



JOHN MONASH

SCIENCE SCHOOL

- **PROSPECTUS FOR 2017 SCHOOL YEAR**

VICTORIA'S SPECIALIST SCHOOL FOR SCIENCE,
MATHEMATICS AND ASSOCIATED TECHNOLOGIES

Pathways To Higher Learning

Message From The Vice Chancellor

Monash University



For students who have a passion for unlocking the mysteries of the world around us, John Monash Science School represents a rare and valuable opportunity. Monash University could not be more proud of the role we play helping the School to nurture the next generation of great thinkers and doers.

Monash has a deep and multifaceted relationship with the School, offering students the chance to experience one of the world's leading research universities. Our Faculties of Education and Science, in particular, work closely with the School to develop classroom content of high international quality and opportunities for collaboration.

John Monash Science School allows students to immerse themselves in the sciences. It is surrounded by one of Australia's largest concentrations of scientific expertise and infrastructure. The School provides students with a first-class grounding in the sciences, a seamless pathway to higher education and a host of exciting career prospects.

On behalf of Monash University, it is my pleasure to welcome future students, parents, teachers and support staff of John Monash Science School into the Monash community.

Professor Margaret Gardner AO - President And Vice Chancellor, Monash University, Melbourne

Investing In Our Future

Message From The Regional Director

Department of Education and Training



John Monash Science School is Victoria's first specialist secondary school focussed on Science, Mathematics and Associated Technologies. It has been formed as a result of a unique partnership between the Department of Education and Training (DET) and Monash University and offers a unique and challenging learning environment for Years 10-12 students with access to the resources of a global university.

Alongside Monash University, and through its innovative curriculum and ever-widening outreach programs, the school aims to increase student interest in science and mathematics, and encourage more students to pursue science and mathematics-related careers to support Victoria's future economic, social and environmental needs.

Beginning its exciting journey in 2010 the school now provides innovative and research-based student learning and aims to fully develop the capacities and talents of all students. The first Year 12 cohort graduated at the end of 2012 with outstanding academic results, with students now pursuing careers in science and science-related fields at tertiary institutions in Melbourne and interstate. Female students, who in the past have been less inclined to pursue this kind of pathway, are a vital part of our student body, with close to half the JMSS 2016 cohort being female.

Victoria as the Education State was launched by the Premier Daniel Andrews in September 2015, heralding an exciting new era for Victorian education. As part of this agenda STEM - Science, Technology, Engineering and Mathematics, is highlighted as an essential element for our society moving forward, and JMSS is playing a lead role. New targets promoting excellence in science will be a key for all government schools, and so the School's science immersion programs which allow students and teachers from remote and regional Victorian schools to take advantage of unique science curriculum opportunities, will become even more important.

North Eastern Victoria Region is proud to host the school and as Regional Director I welcome and encourage all Victorian students with an interest in pursuing a career in the science and mathematics fields to consider John Monash Science School.

Judy Rose - Regional Director, North Eastern Victoria Region, Department of Education and Training

John Monash Science School

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Be Proud Of Your Passion For Science

Message From The Founding Principal

I would like to extend a warm welcome to prospective students, parents and teachers to John Monash Science School (JMSS), Victoria's first specialist school in the Sciences, Mathematics and Associated Technologies.

If you have a passion for the sciences, love a challenge and welcome every opportunity to learn, then this is the school for you.

I want you to be proud of that scientific passion, and be determined to make a career from it. The success of Australia's future has never been more dependent on our capacity to produce high-performing graduates in the STEM (Science Technology Engineering Mathematics) fields, so your decision to join us is both timely and vitally important.

JMSS brings together the dual strengths of an innovative team-based teaching and learning methodology, and a contemporary science curriculum co-created as the result of our unique partnership with Monash University's Science, Biomedicine, Pharmaceutical, Engineering and Education Faculties. It is an exciting prospect for enthusiastic and passionate young scientists, and the opportunities provided are rich, deep and inspiring.

We are proud of what has been achieved for and on behalf of some of Victoria's brightest young minds in the relatively short life of the school to date. Through our partnership with Monash University, we are able to ensure all Year 10 students are able to undertake an extended science research project with guidance from expert mentors.



Exciting programs and approaches have seen over 90% of JMSS graduates gain entry into tertiary STEM courses, with consistently outstanding VCE results.

It is vitally important to us that we develop good citizens, not just good scientists, at JMSS. UNESCO's four pillars of education define the way we teach, the way we learn, the way we interact and the way we work together. The variety of co-curricular options allow students to develop a range of skills and talents,

from music to art, from sport to leadership. The close-knit, supportive, energetic and welcoming environment so evident at JMSS is the result.



Each and every one of us, students and staff alike, has made the brave decision to leave our previous schools in support of the mission of JMSS to lead change and innovation in STEM education in Victoria. Students and parents new to the school will find an environment characterised by strong working relationships between students and staff, a mutual sense of belonging and support existing among our students, and a keen sense of aspiration and challenge which urges all in our community to strive for their personal best in all they do. Our teachers know each of their students, have high expectations of and for them, and provide the necessary individual support to ensure each student achieves ongoing improvement. This unique JMSS culture, affectionately known by many as the 'John Monash Way', embraces all who come. I look forward to welcoming you into our community, and to you developing academically, socially and personally into tomorrow's scientists, innovators and leaders.



Specialism In Science Education

John Monash Science School (JMSS) opened its doors to students in 2010 as Victoria's first specialist secondary science school.

JMSS caters for students in Year 10 through to Year 12. Our students undertake a three-year Victorian Certificate of Education (VCE) program rich in the study of science and mathematics-based subjects.

Our unique position on Monash University's Clayton campus in Melbourne gives us access to nationally and internationally recognised science and education research academics, and the school's innovative curriculum is co-written with Monash University academics and researchers, ensuring our curriculum hits the cutting edge of contemporary knowledge and practice.

John Monash Science School is able to offer a unique education unequalled elsewhere.

Monash academic liaison staff in Physics, Chemistry, Biology, Geoscience, Mathematics, Computer Science, Geography, Biomedicine and Engineering have all played a key role in developing curriculum and emerging science subjects such as nanotechnology and astrophysics. This broad range of subjects leads to multiple pathways through and beyond the VCE.



The opportunities presented to our students on a daily basis are unique, challenging and motivating. Our students are able to hear from leaders in their fields, work alongside them, become familiar with their research and one day will take a leading role in similar fields.

All students complete an Extended Experimental Investigation (EEI) in Year 10 on a topic of their choice. Some students are able to work with academics in a mentoring capacity on projects, and some students are welcomed into University Faculties for Work Experience placements.



Working with like-minded peers, expert teachers, and taking advantage of world-class facilities, students are encouraged to perform to the highest academic level in order to achieve their goals.

Some students access subjects above their age academic level, and many students access university enhancement subjects, taking first-year University science subjects on the Monash University campus alongside traditional Year 12 subjects.



Teaching For Effective Learning



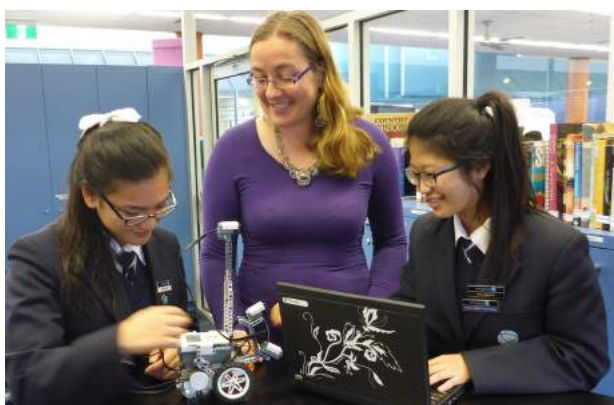
The development of core learning skills and attributes is seen as the cornerstone of academic success at John Monash Science School. These are woven into the fabric of each learning sequence at the school, as we believe the capacity to solve problems, collaborate in teams, undertake independent inquiry, think and act ethically, and make strategic use of high-end technologies will mark a point of difference for our students as they take their place in their chosen fields beyond school.



Gaining these skills will give students at John Monash Science School an advantage in any further studies they choose to undertake.

The school uses inquiry-based learning as one aspect of the delivery of the curriculum to:

- develop problem-solving, critical thinking skills, and disciplinary content;
- promote the transfer of concepts to new problems and questions;
- teach students how to learn and build self-directed learning skills; and
- develop student ownership of their learning and enhance student interest in the subject matter.



JMSS is proud of its team-based approach to student learning. Classes of up to 50 students benefit from having two team teachers in the room to explore knowledge from differing fields using a variety of teaching approaches.

Our teachers work closely together to plan learning experiences for students, and to monitor their progress. They adjust their approaches to support students in need of extra assistance, and to challenge those ready to take the next steps in their learning journeys. Students are also encouraged to work within teams, both large and small, using team members as resources for their learning.



The school's IT infrastructure is part of the extensive Monash IT network, giving our students and teachers access to resources developed in partnership with the university, as well as world-wide resources via high-speed internet throughout the building and across the University campus. Students use a combination of computers, laptops, tablets, iPads and smartphones, enabling 'anytime anywhere' learning, giving our students ready access to resources and collaboration opportunities.

The learning programs at JMSS are enriched for students in two major ways:

- Monash University academic liaison staff bring the cutting edge of scientific knowledge and research into the classroom, engaging students in exciting activities such as astronomical observation nights, geological and biological field trips and camps, creation of advanced computer simulations and robots, and Mathematics and Engineering Immersion Days;
- Our students have access to first-class facilities at Monash University, such as the Geoscience laboratories, Monash library resources and sporting facilities. This includes numerous University-affiliated research organisations such as the Australian Regenerative Medicine Institute, the Australian Synchrotron, the Melbourne Centre for Nanofabrication, and CSIRO's Clayton campus.

Breadth In Curriculum

While the school has a strong focus on science and mathematics, the curriculum is broad enough to develop students' skills and capacities across all fields. In Year 10 all students study:

- English;
- Mathematics;
- Science (Core Sciences including Physics, Chemistry and Biology);
- Emerging Science elective units (unique to JMSS) in fields such as Nanotechnology, Pharmaceutical Science, Astrophysics (Quantum Physics and Astronomy), Geoscience and Bioinformatics;
- Issues Studies (the interface between the Humanities and the Sciences);
- Emerging Technologies (a range of fascinating options in Computer Science); and
- Learn To, which includes study skills, career pathway activities, and Physical Education.

Co-Curricular Program

Our Co-Curricular Program, offered on Wednesday afternoons, provides a range of activities such as sport, dance, yoga, debating, drawing, computer programming, chess, Robocup, First Aid, driver safety, community service, and media and audio-visual production.



The study of languages is popular, with several languages offered at the school, and others undertaken by Distance Education with the assistance of university tutors.

Students may also join one of the many music ensembles which practise and perform at various events and in competitions. Instrumental lessons are available throughout the week.



JMSS Diploma

The JMSS Diploma is awarded at Year 12 graduation, and provides recognition for the achievements and skill development of our students outside the classroom including leadership, community service, sport, performing arts, competitions and the co-curricular program.

Leading Scientists

JMSS students are fortunate to have access to leading scientists, current researchers, and Nobel prize winners such as Elizabeth Blackburn, Peter Doherty, Dan Shechtman and Brian Schmidt. Recent guest speakers include climate advocate and Australian of the Year Tim Flannery, as well as a discussion on the selection of the landing site for the Mars Rover by Marion Anderson from the Monash School of Earth, Atmosphere and Environment.



English	Mathematics	Science	Year 10 Emerging Science Electives	Technology
Year 10 English	Year 10 Maths	Year 10 Science	Analytical and Spectroscopic Science	Year 10 Emerging Techno
English 1, 2	VCE Maths Methods 1, 2	VCE Biology 1, 2	Bioinformatics	VCE Media 1, 2
English 3, 4	VCE Advanced General Mathematics 1, 2	VCE Chemistry 1, 2	Cells to Systems	VCE Media 3, 4
English Literature 1, 2	VCE Maths Methods 3, 4	VCE Physics 1, 2	Our Dynamic Earth	VCE Information Technolo
English Literature 3, 4	VCE Further Maths 3, 4	VCE Psychology 1, 2	Imaging Science	Uni Extension Mobile App Development
English Language 1, 2	VCE Specialist Maths 3, 4	VCE Environmental Science 1, 2	From Logic to Magic	
English Language 3, 4	VCE Algorithmics 3, 4	VCE Biochemistry Unit 1	Marine Biology	
English as an Additional Language (EAL) 1, 2	Uni Extension Mathematics	VCE Computational Physics and Mathematics Unit 1, 2	Nanoscience and Nanotechnology	
EAL 3, 4		VCE Biology 3, 4	Pharmaceutical Science	
		VCE Chemistry 3, 4	Quarks to Quasars	
		VCE Physics 3, 4		
		VCE Psychology 3, 4		
		VCE Environmental Science 3, 4		
		VCE Extended Investigation		
		Uni Extension Chemistry		
		Uni Extension Physics		
		Uni Extension Biology		
		Uni Extension Biomedical Science		



An Abundance Of Opportunities

Students will be able to participate in regional and state-wide sport days and other competitive ventures during school hours. Students have the opportunity to participate in many field trips and camps, as well as lunch-time clubs such as Maths Circle, supercomputing club and chess competitions. After-hours opportunities such as Maths Club, Robocup competitions, computer hackathons, Olympiads, debating, guest speaker events, and drama and musical performances are all available.

Camps and Excursions

Camps and excursions are an integral part of the curriculum, consolidating and enriching learning experiences. Camps, excursions and fieldtrips include:

- New Year 10 students induction camp at Monash University;
- Year 12 study camp at Lord Somers;
- Our Dynamic Earth take 2 x 5-day field trips;
- Marine Biology;
- Year 11 Geography and Year 12 Geography 3-day fieldtrips to different regions of Victoria;
- Great Victorian Bike Ride;
- 15-day Reef and Rainforest science trip available to Year 11 students around the Cairns region in Far North Queensland. The trip involves students



conducting research at many locations on the Great Barrier Reef and in and around the Daintree Rainforest.



There are also single day excursions for subjects such as Science, Mathematics, Biology, Physics, Chemistry, Psychology, Environmental Science and Issues Studies.

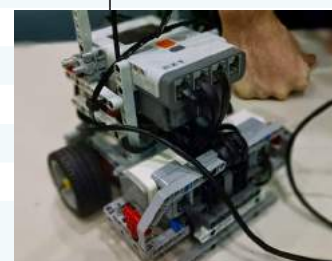
Global Perspective

Our partnerships with several international specialist science schools enable our students to collaborate, share research and build friendships with equally passionate students across the globe through exchanges and science fairs. JMSS is an Executive member of the International Science Schools Network (ISSN). Opportunities include:

- International Science Olympiads, Maths Olympiads, and conferences such as "Water is Life" in the Netherlands in 2016;
- Annual International Student Science Fair held in Moscow, Russia in 2014, hosted by JMSS in December 2015, and Singapore in 2016;
- Annual International Supercomputing Conference held in New Orleans, USA in 2014, Austin Texas in 2015, and Salt Lake City in 2016;
- International Science Fairs in Japan, Singapore and Korea;
- World Challenge held in Laos and Cambodia in 2013 and 2014, and Borneo in 2015 and 2016;
- Annual International Student Cultural Exchange with MWITS Thailand and NUS Singapore.



	Humanities	Personal Development	Languages	Music	Co-Curricular Program	Other Studies facilitated by JMSS, but involves external providers
ologies	Year 10 Issues Studies	Learn To	French	Voice and Choir	Languages Other Than English (LOTE)	VCE Visual Communication and Design
	VCE Accounting 1, 2	Leadership	Japanese	Guitar	Music Ensembles	VCE Philosophy
	VCE Accounting 3, 4	Careers and Pathways		Instrumental Music	IT and Robotics	Indonesian
ogy 1, 2	VCE Economics 1, 2	Health Education		Piano	Arts	Latin
o	VCE Economics 3, 4	Year 10 Physical Education		Strings	First Aid	Mandarin
	VCE Geography 1, 2	VCE Physical Education 1, 2		Brass	Health and Fitness	Hindi
	VCE Geography 3, 4	VCE Physical Education 3, 4		Woodwind	Sport	Spanish
	VCE History 1, 2	Sport - Interschool and Individual		Percussion	Community Involvement	Italian
	VCE History 3, 4				Duke of Edinburgh	Other languages
	VCE Global Politics 1, 2				Personal Development	
	VCE Global Politics 3, 4				Chess	
					Drama	
					Dance	
					Yoga	



Student Empowerment and Support

Central to all of the work at John Monash Science School is our belief that quality interpersonal relationships are essential if outstanding learning outcomes are to be achieved. We foster these relationships through our House Structure. The four Houses, named after prominent Australian scientists Peter Doherty, Elizabeth Blackburn, Fiona Wood and Tim Flannery, allow us to foster both school spirit and pride, and connectedness between all members of our community.

Various events such as swimming carnivals provide a healthy source of competition and enjoyment for all members of our community.



Each student has a teacher-mentor who remains with them throughout their time at JMSS, guiding and advising them and supporting their growth and development throughout their journey with us.

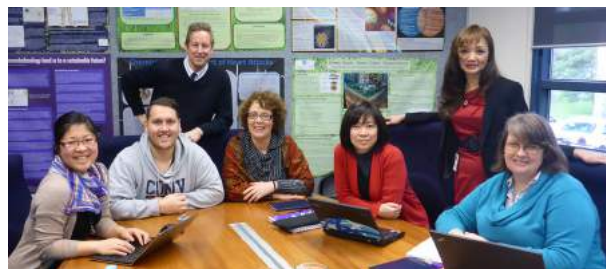


We believe strongly in the ongoing development of leadership capacity in our students. Each House has two student captains and vice-captains, as well as student leaders on each of six key student committees:

- Science, Mathematics and Technology;
- Sports and Recreation;
- Environment;
- Culture and Community Outreach;
- Performing Arts;
- Media and Communication.

This collection of elected students forms the unique JMSS Student Parliament, a body which positively influences life for students at the school, has input into learning programs, raises funds for charity and organises student voluntary services in the local community.

The Student Empowerment Team includes House Leaders and mentors, a school chaplain, a counsellor, a psychologist, a Mindfulness coach, and integration aides to support students with additional learning needs.



Our school works hard to ensure all students make a quick and effective transition into John Monash Science School. We begin each year with an Orientation Camp for Year 10 students, designed to introduce them to learning the JMSS way, as well as to the many new friends they will make. This is an important step in the learning journey of students making the challenging transition from previous familiar surroundings. Our students and staff have created an aspirational yet welcoming, safe and supportive community at our school.



Outreach Programs - Energising Science

Regional Science Exchange

The school's growing outreach program includes work with students and teachers from regional Victoria. Students visit JMSS for a 4-week block, participate in workshops at Monash University, experience Melbourne life with a JMSS homestay family, and broaden their future study and career options. Students benefit from being involved in a large group of like-minded students who are passionate about science, maths and technology. Teachers also participate in enriching professional development, then return to their local schools with ideas and resources from John Monash Science School and Monash University.



Little Scientist - Big Science

Local primary schools participate in this program in which our own Year 10 students take on the challenge of teaching science to Year 5 and 6 students. Students work together on complex topics to develop science skills and produce a poster for display at our Science Fair.



JMSS Exhibition Night and JMSS Science Fair

Twice a year we showcase student investigation and research in science. All Year 10 students present Emerging Science Elective projects each semester, as well as undertaking a year-long individual or group Extended Experimental Investigations. The fairs are attended by parents, teachers, local schools, Monash academics and members of the wider community. The JMSS Science Fair in October features projects by our Little Scientists, as well as our Regional Science Exchange students who return from regional Victoria to present their research projects.



Emerging Sciences Victoria (ESV)

JMSS is excited about the opportunities available for teaching our contemporary curriculum, through Emerging Sciences Victoria (ESV). ESV is a virtual school, building on previous work in partnership with Monash University, and teaches students across Victoria through online video-conferencing. Rather than a static correspondence course, students are involved in weekly classes with peer-to-peer interaction and two teachers discussing topics with them in real-time. More information is available online at www.emsci.vic.edu.au.



International Student Science Fair (ISSF 2015)

Hosting ISSF in 2015 was a fantastic experience for JMSS students and alumni volunteers, showcasing the best of science at John Monash Science School, Monash University, CSIRO, Australian Synchrotron and Victoria's Science Specialist Centres. Students and staff from 27 specialist Science Schools around the world enjoyed the week's events alongside regional Victorian teams. Melbourne schools also participated in day-time workshops at JMSS.



Outstanding Contemporary Facilities

The school has been designed to facilitate a range of teaching approaches, flexibility of group sizes and maximum access to cutting-edge learning technologies. These outstanding facilities help us achieve the best learning outcomes for students in the 21st century. Rather than traditional classrooms, our school has open-plan learning spaces for small or large groups up to 50 students with two teachers working in tandem.

Our science laboratories are spacious, flexibly designed and ICT-rich, allowing small-group or whole-class problem solving, individual or group research, direct instruction and collaborative skill development. Students have wireless network access throughout the building, including laboratories. Students use a combination of digital devices to research, problem-solve, organise, document, analyse, present and create digital objects as well as accessing references and resources from Monash University and beyond.

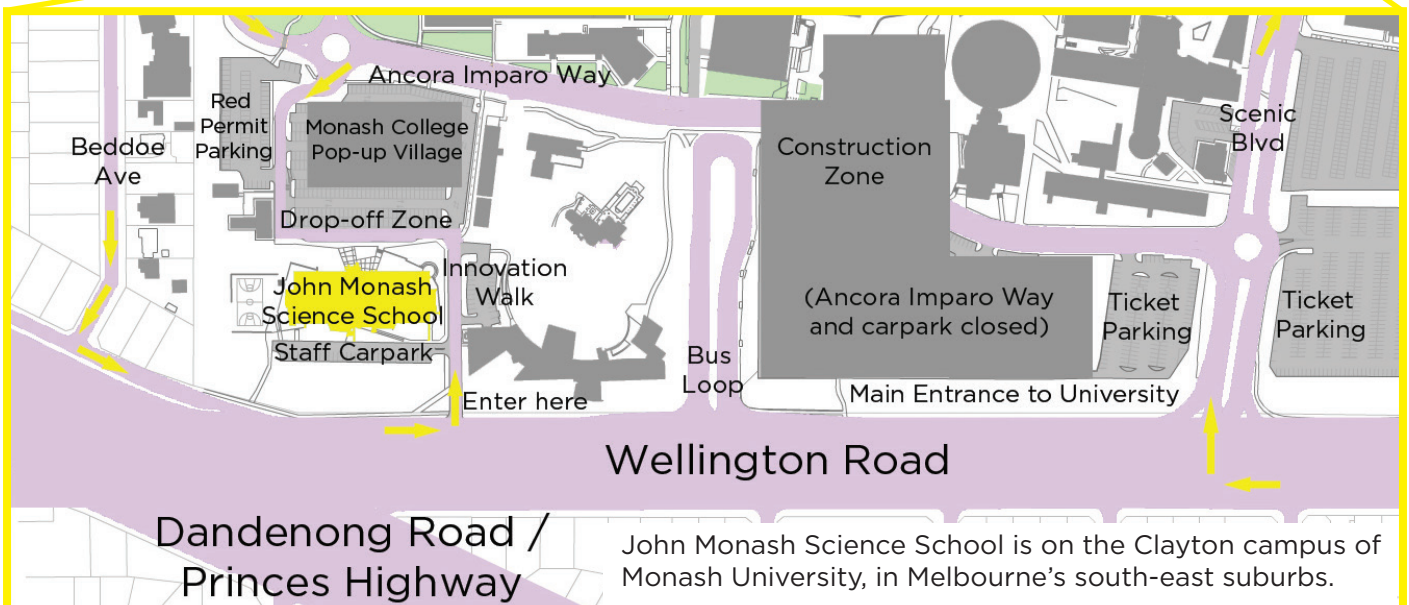
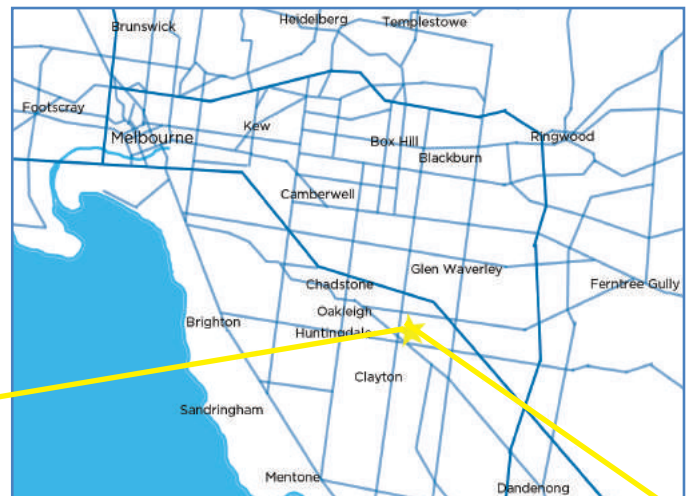
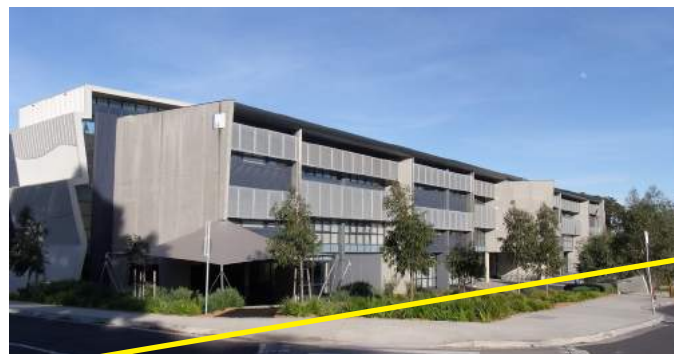
There are also landscaped outdoor areas, a basketball court, an amphitheatre, kitchenette areas with microwaves on every floor, and a fully-equipped cafeteria. Students also benefit from close access to Monash University for both physical and digital resources.

JMSS is a \$20 million state-of-the-art educational facility, designed to advance each student's academic ability.



Monash University has provided the site for the school building in the Science, Technology, Research and Innovation Precinct (STRIP) at the Clayton campus in Melbourne's south-east. John Monash Science School is on the corner of Wellington Road and Dandenong Road/Princes Highway. To ensure student safety, JMSS has its own drop-off/pick-up zone. Please note: due to construction zones, there is no parking for visitors.

The University is well-served by public transport, with regular buses from each of Ormond, Huntingdale, Clayton and Blackburn railway stations. JMSS students are also able to travel to and from other Monash University campuses free of charge on the Monash shuttle buses which leave each of the Caulfield, Peninsula and Berwick campuses at regular intervals during university terms.



General Information

Admission

Entrance to John Monash Science School will be based on students' aptitude in and passion for science, mathematics and associated technologies. Potential students undertake an application process including written assessment tasks and an interview where students demonstrate their suitability for the school's learning opportunities.

JMSS accepts 200 students into Year 10 each year, and there will also be limited places available in Year 11. The school does not allow entry at Year 12. Prospective students can register for the selection process via our website www.jmss.vic.edu.au.

Enrolment into the school is limited to a maximum number of students from each school, as with select-entry schools. The school attracts students from all educational sectors, as well as regional and rural locations.

Is There A Full Choice Of Subjects Through To VCE?

Although JMSS is Victoria's first specialist school for the sciences, mathematics and associated technologies, it offers a broad curriculum that satisfies the Australian Essential Learning Standards (AusVELS) and Victorian Certificate of Education (VCE) requirements and assessments.

What Are Average Class Sizes? How Does That Compare With Other Schools? What Is The Balance Between Boys And Girls?

Normal class sizes will be at or below 25 students. Most subjects are team-taught, with two classes (50 students) and two or more teachers working together. This innovative approach is supported by research and continues to be the focus of our own developments in this field. It allows students to work effectively in small teams, and teachers to vary approaches to ensure every student is able to learn at the point of need.



Our experience has shown that both genders are attracted to the school in equal numbers, with the outstanding facilities and curriculum opportunities cited as the key reasons. We have an equal number of male and female staff.

Who is John Monash?

John Monash Science School is named to commemorate the legacy of a famous and distinguished Australian, General Sir John Monash. Sir John Monash is best known for his outstanding military service during World War One, but his impact on Victoria was profound in the civic, education and engineering spheres. He is remembered in the names of Monash University and the City of Monash.

School Hours

Students are required at school from 8.30 am to 3.15 pm, and until 3.30pm on Wednesdays.

Uniform

School uniform is compulsory, comprising a Summer, Winter and Sport uniform. Uniform information is given at enrolment, and second-hand uniforms are available.

Text Books And Technology

Students are required to bring two digital devices to school. The primary device (for example laptop or notebook computer) will serve as the student's main computer. The secondary device (for example tablet, smartphone or a hybrid "phablet") will give students access to advanced digital content and various applications through which to organise this content.

Textbook, apps and eBook lists will be provided to parents before the start of each school year. Students will be able to borrow both eBooks and print resources from the school's library.

Will The Students Be Free To Mingle With Monash University Students?

No. John Monash Science School is a separate facility, located on the grounds of Monash University's Clayton campus. Students remain within the school grounds for the whole day except for supervised lectures and workshops on the University campus.



Students undertaking a first-year University subject as part of Year 12 extension at JMSS will attend all lectures, tutorials and pracs within the University, and will be able to move freely between the school and the University campus in order to manage this.

Students may also take advantage of the library, sporting, cultural and other extra-curricular opportunities presented by the University outside school hours.

Fees And Other Costs

John Monash Science School is a State Government Senior Secondary School. School fees comprise both compulsory and voluntary components:

- essential education items which parents/guardians are required to pay the school to provide for their child (e.g. core curriculum materials; IT support);
- optional extras which are offered on a user-pays basis and which parents/guardians may choose whether or not their child accesses or participates in (e.g. school magazine or extra curricular activities);
- voluntary financial contributions which parents/guardians are invited to donate to the school via our Building or Library Fund. Donations to these funds are fully tax deductible.

Any families experiencing financial difficulty should contact the Business Manager Alison Galloway.

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