




Monash Extension 2015



Study options for
high-achieving
secondary students



Brilliant isn't just smart.
Brilliant is ahead of the curve.
Brilliant is an attitude that wants
to get ahead, and stay ahead.

This is the thinking that makes Monash a place where amazing things happen. It's the mindset that helps Monash researchers achieve the incredible, from pioneering IVF technology to developing innovative answers that will stop the spread of diseases.

That's why Monash is where brilliant begins.

No wonder Monash is known as a place where reputations are made. But if our achievements are a mark of our ambition they are also proof that we know what it takes to help you live up to your potential. Brilliant doesn't come easy.

The great things never do.

Big on opportunity

Monash is Australia's largest university. We are the only Australian university active on four continents and the first to be granted a licence to operate in mainland China.

With more options across more faculties in more places, you have access to more opportunities.

- More opportunities to learn.
- More opportunities to grow.
- More opportunities to turn a great education into a brilliant career.



Nipuni Padukkage, studied Chemistry Extension alongside her VCE studies at John Monash Science School.



The Group of Eight is a coalition of Australian universities renowned for the high standard of education they provide and the research they produce. Monash is the youngest member of this prestigious group – a measure of the quality of our research, the impact of our graduates and the scope of our ambition.

Be a part of the top 100

Monash University is ranked inside the top 100 of world universities.

Times Higher Education World University Rankings 2013–2014.

A five star university

The Good Universities Guide is Australia's most authoritative independent university ratings publication. The guide gives Monash the highest possible rating in the categories that matter.

Staff qualifications

★★★★★

Student/staff ratio

★★★★★

Student retention

★★★★★

Research grants

★★★★★

The benefits

Monash Extension is your chance to get an early look at what it takes to succeed at Monash. The program offers top-performing high school students a chance to get a head start on their university studies. Endorsed by the Victorian Curriculum and Assessment Authority, Monash Extension allows high-achieving Year 12 students to get a taste of university before finishing school – and be rewarded for it.

It will help you realise your potential by pushing you beyond your comfort zone. We'll make sure you gain the knowledge, develop the skills and have the support you need to thrive. You gain the confidence to make a real difference in whatever field you choose. As a participant, you'll complete a first-year pair of university subjects as part of your final year school studies. The program aims to extend and enhance knowledge in a subject area you are studying at secondary level while giving you an idea of university standards and expectations.





Gain an ATAR increment

If you successfully complete both semesters of Extension, and any preparatory VCE units 3 and 4 being studied concurrently in Year 12, you will earn an increment on your Australian Tertiary Admission Rank (ATAR). (The increment is added to the aggregate from which the ATAR is derived).

The Monash Extension subjects can be counted as a fifth or sixth study.

The ATAR increment is calculated as follows:

- 5.0 where a student gains an average mark of at least 90
- 4.5 where a student gains an average mark of at least 80 but less than 90
- 4.0 where a student gains an average mark of at least 70 but less than 80
- 3.5 where a student gains an average mark of at least 60 but less than 70
- 3.0 where a student gains an average mark of at least 50 but less than 60.

Monash Extension is endorsed by the Victorian Curriculum and Assessment Authority (VCAA), www.vcaa.edu.

Get credit when you start university

If you successfully complete Monash Extension and subsequently enrol in a related Monash degree, you may be granted credit for your Extension study. Other universities and tertiary institutions may also grant credit for Monash Extension if the subjects fit into their course structure.

An added bonus is that units for which credit is granted are exempt from student contribution fees. University credit can be used in a number of different ways:

- **To accelerate studies** – Having already completed a first-year sequence you can proceed to the second-year level of the Monash Extension discipline

- **To broaden studies** – You can choose not to seek credit, therefore opening up the possibility of doing an extra first-year sequence.
- **To lighten the first-year study load** – As you will have already completed one first-year study, you can choose to do one less first-year sequence and pick up a full study load in second year.

Begin the transition to university life

Monash Extension gives you an insight into life at university, not only through study but also through a range of tailored activities and events organised during the year. Regular interaction with university staff and systems helps you understand how a university functions. You will have an ID card, library access and use of university facilities, all of which will make you feel more comfortable when you move on to full time tertiary study.

Be challenged and meet people like yourself

Monash Extension provides an intellectual challenge and a new approach to learning. You have the opportunity to interact with Monash academic staff who are leaders in their fields. You will meet like-minded students both in class, and at the special events for participants. You will also be invited to an orientation session, a leadership day and a formal graduation ceremony.



How it works

Monash Extension Centres are located at approved secondary schools or Monash campuses. You will attend class each week, which usually consists of a lecture and tutorial session. Classes at secondary schools are often taught by secondary teachers who work closely with academic coordinators at the University. You can attend any centre that is convenient for you. There are no restrictions in terms of gender, geographical location or school sector on your choice of centre.



Bryce Christensen, studied IT Extension study, alongside his VCE studies at McClelland Secondary College.



Assessment

Assessment requirements are set for each study and are outlined at the commencement of the semester. They are the same as those required for first-year degree students at the university and are assessed at the same level. Assessment usually consists of work submitted during the semester, plus an examination. Assignment due dates and examination dates accommodate students' VCE/IB assessment timetables as far as possible.

International Baccalaureate (IB) students who successfully complete Extension will be issued with a revised notional ATAR, and may receive credit for those subjects if they go on to study in a degree that allows credit to be granted. Information for IB students can be found on the VTAC website:

www.vtac.edu.au

Areas of Study: Preparatory studies

VCE

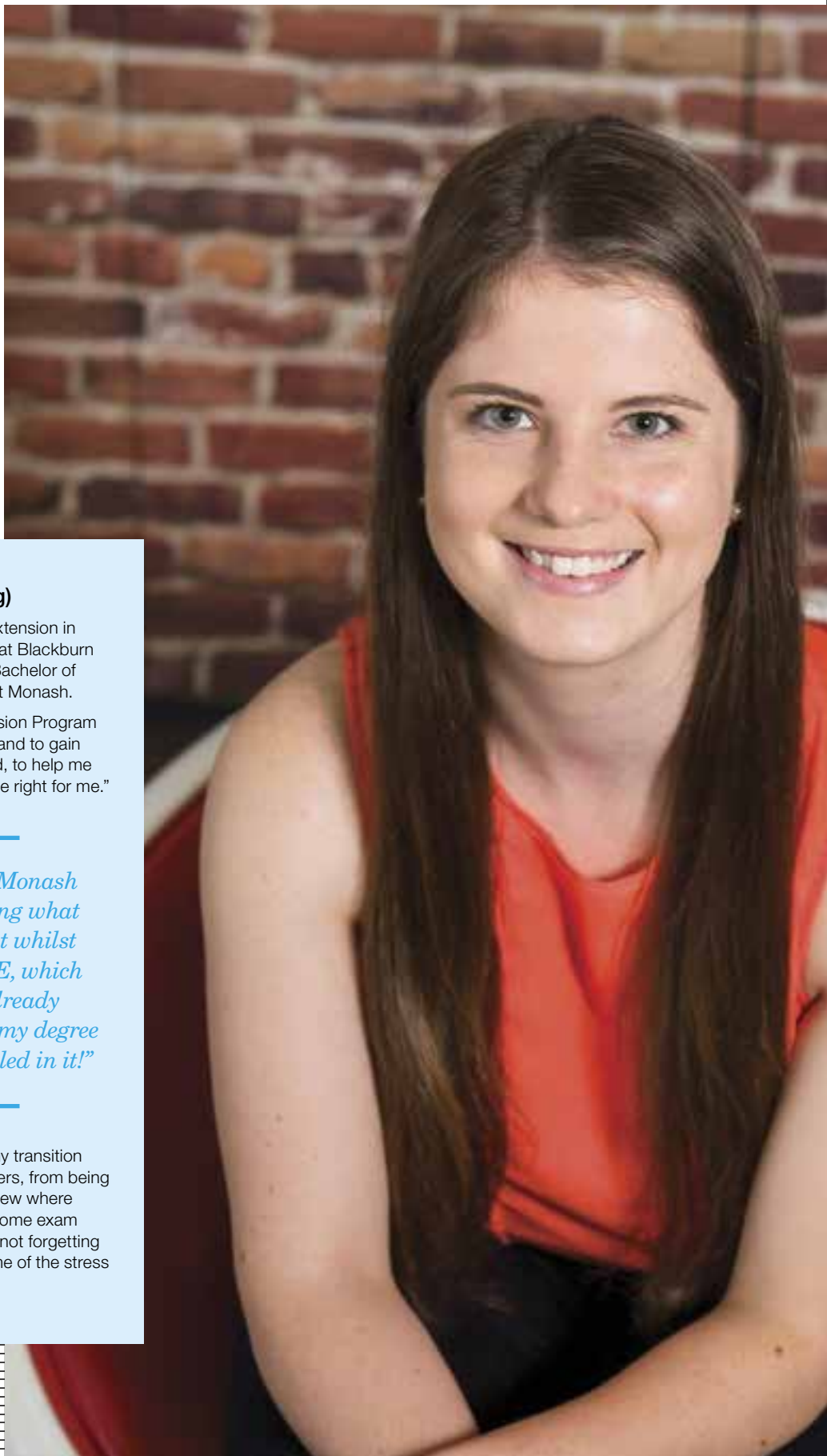
As this program is designed to extend students in a particular subject area, most subjects have specified preparatory studies.

International Baccalaureate

International Baccalaureate students may also undertake the program. Please enquire directly to Monash Extension for further information (extension@monash.edu).

Subject	Units	VCE units 3 and 4 prerequisite study (or concurrent enrolment)	Locations	More information
Accounting	Principles of Accounting and Finance Introduction to Financial Accounting	Accounting	Mentone Girls Grammar School Monash University, Clayton Campus Westbourne Grammar, Truganina	Page 7
Computational Thinking	Programming Fundamentals Algorithmic Problem Solving	Mathematics (any)	Monash University, Clayton campus	Page 8
Mobile Applications Development	Mobile Application Development Algorithmic Problem Solving	Mathematics (any)	Monash University, Clayton campus	Page 9
Biomedical Science	Cells, Tissues and Organisms Human Neurobiology	Must have previously completed units 3 and 4 of Biology	Monash University, Clayton campus	Page 10
Biology	Biology I Biology II	Biology	Monash University, Clayton campus	Page 11
Chemistry	Chemistry I Chemistry II	Chemistry	Brighton Grammar School Monash University, Clayton campus Padua College, Mornington Scoresby Secondary College Scotch College, Hawthorn	Page 12
Mathematics	Mathematics Extension Study (all year)	Mathematical Methods and Specialist Mathematics	Scotch College, Hawthorn Ivanhoe Girls' Grammar School Monash University, Clayton campus Presbyterian Ladies' College, Burwood	Page 14
Physics	Physics Physics	Must have previously completed units 3 and 4 of Physics	Monash University, Clayton campus	Page 15

Areas of study



Hayley Short (Accounting)

Hayley completed Accounting Extension in 2013 alongside her VCE studies at Blackburn High School. She is currently a Bachelor of Business (Accounting) student at Monash.

"I decided to apply for the Extension Program to get a head start on university and to gain further insight into what I enjoyed, to help me determine which course would be right for me."

"The main benefit of Monash Extension was learning what university is all about whilst gaining credit for VCE, which meant that I had already completed two units of my degree before I had even enrolled in it!"

"Monash Extension smoothed my transition into university this year. For starters, from being on campus so much I already knew where most of my classes were held. Come exam time, I knew the little details (like not forgetting your student ID!) which took some of the stress out of the day."



Accounting

ACC1000 Principles of Accounting and Finance

ACC1030 Introduction to Financial Accounting

VCE units 3 and 4 prerequisite study (or concurrent enrolment)

Accounting

Class requirements

2 hours per week (outside school hours)

May be required to attend two on-campus seminars per semester at Monash Clayton

Locations

Mentone Girls Grammar School
Monash University, Clayton Campus
Westbourne Grammar, Truganina

Credit arrangements

Credit for a first-year sequence in Accounting for students who:

___ successfully complete ACC1000 and AFC1030, and

___ subsequently gain a place in a Monash Faculty of Business and Economics course.

Other courses may also allow credit for first-year Accounting.

Unit coordinator

Mr John Gerrand
Accounting and Finance
Phone: 03 9905 2439
Email: john.gerrand@monash.edu

John joined the Monash Accounting department in 2003 and prior to this was a Senior Lecturer at Swinburne University.

ACC1000 Principles of Accounting and Finance

Unit comprises topics which cover the accounting equation and general purpose financial reports, including:

- cash and accrual accounting, adjustments and financial statement analysis
- interpreting information for managers to use in planning
- decision making and control, financial mathematics
- capital budgeting and investments.

ACC1030 Introduction to Financial Accounting

Unit comprises topics which cover the conceptual framework for accounting, including:

- definition and recognition criteria for assets
- equity, income and expenses (including leases, inventory valuation, non-current assets, depreciation and impairment)
- the form and content of financial reports for partnerships and companies
- evaluate alternative measure systems (historical costs, modified historical cost and fair value accounting).

Computational Thinking

FIT1040 Programming Fundamentals

FIT1029 Algorithmic Problem Solving

VCE units 3 and 4 prerequisite study (or concurrent enrolment)

Mathematics (any)

Class requirements

FIT1040: 2 hour workshop per week at Clayton (outside school hours)
 Online lectures each week

FIT1029: 2 hour workshop per week at Clayton (outside school hours)
 Two one-hour lectures per week at Clayton (also available online).

Locations

Monash University, Clayton campus

Credit arrangements

Credit for students who:

successfully complete FIT1040 and FIT1029, and
 subsequently gain a place in a Faculty of Information Technology undergraduate degree. These students will receive credit transfer for two first year equivalent units.

Other degrees may also allow credit transfer for these units.

Unit coordinator

Dr David Albrecht
Faculty of Information Technology
Phone: 03 9905 5526
Email: david.albrecht@monash.edu

David is a Senior Lecturer in the Faculty of Information Technology at Monash University.

FIT1040 Programming Fundamentals

Unit comprises topics which place an emphasis on the need to design program code that is easy to maintain, readable, tested, and well documented, and cover:

- learning to develop descriptions of algorithms and program logic using pseudocode. This will be implemented as working software programs using a visual procedural programming language
- exploring a variety of application domains including: computer games, business and science applications, computer generated arts, computer-based simulations and the control of simple robots
- fundamental concepts: data types and structures, basic types of input and output, program control structures, and modular design along with the basics of event-driven programming and objects.

FIT1029 Algorithmic Problem Solving

Unit introduces algorithmics and comprises topics which place an emphasis on using algorithms for systematic problem-solving. Topics include:

- what is a computational problem and what is an algorithm?
- basic control structures
- basic data structures
- modular algorithm structure
- recursion; problem-solving strategies for algorithm development
- understanding the efficiency of an algorithm
- limitations of algorithms.



Aaron Chitaranjan (Information Technology)

Aaron completed IT Extension in 2013 alongside his VCE studies at Mazenod College.

He is currently studying the double degree of Bachelor of Science and Bachelor of Computer Science at Monash.

“I chose to study Monash Extension as a challenge, to gain an insight into University life, and also to earn a little extra for my ATAR score.”

“It wasn’t very difficult to manage Monash Extension studies with Year 12. I felt that I was able to manage the time in both Year 12 and Monash Extension well, giving the appropriate amount of time to both.”

Mobile Applications Development

FIT2081 Mobile Application Development

FIT1029 Algorithmic Problem Solving

VCE units 3 and 4 prerequisite study (or concurrent enrolment)

Mathematics (any)

Class requirements

FIT2081:

__ 2 hour workshop per week at Clayton (outside school hours)

__ 2 hour lecture per week at Clayton (also available online)

FIT1029:

__ 2 hour workshop per week at Clayton (outside school hours)

__ Two one-hour lectures per week at Clayton (also available online).

Location

Monash University, Clayton campus

Credit arrangements

Credit for students who:

__ successfully complete FIT2081 and FIT1029 and

__ subsequently gain a place in a Faculty of Information Technology undergraduate degree.

Unit coordinator

Dr David Albrecht

Faculty of Information Technology

Phone: 03 9905 5526

Email: david.albrecht@monash.edu

David is a Senior Lecturer in the

Faculty of Information Technology at Monash University.

FIT2081 Mobile Application Development

Unit places an emphasis on providing students with practical skills in the context of mobile application development, and includes:

- introduction to a popular and important programming language
- object-oriented application development in the context of application development for mobile devices. The approach is strictly application driven.
- learning program syntax and semantics and object-oriented design and coding techniques by analysing a sequence of carefully graded, finished applications.
- design and building of an application.

FIT1029 Algorithmic Problem Solving

Unit introduces algorithmics and comprises topics which place an emphasis on using algorithms for systematic problem-solving. Topics include:

- what is a computational problem and what is an algorithm?
- basic control structures
- basic data structures
- modular algorithm structure
- recursion; problem-solving strategies for algorithm development
- understanding the efficiency of an algorithm
- limitations of algorithms.



Bryce Christensen (Information Technology)

Bryce completed IT Extension in 2013 alongside his VCE studies at McClelland Secondary College. In 2014 he is studying the Bachelor of Business Information Systems degree at Monash.

“Getting used to the university class structure was beneficial, and having already completed most of the enrolment process saved time when I began studying at university.”

“I studied Monash Extension to enable me to continue my IT studies and get a head start in future studies in that area.”

Biomedical Science

BMS1021 Cells, Tissues and Organisms

BMS1052 Human Neurobiology

VCE units 3 and 4 prerequisite study

Must have previously completed units 3 and 4 of Biology. In addition, concurrent Chemistry (units 3 and 4), enrolment is recommended.

Class requirements

3 x 1 hour lectures per week

1 x 3 hour practical class per week

Locations

Monash University, Clayton campus

Credit arrangements

Credit for the units of BMS1021 and BMS1052 if you:

___ successfully complete both units, and

___ are subsequently successful in gaining a place in a Biomedical Science or Monash Faculty of Science course.

Unit coordinator

Dr Sharon Flecknoe
School of Biomedical Sciences

Phone: 03 9905 1547

Email: sharon.flecknoe@
monash.edu

Sharon lectures in the Faculty of Medicine, Nursing and Health Sciences and uses innovative approaches to motivate students. Sharon also promotes science to the public through her outreach program.

BMS1021 Cells, Tissues and Organisms

Unit covers a range of topics including:

- the chemical constituents of living cells and biological reactions
- cell structure and function and animal development
- diversity and evolution
- the relevance of the microbial world in biomedical science
- human anatomy and tools for studying cells including histology
- different types of microscopy, tissue culture
- specialised cell staining techniques.

BMS1052 Human Neurobiology

This unit introduces you to:

- the human nervous system – using examples of historical and cutting-edge research to illustrate current knowledge about brain function
- questions such as: how do individual brain cells communicate; how do we sense the world; how does the brain control movement; and how does the autonomic nervous system function?
- higher order brain functions such as language, learning and memory
- practical classes which allow observation and quantification of sensory and motor function.



Steele Fairless (Biology)

Steele completed Biology Extension in 2013 alongside his VCE studies at Goulburn Valley Grammar School. He is currently studying the Bachelor of Biomedical Science at Monash.

“Monash Extension was incredibly helpful for me as an escape from Year 12 pressures, as it was a subject I was passionate about.”

“My Biology Extension units counted as ~~12~~ credit points towards my Biological Science course, reducing my load for my first year studies.”

“When commencing university I was already well aware of the procedure for enrolment, and the use of learning tools used by Monash University, which made the transition significantly easier.”



Biology

BIO1021 Biology I

BIO1022 Biology II

VCE units 3 and 4 prerequisite study (or concurrent enrolment)

Biology

Class requirements

2 x 1 hour lectures per week
1 x 3 hour laboratory exercise (some weeks)

Locations

Monash University, Clayton campus

Credit arrangements

Credit for a first-year sequence in biology to students who:

- ___ successfully complete BIO1011 and BIO1022, and
- ___ subsequently gain a place in a Monash Faculty of Science course.

This will allow them to proceed to second-year level studies in a range of science disciplines, including genetics, plant sciences, zoology, physiology, microbiology and pharmacology.

Other courses may also allow credit transfer for these units.

Unit coordinator

Dr Gerry Rayner
School of Biological Sciences
Phone: 03 9905 5629
Email: gerry.rayner@monash.edu

Gerry is an education-focussed academic. Gerry's research interests focus on the scholarship of teaching and learning in tertiary science.

BIO1021 Biology I

Unit offers considerable feedback on your progress and gives opportunities for self-paced learning. It covers a study of animal and plant biology and diversity from genes to whole organisms and includes:

- an examination of the structure and function of plant and animal cells with an emphasis on energy fixation, storage and usage
- principles of genetics, including advances in molecular biology
- current views of evolutionary processes and ecology.

BIO1022 Biology II

Unit offers considerable feedback on your progress and gives opportunities for self-paced learning. It covers:

- a study of the biology of whole organisms,
- organ systems and cells, including molecular genetics, and the effect of environmental parameters on biological functions
- the biology of microbes and animals is emphasised
- the ecological factors that are biologically important at the level of integrated whole organisms, at cellular, subcellular, and biochemical levels are considered for each organism under study.

CHM1011 Chemistry I

CHM1022 Chemistry II

VCE units 3 and 4 prerequisite study (or concurrent enrolment)

Chemistry

Class requirements

2 hour class per week (after school hours)

Some workshops/practical classes at the Clayton campus during semester

Locations

Brighton Grammar School
Monash University, Clayton campus
Padua College, Mornington
Scoresby Secondary College
Scotch College, Hawthorn

Credit arrangements

Credit may be given for a first-year sequence in Chemistry (allowing students to proceed to second-year studies in Chemistry) to students who:

- __ successfully complete CHM1011 and CHM1022, and
- __ subsequently gain a place in a Monash Science course

Depending on the course structure and VCE preparation undertaken, some credit may be given to students who:

- __ successfully complete CHM1011 and CHM1022, and
- __ subsequently gain a place in a Monash Faculty of Engineering course. The Faculty of Engineering recommends that interested students should contact the course adviser prior to enrolment for more information.

Students who:

- __ successfully complete CHM1011 and CHM1022, and
- __ subsequently gain a place in a Monash Faculty of Pharmacy and Pharmaceutical Sciences course may receive some credit.

Unit coordinator

Dr Christopher Thompson
School of Chemistry

Phone: 03 9905 9362
Email: chris.thompson@monash.edu

Christopher's research involves tandem mass spectrometry of ion-molecule reactions, high resolution synchrotron spectroscopy of small molecules and computational chemistry.

CHM1011 Chemistry I

Unit offers students practice in the methods for communicating chemistry, and discussion about the social and environmental responsibility of chemists in the global community. Unit includes:

- discussion of the features of atomic structure and the construction of the periodic table of elements
- developing an ability to interpret the relationships between electronic structure and bonding
- exploration of a wide range of molecular structures and investigated aspects of stereochemistry such as isomerism and chirality
- distinguishing the differences between ideal gases and real gases
- recognising the factors which give rise to polarity and studied how this effects intermolecular bonding
- investigating the first and second laws of thermodynamics and defined the idea of enthalpy and entropy
- discussion of the factors which give rise to chemical kinetics
- exploration of acid-base chemistry and other important chemical systems dictated by dynamic equilibria
- fostering the acquisition of practical skills by exploiting an inquiry-based approach to the chemistry laboratory experience, by formulating hypotheses and testing theoretical principles learnt throughout the coursework.

CHM1022 Chemistry II

Unit offers students practice in the methods for communicating chemistry, and discussion in the social and environmental responsibility of chemists in the global community. Unit includes:

- development of a basic understanding of chemical nomenclature
- exploring the classification, bonding, structure, properties and reactions of a wide range of organic compounds according to the functional groups they contain
- discussing a number of case studies relating to biological and synthetic macromolecules such as proteins, carbohydrates, polymers; discussed the properties of transition elements
- describing a wide range of coordination compounds and their structures, reactions and applications in both synthetic materials and biological systems
- employing spectroscopy to investigate the elucidation of molecular structure
- fostering the acquisition of practical skills by exploiting an inquiry-based approach to the chemistry laboratory experience, by formulating hypotheses and testing theoretical principles learnt throughout the coursework.





Nipuni Padukkage (Chemistry)

Nipuni completed Chemistry Extension in 2013 alongside her VCE studies at John Monash Science School. She is studying a Bachelor of Science and Bachelor of Engineering (Honours) at Monash in 2014.

“Extension Chemistry and VCE Chemistry complemented each other very well. This helped me to achieve well in both studies and consolidate my knowledge. I also realised that it was very easy to access help from lecturers and demonstrators, as well as from other students.”

“A highlight of Monash Extension for me was the reassurance it gave me in making my career choice. I knew that my entire course would have many chemistry units in it, and the fact that I still loved and looked forward to all my chemistry classes last year proved to me that I would really enjoy studying pharmacy.”

“Monash Extension provided me with a challenge, and I made new friends thanks to this program!”



Grace Wan (Chemistry)

Grace completed Chemistry Extension in 2013 alongside her VCE studies at Brentwood Secondary College, and is a talented and enthusiastic violinist. She is currently studying a Bachelor of Pharmaceutical Science Advanced with Honours degree at Monash.

“It was not really difficult to manage my Monash Extension workload with my Year 12 studies.”

“Although the Monash Extension study content was more than VCE level, contact hours were minimal, leaving more than enough time for me to study for everything.”

“Monash Extension has definitely helped me gain an understanding of the university. I quickly learnt to be more responsible for my own studies and be less reliant on others around me. Having been introduced to various Monash websites during the year also added a hint of familiarity when I started my undergraduate degree at Monash, making my transition to university very smooth.”



Mathematics

MTH1040 Mathematics Extension Study (all year)

VCE units 3 and 4 prerequisite study (or concurrent enrolment)

Mathematical Methods (CAS) and Specialist Mathematics

Class requirements

2 – 2.5 hours per week (after school hours)

Some 2 hour intensive workshops on the Clayton campus for all students enrolled in the course (usually during the school holidays)

5 hours per week (preparation and homework)

Students require: one of the standard first-year uni maths textbooks (not included in Monash Extension fee)

Locations

Scotch College, Hawthorn

Ivanhoe Girls' Grammar School

Monash University, Clayton campus

Presbyterian Ladies' College, Burwood

Credit arrangements

Credit may be given for a first-year sequence in Mathematics for students who:

___ successfully complete MTH1040, and

___ subsequently gain a place in a Monash Science course

___ the credit will allow students to proceed to second-year studies in Mathematics.

___ students who subsequently gain a place in a Monash Faculty of Engineering course may receive credit for either one or both of these units, depending on the course structure and their VCE preparation. The Faculty of Engineering recommends that interested students should contact the course adviser prior to enrolment for more information.

___ courses from other faculties may also allow credit for first-year Mathematics.

Unit coordinator

Associate Professor

Burkard Polster

School of Mathematical Sciences

Phone: 03 9905 4493

Email: burkard.polster@monash.edu

Burkard's research areas of interest are: Finite and topological geometry, combinatorial designs, group theory, history of mathematics, classical interpolation theory, computer visualisation, mathematics education and outreach, and any kind of fun mathematics.



MTH1040 Mathematics Extension Study (all year)

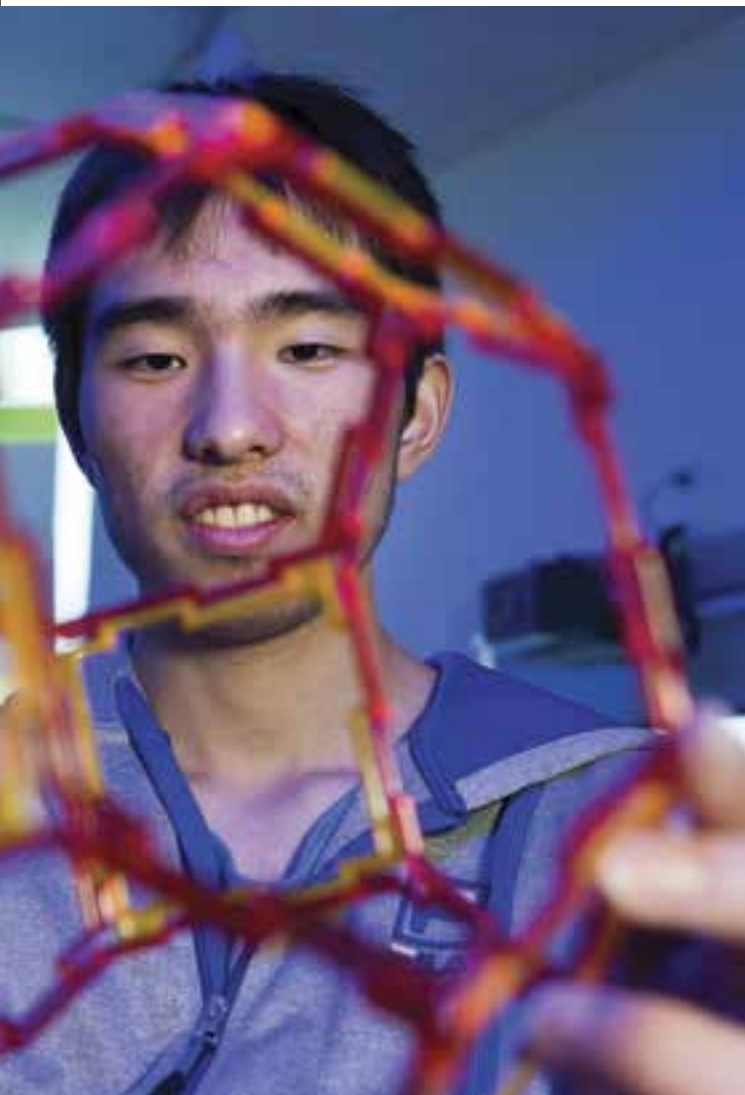
First half of the year focuses on Linear Algebra. Topics include:

- vectors in \mathbb{R}^n , dot and vector products, lines and planes in \mathbb{R}^3
- solution of systems of linear equations
- gaussian elimination, reduced row echelon form, matrix operations, inverses and determinants
- rank, image and kernel, special matrices, linear dependence of vectors, linear transformations, eigenvectors and eigenvalues
- diagonalisation of matrices, Cayley-Hamilton theorem, abstract vector
- spaces and various applications of linear algebra.

Second half of the year covers how and why something works and places an emphasis on Calculus. Topics include:

- limits and continuity
- infinite sequences and series (e.g. convergence tests, Taylor series)
- techniques of integration and improper integrals (e.g. integration by parts and partial fractions)
- differential equations (e.g. mathematical modelling, separable equations, linear first and second order differential equations, systems of differential equations).

Students are expected to be able to justify/prove the main properties of determinants.



Stephen Deng (Mathematics)

Stephen completed Mathematics Extension in 2013 alongside his VCE studies at Wellington Secondary College. He is currently a Bachelor of Science Advanced (Research) student at Monash.

"I chose to do Monash Extension because it meant I could learn more in Mathematics and see how university Mathematics is different to the one in high school."

"The highlight of my Monash Extension was Burkard Polster, my lecturer. He used Mathematics toys, facts about cubes or point out Mathematics in TV shows / movies, which was always interesting."

"The main benefits of completing Monash Extension were having access to a lot more resources, and finding out what worked or what didn't work in terms of studying."

Physics

PHS1011 Physics

PHS1022 Physics

VCE units 3 and 4 prerequisite study

Must have previously completed units 3 and 4 of Physics

Class requirements

6 hours per week (3 x 1 hour lecture, and 1 x 3 hour laboratory class)

Locations

Monash University, Clayton campus

Credit arrangements

Credit may be given for a first-year sequence in Physics for students who:

___ successfully complete PHS1011 and PHS1022, and

___ are subsequently successful in gaining a place in a Monash Faculty of Science course.

The credit will allow you to proceed to second-year studies in Physics.

Unit coordinator

Dr Timothy Petersen
School of Physics

Phone: 03 9905 9765

Email: timothy.petersen@monash.edu

Timothy's research has centred on improving experimental measurements through computational and theoretical algorithm development, and he has developed modelling approaches utilising computational physics

PHS1011 Physics

Unit comprises four main topics, which provide the foundations of a large part of classical and modern physics:

- **Mechanics** – covers Newton's laws, dynamics, energy, momentum and contemporary measurement theory (via laboratory experimentation).
- **Modern thermodynamics** – an introduction. Covers an understanding of the concept of work, the laws of thermodynamics, and an introduction to entropy.
- **Waves** – covers simple harmonic motion that builds up to diffraction, superposition, wave optics and ray optics.
- **Special relativity** – an introduction.

PHS1022 Physics

Unit comprises topics which provide the foundation of main-stream physics, including rotational dynamics, the gravitational field, electrostatics, magnetism and quantum physics. These topics underpin interactions in our universe at sub-atomic to cosmic scales.

- **Electrostatics** – covers the electric field, potential and energy for various situations, and the behaviour of capacitors and dielectrics.
- **Magnetism** – covers the relation between currents, magnetic fields and induced emfs, inductance, LCR resonance, and introduces Maxwell's equations and electromagnetic waves.
- **Quantum physics** – covers wave particle duality for matter and light, quantisation, wave-functions and probabilities, the Heisenberg Uncertainty Principle, hydrogen atom, 1D Schrödinger equation, and the particle-in-a-box model.

Student support

Bursaries

Monash Extension Support Bursaries

Each year a number of bursaries are available for students who require financial assistance to be able to undertake the program.

The support bursary allows the recipient to complete the program for a reduced fee. You should apply for the bursary after you have been accepted into the program and will be expected to provide documentation to support your claim.

Bursaries are awarded to students who come from one or more of the following groups:

- Indigenous Australian background
- Regional or remote areas of Australia
- Experiencing financial disadvantage.

For more information and an application form go to monash.edu/extension or email extension@monash.edu

The due date for applications is 31 March 2015.

Special events

Orientation Day Thursday 15 January 2015

You are invited to an orientation day which provides an opportunity to meet other students and teaching staff. It also allows you to organise your Monash ID card and computer access, and familiarise yourself with the university's processes.

Leadership Day Monday 29 June 2015

As a high-achieving Year 12 student you will be a leader of the future. Leadership Day is an invitation-only event providing you with the opportunity to explore the nature of leadership, develop knowledge and skills for success and meet other outstanding students and Monash staff. You can also choose to participate in faculty-specific workshops.

Monash Extension Graduation Ceremony Wednesday 2 December 2015

In December, a formal graduation evening is held to celebrate the success of all students throughout the year. Friends, family and teachers are all welcome. Each subject area nominates their top student who receives a special prize. Students also have the opportunity to nominate their teacher for a teaching award.

Mentors

All Monash Extension students nominate a teacher from their home school to act as a mentor. Mentors are not expected to provide academic advice or teaching, but are welcome to attend any teacher training or on-campus sessions.

The role of mentors is to monitor students' progress with their studies during the year. All academic support will be provided at the weekly classes or, where students are studying via off-campus learning, by university staff online or by phone. Mentors may also be the contact person for an individual student within a school, however most contact from the University will be directly with the student.

Library access

You will be issued with a Monash University student identification card (ID). This photo ID will enable you to use the libraries at no cost, which is beneficial both for the Monash Extension study as well as other VCE studies.

The University library catalogue is available online at www.lib.monash.edu.

Personalised computer access

In order to access Monash email, password protected internet resources and computer laboratories on campus, all Monash Extension students must register for a Novell account and an Authcate account. You will be assisted with this process at orientation.

A Novell account allows access to the University's computer resources, including use of PCs in the computer laboratories on-campus, and to software on the file servers.

An Authcate account enables access to secure pages on the Monash website, my.monash portal, and other Monash resources that are password protected. These include personal information and services such as examination details, results, library resources, and protected internet resources such as Monash web pages/newsgroups and Monash email.

The Monash email address is the main source of communication between you and the University and should be checked regularly.

Admission

Eligibility

- Students must be high achievers across all Year 11 subjects, not just the discipline they wish to study in Extension.
- If a student has completed the preparatory VCE units 3 and 4 in Year 11 they should have a VCE study score of 41 or more.
- If a student is studying the preparatory Units 3 and 4 concurrently with the Extension study they should reasonably be expected to achieve 41 or more.
- The student's school must endorse the application.
- Where a student has completed the VCE preparatory study and/or any other prerequisite requirement of the Extension study in a previous year, they are required to have an active enrolment and satisfactorily complete at least one Units 3 and 4 sequence towards the VCE in the same year in which they enrol in the extension study.

Applications

Before applying, students should:

- discuss their application and subject selections with their school
- keep in mind that Extension is counted as a fifth or sixth study
- refer to the VCAA website for more information about Higher Education Studies and the Victorian Tertiary Entrance Requirements (VICTER 2016) guide as there are some restrictions on subject use in the ATAR calculation which may impact on their decision to enrol in Monash Extension
- check the Monash Extension website for any changes or updates to information
- complete the online form at monash.edu/extension.
A non-refundable application fee of \$20 is payable online at the time of completing the application.

- The application closing date is Friday, 5 December 2014
- Applicants have until 19 December 2014 to submit any outstanding results or supporting documentation. Anyone submitting extra documents should download a cover sheet which can be found with application forms on the website at monash.edu/extension or by emailing extension@monash.edu.

Selection

While secondary schools recommend students for the program, it is the University that makes the final decision in selecting applicants.

Selection is based on performance in the preparatory study and overall achievement in Year 11.

Students will be notified of the outcome of their application in January.

Availability of studies and centres

The availability of any unit or class is subject to both adequate enrolments and a quota on the maximum number of students that can be accommodated. Students wanting to attend classes will be allocated to a Monash Extension centre according to the preferences they have indicated in their application.

If too few students have indicated a preference for a particular class or venue and the class consequently does not proceed, these students are offered an alternative where possible or the option of withdrawing their application with a full refund of the application fee.

Enrolment

Students accepted into the program are automatically enrolled and will receive confirmation of enrolment with an invoice for the first semester fee and information about induction sessions.

Semester two enrolment fees will be invoiced in July.

Withdrawal

A student may withdraw from the program without penalty after their application has been approved.

Students who wish to withdraw after they have formally accepted must do so in writing prior to 31 March 2015 in order to have their semester fee refunded. There will be no refund of fees after this date.

Withdrawal will not affect future tertiary selection in any way.

Successful completion of the program

To successfully complete the program, and gain the ATAR increment, students must complete both semesters of Monash Extension as well as any preparatory unit 3 and 4 they are studying concurrently. Students who fail first semester of the university study will not be able to continue the program. All fails will be removed from the student's academic record and will not affect future tertiary selection in any way.

Cost

In order to run a high-quality program it is necessary to provide funding to participating host schools and Monash departments to staff Monash Extension.

In 2015 the fee is \$900 (\$450 per semester paid in March and August).

Further information

Monash Extension Office

Phone: 03 9903 4756

Email: extension@monash.edu



facebook.com/Monash.University



twitter.com/MonashUni

monash.edu/extension

Key dates

15 October 2014	Information evening (for 2015 program)
05 December 2014	Applications close
18 December 2014	Final date to submit supporting paperwork for applications
09 January 2015	Offers completed
15 January 2015	Monash Extension Orientation Day Caulfield campus
14 October 2015	Information evening (for 2016 program)