range of displays to showcase some of our current research and learning activities. You’ll be able to talk to some current students and find out how a degree in Biological, Earth or Environmental Science might be just right for you.

Chemistry

Opposite Chemical Sciences Building, (East end) map reference F10
Are you destined to develop the next anti-cancer drug? Does the untold scientific and technological promise of manipulating matter on the nano-scale excite you? Chemistry is a highly creative science; it has a profound effect on our planet and is involved in nearly every component of everyday life. It is a central science that underpins many other sciences such as biology, materials science and nanoscience. Come and try out reactions that oscillate, see our methanol cannon in action, and have a go at chromatography. Ask our Chemistry, Medicinal Chemistry and Nanoscience students and staff about life at UNSW.

Materials Science and Engineering

Opposite Chemical Sciences Building, map reference F10
We will have an abundance of interactive activities and displays for you to explore. Plus, get all your questions about Materials Science, student life, and studying Materials Science and Engineering at UNSW answered by an orange army of students and staff.
Science Activities

Mathematics and Statistics
Science Lawn, map reference G13
Are you driven to understand the world around you? Do you want to predict what the stock market will do tomorrow? Are you passionate about climate change? Mathematics and statistics underpin these and many other real-world problems by uncovering patterns, decoding data, and modelling the natural world. Come to our marquee and be inspired by the beauty and power of mathematics!

Optometry and Vision Science
Science Lawn, map reference G13
Come and see our exhibit, including:
• Model Eye
• Stereo Vision - how well do your eyes work together?
• Ishihara Test - test your colour vision
• Optical Illusions
Plus, find out about the Optometry Clinic on the UNSW Kensington campus and the services we offer.

Psychology
Science Lawn, map reference G13
Psychology covers so many interesting and diverse areas it is impossible to list them all. Are you interested in behaviour, perception, learning, personality, memory, emotion, or social interaction? Take part in a range of interesting and unusual demonstrations. Come and find out about the fascinating world of Psychology and where a degree might take you.

Climate Change Research Centre – Atmosphere and Ocean Motion
Science Lawn, map reference G13
At the Climate Change Research Centre, we examine some weighty questions related to global warming, weather extremes and ocean circulation. Come and find out about the weird world of fluids in motion with some hands-on demonstrations. Forecast: fun with a chance of learning!

Session times: 10 – 10.30am; 11 – 11.30am; 1 – 1.30pm; 2 – 2.30pm; 3 – 3.30pm

UNSW Science Instagram #tagsnaps booth

In front of Red Centre, West Wing entryway, map reference H13
Visit our fun TagSnaps booth to dress up like a scientist and receive a beautiful printed photo to keep!

Take a photo with your own camera and use the hashtag #unsnescience on Instagram to go in the draw to win one of 5 prize packs!
Future-proof your career with mathematics

9.30 – 10am
Chemical Sciences M18 [F10]

Graduate surveys consistently show that maths graduates have excellent career prospects. And if you are thinking about studying maths, think UNSW. We’re the only mathematical sciences school to win a maximum rating for both Teaching Quality and Overall Satisfaction in Australia’s only degree and university performance ratings (Good Universities Guide for 2012). The School’s graduates’ starting salaries are Australia’s highest, at 8% higher than average. We also have the highest percentage of employed graduates four months after graduation.

Dr Shane Keating

From birth to death: how molecular genetics and biochemistry makes us who we are

9.30 – 10am
Webster Theatre A [G14]

Recent advances in molecular cellular biology, especially the continuing development of recombinant DNA technology, have revolutionised our understanding of the structure, function and regulation of individual genes. These advances have opened up the exciting field of Molecular and Cell Biology, one of the most rapid growth areas in biology. This marriage of Biochemistry, Microbiology, and Cell Biology provides an exciting new approach for the study of all living organisms, including the human. Molecular and Cell Biology therefore represents fundamental components of biological and medical science and they will have increasingly important roles to play in many aspects of modern medicine, genetics, evolutionary biology, bioinformatics, biotechnology and genomics.

Dr Louise Lutze-Mann

Optometry and Vision Science

9.30 – 10am
Physics Theatre [K15]

The Optometry/Science degree provides students with an understanding of the theoretical discipline of vision science and the clinical practice of primary eye care. Vision science covers topics such as optics of lenses and instruments, the physiology of the eye, the psychophysical measurement of vision and the neuroscience of the brain. Optometry includes the diagnosis and management of ocular disease, the dispensing of spectacles and contact lenses, the management of people with special needs (children, low vision), sports vision and vision in the workplace. The School of Optometry and Vision Science at UNSW is the largest optometry school in Australia that links its academic learning with clinical practice and cutting edge research. It has a modern clinic providing a full range of optometry services. The School is associated with a number of outstanding research units including the Optics and Radiometry Laboratory, and sits alongside the Brien Holden Vision Institute and Centre for Eye Health.

Dr Maria Markoulli
Psychology @ UNSW - A science and a profession
9.30 – 10am
Keith Burrows
Theatre [J14]
Psychology is the scientific study of human behaviour, a diverse discipline that covers the relationship between the brain and behaviour; the processes of perceiving, learning and memory; the assessment of abilities and attitudes; the origins of personality and emotional states; the nature and effects of social interactions; and the causes of abnormal behaviour. Skills in psychology make a strong and positive contribution to a career.

Advanced Mathematics and programs in mathematics and statistics
10.10 – 10.40am
Matthews B [D23]
Mathematics provides the language for the fundamental understanding of nature, technology and commerce. Data and factual information can be understood using the techniques and theory of statistics. Why should you do Mathematics at UNSW? What is Advanced Mathematics? Where can Mathematics take you?

Marine Science
10.10 – 10.40am
Webster Theatre A [G14]
Marine Science encompasses all aspects of the marine environment from coral reefs to the behaviour of leopard seals in Antarctica. Marine scientists study the environment and biota in estuaries, along beaches and shorelines, and in the oceans.
Marine Science is multidisciplinary and can be studied with an emphasis on biology, earth sciences, environmental chemistry, or oceanography. Marine biologists might study seagrass communities or fish stocks; whilst marine geologists look at the topography of the ocean floor or mineral resources; physical oceanographers study the waves, currents and tides; and marine chemists might consider the concentrations of pollutants and nutrients in seawater.
Come and find out how a marine science degree can lead to exciting careers in managing or researching the marine environment.

Careers in Aviation
10.10 – 10.40am
Keith Burrows
Theatre [J14]
Aviation is a multi-faceted environment that requires people skilled in many disciplines. It is uniquely international in its application, demanding a level of cultural and political awareness. Aviation offers two streams of study with a common core, made up of basic science and aerospace technologies, plus management studies. A fourth honours year is also offered. We have our own aircraft operating from Bankstown Airport. Our management lecturers include some very senior and active members of the industry, whose expertise helps graduates find ready employment. Research topics include human factors, flight safety, operations, management methods and aviation meteorology.
Genetics – where we are and where we’re going

10.10 – 10.40am

Chemical Sciences M17 [F10]

Genetics is the study of evolution and inheritance, how biological information is passed on between generations and how it is used and stored. Genes exert control over all functions in all organisms. Molecular geneticists study how DNA encodes genes, how genes are expressed to make proteins, how those proteins are controlled and affect life (such as the genetic defects that cause cystic fibrosis or diabetes). Genetics is increasingly relevant to biological research, agriculture, industry, the monitoring of harvested and endangered species, and human health. The outcomes of the famed Human Genome Project have sparked considerable ethical debate.

Chemistry – A diverse and expanding science

10.10 – 10.40am

Chemical Sciences M18 [F10]

Chemistry is a central science dealing with the design, synthesis, analysis and properties of molecules. As a basic science, it is unique in providing opportunities for creativity. Chemistry develops enquiring, analytical and problem solving minds with good powers of observation and deduction. The School of Chemistry has teaching and research degrees at both fundamental and applied levels that cover many aspects of chemistry. As a student at the School of Chemistry you will benefit from our world class instruments and first rate learning facilities.

Materials Science and Engineering (including dual degrees with Biomedical Engineering and Commerce)

10.10 – 10.40am

Webster Theatre B [G14]

Materials Science and Engineering offers unlimited possibilities for innovation and development. As a materials engineer, you could be involved in developing environmentally friendly and economical metals, advanced surface coatings, biomedical materials, advanced composites and much more.

Physics and Astronomy

10.50 – 11.20am

Rex Vowels Theatre [F17]

Physics involves understanding the fundamental nature of the world around us, the principles that govern everything from subatomic particles to the universe itself. The technologies that we now all take for granted - medical scanners, mobile phones, GPS and the internet - have grown out of yesterday’s fundamental physics research. You cannot even imagine where tomorrow’s physics research might take us. Our Physics School specialises in experimental and theoretical physics in astrophysics, biophysics, quantum and solid state physics. Our research facilities include specialist observatories in Australia and Antarctica, a research centre investigating how to build a quantum computer, and an acoustics laboratory to analyse virtuoso musicians and instruments.
Geo Sciences
10.50 – 11.20am
Webster Theatre B [G14]

Geoscience is the science of planet Earth. A degree in geosciences can include aspects of geology, geophysics, geochemistry, geomorphology or soil science. Fieldwork in a variety of locations around Australia and overseas is a key part of your geoscience experience at UNSW. Career paths are extremely rich and varied. Your skills may be used in the quest for mineral and energy resources; or in the identification of natural hazards and solutions to environmental problems; engineering site investigations; or assist in the management of groundwater resources.

A/Prof. David Cohen

HSC Maths Tips and Tricks
10.50 – 11.20am
Webster Theatre A [G14]

Join the UNSW Mathematics Society for a Tips and Tricks session for Extension 2 Mathematics students. Breeze through your exams with insight into simple university maths like L'Hopital's Rule, Advanced Combinatorics, Integration by Inspiration and the Heaviside Method. Plus, hear General Exam Tips and Calculator Tricks from university students and lecturers who've seen it all!

MathSoc members (UNSW Maths Society)

Bachelor of Science and Business
10.50 – 11.20am
Chemical Sciences M17 [F10]

Successful careers are built on a range of skills and it’s a challenge to prepare yourself to cover all the bases when you graduate. Here’s a great starting point. It is now possible to study Science and Business in a dedicated 3-year degree. If you’re passionate about science and you also want a valuable foundation in business knowledge, study both in a single degree. Two thirds of your study will be science and you’ll also select a major. The remaining courses are from the Australian School of Business, including foundations in accounting, microeconomics, marketing, and management, and additional options to give you more depth of knowledge in marketing, business law and management. The Bachelor of Science and Business is a smart way to establish your career.

Professor Peter Lovibond, Deputy Dean of UNSW Science
**Biotechnology and Fuels for the Future**

10.50 – 11.20am  
**Chemical Sciences M18 [F10]**  

Biotechnology is a mix of all the natural sciences and engineering. It is the innovative use, either direct or indirect, of all living organisms and their parts to improve existing industrial processes. Biotechnology is part of the future of sustainable development, from biomining and bioremediation to the development of biomaterials for medicine, such as tissue engineering and stem cell therapies. Studying biotechnology at UNSW, you will learn skills from bioprocessing to genetic engineering, as well as acquiring cutting-edge scientific skills and learn commercial aspects of biotechnology company start-up, growth and development. Study of complementary business aspects such as patenting and commercialisation help equip you for the myriad career directions available to biotechnologists. Today, we will talk about one area where biotechnology has the potential to make a huge impact; the development of renewable fuels.

- **Dr Chris Marquis**

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**Medical Science**

10.50 – 11.20am  
**Physics Theatre [K15]**  

Medical Science underpins the practice of medicine. Whether you are looking for a career in biomedical research, or to go into graduate medicine or paramedical degrees, if you are fascinated about how the human body works, this could be the degree for you. By studying this degree you will learn about the human body: how it functions down to its smallest parts and how it reacts to disease and the drugs that are used to treat disease. Medical science truly incorporates many facets of the scientific disciplines.

- **Dr Angela Finch**

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**Medicinal Chemistry - chasing the perfect potion**

11.30 – 12.00pm  
**Chemical Sciences M18 [F10]**  

Medicinal Chemistry is an exciting, rapidly expanding area within the broad discipline of chemistry that has seen enormous growth recently both within Australia, and globally. Medicinal Chemistry is the development of new pharmaceutical agents, from concept to clinic. You will study design and synthesis of novel new drug candidates, biochemical effects, testing regimes, and regulatory and ethical considerations. The degree is taught as a joint initiative between the School of Chemistry, the School of Biotechnology and Biomolecular Sciences, and the Pharmacology section of the School of Medical Sciences. As a graduate of the Medicinal Chemistry degree, you will be equipped with unique skills, from fundamental chemistry enabling the synthesis and analysis of drug candidates through to pharmacology and molecular biology.

- **Professor Naresh Kumar**
UNSW Science Bridging Courses

11.30 – 12.00pm  
Webster Theatre A

UNSW Science Bridging Courses offer you the opportunity to revise Chemistry, Mathematics and Physics and experience how these subjects are taught at university. Each course consists of 40 hours of tuition comprising lectures, tutorials, laboratory classes and/or demonstration sessions.

Laura Jiew,  
Science Marketing

Psychology @ UNSW - A science and a profession

11.30 – 12.00pm  
Science Theatre

Psychology is the scientific study of human behaviour, a diverse discipline that covers the relationship between the brain and behaviour; the processes of perceiving, learning and memory; the assessment of abilities and attitudes; the origins of personality and emotional states; the nature and effects of social interactions; and the causes of abnormal behaviour. Skills in psychology make a strong and positive contribution to a career.

Dr Lisa Williams

Advanced Science: Be informed. Explore the possibilities.

11.30 – 12.00pm  
Rex Vowels Theatre

Advanced Science is the degree of choice for innovative thinkers with exceptional scientific knowledge and skills. It’s designed for talented students and offers you some flexibility to tailor your degree in a way that works for you. This program differs from the Bachelor of Science with the inclusion of advanced level courses, an honours year, and options tailored to an individual’s aptitude and interests. Students will develop a working knowledge in areas of scientific investigation to place them at the forefront of research and discovery.

A/Prof. Chris Tisdell,  
Assoc Dean Education

Environmental Management

11.30 – 12.00pm  
Matthews B

Our Earth faces enormous environmental challenges such as climate change, loss of biodiversity or land degradation. Effective and sustainable management of Earth’s environments has never been more important and it takes special students to meet this challenge.

Environmental Management is an all-encompassing degree which looks to find the answers to a sustainable existence. The aim of the program is to provide a strong education in the skills and knowledge necessary to work as an environmental manager or scientist. Choices of specialisation include biology, geography or earth sciences.

The School of BEES is one of the largest environmental science centres in Australia. Come and find out how our staff, students and graduates are contributing to environmental knowledge, policy and management.

A/Prof. Scott Mooney
UNSW Science: Breadth of choice, depth of knowledge

**12.10 – 1.10pm**

**Science Theatre [F13]**

UNSW Science: Breadth of choice, depth of knowledge. Offering choices to explore, discover, and gain scientific knowledge through minimum time study pathways. Science encompasses a wide range of fields and suits an equally wide range of people. You should think about studying science if you: have a curious mind; would like to help advance our society; are enjoying your high school Maths and Science subjects; hope to pursue a fulfilling career in a wide variety of sectors; are an all-rounder who’s keen to further develop life skills like leadership and teamwork. We’ve got flexible degrees so you can explore your passion for science through a number of specialisations. You don’t have to decide on your ‘major’ until second year, so there’s plenty of time to make the right choice.

We are a broad, all-encompassing Science Faculty consisting of nine very different Schools: Aviation, Biological, Earth and Environmental Sciences, Biotechnology and Biomolecular Sciences, Chemistry, Materials Science and Engineering, Mathematics and Statistics, Optometry and Vision Science, Physics and Psychology.

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**Bums to Beaches - the role of microbes in everyday life**

**1.30 – 2.00pm**

**CLB 5 [E19]**

Microbiology is the study of microorganisms and their interactions, both within the environment and with each other. UNSW is home to some of Australia’s leading microbiologists and biotechnologists who are building excellence in environmental genomics applied to research themes in environmental health and sustainability, animal and plant symbiosis and disease, water quality and waste reuse, microbial processes and climate change, and evolution and bioprospecting. Are you aware of the little things that make our world turn?

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**Materials Science and Engineering (including dual degrees with Biomedical Engineering and Commerce)**

**1.30 – 2.00pm**

**Webster Theatre B [G14]**

Materials Science and Engineering offers unlimited possibilities for innovation and development. As a materials engineer, you could be involved in developing environmentally friendly and economical metals, advanced surface coatings, biomedical materials, advanced composites and much more.
Medical Science
1.30 – 2.00pm
Physics Theatre [K15]
Medical Science underpins the practice of medicine. Whether you are looking for a career in biomedical research, or to go into graduate medicine or paramedical degrees, if you are fascinated about how the human body works, this could be the degree for you. By studying this degree you will learn about the human body: how it functions down to its smallest parts and how it reacts to disease and the drugs that are used to treat disease. Medical science truly incorporates many facets of the scientific disciplines.

A/ Prof. Patsie Polly

Biological Sciences
1.30 – 2.00pm
Chemical Sciences M17 [F10]
Biology is the study of life and living organisms. The School of BEES has an international reputation for quality teaching and research in the fields of botany, ecology, marine biology and zoology.
Botany looks at all aspects of plants and their relation to the environment. Ecology is the science of the relationships between organisms and their environments. An understanding of ecology is necessary for conservation of our natural environment. Marine biology is about life in the ocean, estuaries and other coastal environments. Zoology investigates the structure, behaviour, genetics, distribution, evolution and classification of animals.

Professor Richard Kingsford

Careers in Aviation
1.30 – 2.00pm
Rex Vowels Theatre [F17]
Aviation is a multi-faceted environment that requires people skilled in many disciplines. It is uniquely international in its application, demanding a level of cultural and political awareness. Aviation offers two streams of study with a common core, made up of basic science and aerospace technologies, plus management studies. A fourth honours year is also offered. We have our own aircraft operating from Bankstown Airport. Our management lecturers include some very senior and active members of the industry, whose expertise helps graduates find ready employment. Research topics include human factors, flight safety, operations, management methods and aviation meteorology.

Professor Jason Middleton

Biotechnology and Biomolecular Sciences – Why can’t you run a marathon at the speed of a sprint?
2.10 – 2.40pm
CLB 5 [E19]
How do we store energy and how to we access it when needed? Why can you sprint to the bus, but could not keep that pace all the way home? These questions are discussed to introduce some of the concepts of human biochemistry and metabolism.

Dr Rebecca LeBard
Nanoscience - Science that benefits society

2.10 – 2.40pm  
Rex Vowels Theatre [F17]

Nanoscience is the science, technology, research, engineering and manufacture of material smaller than 100 nanometres. This is about 60 to 80 times smaller than a red blood cell! It involves dealing with individual to several thousand atoms and molecules, and can result in dramatically changed properties. Nanoscience can be used to create devices and materials with unique properties and applications such as: - Nano patches, to vaccinate without needles or injections, and requiring only one hundredth of the normal amount of vaccine; - Faster, more powerful, lighter, smaller computers; - New catalysts, to produce more energy and reduce pollution; - Exceptional materials.

Dr Leigh Aldous and Dr Chuan Zhao

Psychology @ UNSW - A science and a profession

2.10 – 2.40pm  
Physics Theatre [K15]

Psychology is the scientific study of human behaviour, a diverse discipline that covers the relationship between the brain and behaviour; the processes of perceiving, learning and memory; the assessment of abilities and attitudes; the origins of personality and emotional states; the nature and effects of social interactions; and the causes of abnormal behaviour. Skills in psychology make a strong and positive contribution to a career.

A/Prof. Lenny R. Vartanian

HSC Maths Tips and Tricks

2.10 – 2.40pm  
Webster Theatre A [G14]

Join the UNSW Mathematics Society for a Tips and Tricks session for Extension 2 Mathematics students. Breeze through your exams with insight into simple university maths like L'Hopital’s Rule, Advanced Combinatorics, Integration by Inspiration and the Heaviside Method. Plus, hear General Exam Tips and Calculator Tricks from university students and lecturers who’ve seen it all!

MathSoc members (UNSW Maths Society)

Bachelor of Life Sciences: Satisfy your curiosity for life

2.50 – 3.20pm  
Chemical Sciences M17 [F10]

The Bachelor of Life Sciences will satisfy your innate curiosity about life, from the way things work at the molecular level, to the study of entire ecosystems. Discoveries in the life sciences are integral to the advancement of our world and society. Many students are drawn to the opportunity to study life sciences rather than the physical or numerical disciplines of science. Although mathematics and the physical sciences do not necessarily form part of the life sciences degree, there is still the option to study these as electives to broaden and enrich your studies. As a graduate, you will leave equipped to enter a wide range of interesting and rewarding careers, both in and beyond the sphere of the life sciences.

Associate Professor David Cohen
Physics and Astronomy

2.50 – 3.20pm  
**Rex Vowels Theatre [F17]**

Physics involves understanding the fundamental nature of the world around us, the principles that govern everything from subatomic particles to the universe itself. The technologies that we now all take for granted – medical scanners, mobile phones, GPS and the internet – have grown out of yesterday’s fundamental physics research. You cannot even imagine where tomorrow’s physics research might take us. Our Physics School specialises in experimental and theoretical physics in astrophysics, biophysics, quantum and solid state physics. Our research facilities include specialist observatories in Australia and Antarctica, a research centre investigating how to build a quantum computer, and an acoustics laboratory to analyse virtuoso musicians and instruments.

Chemistry - A diverse and expanding science

2.50 – 3.20pm  
**Chemical Sciences M18 [F10]**

Chemistry is a central science dealing with the design, synthesis, analysis and properties of molecules. As a basic science, it is unique in providing opportunities for creativity. Chemistry develops enquiring, analytical and problem solving minds with good powers of observation and deduction. The School of Chemistry has teaching and research degrees at both fundamental and applied levels that cover many aspects of chemistry. As a student at the School of Chemistry you will benefit from our world class instruments and first rate learning facilities.

Optometry and Vision Science

2.50 – 3.20pm  
**Keith Burrows Theatre [J14]**

The Optometry/Science degree provides students with an understanding of the theoretical discipline of vision science and the clinical practice of primary eye care. Vision science covers topics such as optics of lenses and instruments, the physiology of the eye, the psychophysical measurement of vision and the neuroscience of the brain. Optometry includes the diagnosis and management of ocular disease, the dispensing of spectacles and contact lenses, the management of people with special needs (children, low vision), sports vision and vision in the workplace. The School of Optometry and Vision Science at UNSW is the largest optometry school in Australia that links its academic learning with clinical practice and cutting edge research. It has a modern clinic providing a full range of optometry services. The School is associated with a number of outstanding research units including the Optics and Radiometry Laboratory, and sits alongside the Brien Holden Vision Institute and Centre for Eye Health.