Mathematics & Sciences @ MSC

MINDARIE
SENIOR COLLEGE
Where Your Future Begins

ATAR Biology*

What is ATAR Biology?

Biology is the study of living things, how they function and interact with other organisms and their environment. If you are passionate about the environment and want to learn more about how the natural world around you functions, this course is for you.

What will we cover?

In Semester One we start small – at the cellular level and then through to how whole systems function within an organism. We learn about a range of different organisms from bacteria to plants and a wide range of animal types. We end the year by looking at ecosystems and biodiversity, exploring factors that affect ecosystems and the way they function.

What does a typical week look like?

When covering the content, we use text references, videos and discussion, complemented with practical work. A field trip is a compulsory part of this course where we get to apply theory outside of the classroom.

You will need to complete practice questions and research at home and watch wildlife documentaries to give a wide range of examples. Three hours a week of study is recommended to ensure you have a thorough understanding of concepts covered.

Complementary Courses

- ATAR/General Human Biology
- ATAR Chemistry
- ATAR Mathematics Applications
- General Science in Practice
- ATAR Psychology

What can it lead to?

Animal services. Health services. Environmental and sustainability role.
https://myfuture.edu.au/bullseyes/details/3--biology

Are there any Prerequisites?

- B grade in Year 10 English & Science

* Indicates List B Courses

ATAR Chemistry*

What is ATAR Chemistry?

This course focuses on understanding materials and compounds their properties and how they interact. We cover the theories that help us to understand and explain the way chemicals act and conduct labs that help to show this in action.

What will we cover?

The first topics we cover include reviewing some Year 10 concepts including atom structure and bonding. We begin calculations using the mole and look at some analytical techniques that are used in laboratories. Organic chemistry and chemical reactions finish the Semester 1 topics.

Semester 2 explores more new topics including Chromatography, Acids and Bases, Solutions and Reaction Rate. All of the topics from Year 11 support the topics covered in Year 12 by further building on them.

What does a typical week look like?

Our Chemistry lessons occur in spacious lab-ready Science classrooms. Most of your week is spent on theory and practice questions. Our specialist teachers use a range of strategies to explain the concepts involved and develop your understanding. Laboratory work is used to demonstrate the theory wherever possible; including flame tests, separation techniques, bonding properties, solubility and precipitation reactions, exothermic and endothermic reactions, acid base reactions, and reaction rate.

You will need to complete practice questions at home and review to memorise key facts like reactions, formula and theories. Three hours per week of home-study is recommended, with practice questions being the most effective way to ensure you understand Chemistry.

Complementary Courses

- ATAR/General Human Biology
- General Science in Practice
- ATAR Mathematics Methods
- ATAR/General Engineering (Mechatronics)
- ATAR Biology
- ATAR Physics
- ATAR Mathematics Applications

What can it lead to?

Forensic and environmental sciences. Engineering. Medicine. Dentistry. Pharmacy. Sports Science. Chemistry can be beneficial for a Bachelor of Science degree, or a Diploma or Certificate course related to Technicians, Laboratory Skills, Health, and Environmental Science. https://myfuture.edu.au/bullseyes/details/5--chemistry

Are there any Prerequisites?

- A grade in Year 10 Science (Chemical and/or Physical Science sub strands)
- A grade in Year 10 Mathematics

* Indicates List B Courses

ATAR Human Biology*

What is ATAR Human Biology?

This course is all about you (a human!). It is the best course for students who aspire to work in the health and medical industry.

What will we cover?
Students will discover the inner workings of the human body focusing on the structure (what it looks like) and function (what it does) of the Circulatory, Respiratory, Digestive, Excretory, Musculoskeletal and Reproductive Systems.

Students also study DNA and Genetics, attending an excursion to the Harry Perkins Institute of Medical Research to use state of the art medical technology to look at stem cells. Not for the squeamish…this course includes dissections!

What does a typical week look like?

Students will be involved in a variety of engaging classroom activities with a strong digital focus.

Students will have the opportunity to use microscopes, dissect organs and perform practical investigations. Students should expect 80% theory and 20% practical work.

Complementary Courses

- ATAR/General Psychology
- ATAR/General Physical Education
- ATAR/General Health Studies
- ATAR Chemistry
- ATAR Biology
- General Science in Practice

What can it lead to?

Bachelor's degrees in health and medical sciences including Nursing, Paramedicine, Biomedicine, Physiotherapy, Exercise Physiology, Dentistry and Nutritionist.

https://myfuture.edu.au/bullseyes/details/3--biology

Are there any Prerequisites?

- B grade in Year 10 Science

* Indicates List B Courses

General Human Biology*

What is General Human Biology?

General Human Biology is all about you (a human!). It is the best course for students who aspire to work in the health services and sporting industry.

What will we cover?

Students will discover the inner workings of the human body focusing on how to maintain a healthy body. Focus is on the body systems including the Circulatory, Respiratory, Digestive, Urinary and Musculoskeletal Systems.

We look at not only how each system works, but also what happens when things go wrong. Not for the squeamish…this course includes dissections!

What does a typical week look like?

Students will be involved in a variety of engaging classroom activities with a strong digital focus.

Students will have the opportunity to use microscopes, dissect organs and perform practical investigations. Project based learning is a prime focus of this course with a 'hands on' approach to learning. Students should expect 60% theory and 40% practical work.

Complementary Courses

- ATAR/General Psychology
- ATAR/General Physical Education
- ATAR/General Health Studies
- ATAR Chemistry
- ATAR Biology
- General Science in Practice

What can it lead to?

A variety of TAFE courses including Allied Health Services, Enrolled Nursing, Beauty Therapy, Hairdressing, Personal Training, Dental Assistant and Science Technician.

https://myfuture.edu.au/bullseyes/details/3--biology

Are there any Prerequisites?

- C grade in Year 10 Science

* Indicates List B Courses

General Science in Practice*

What is General Science in Practice?

The General Science in Practice course enables student to investigate science issues in the context of the world around them. It encourages students to develop their scientific skills of observation, collection and analysis of evidence, in a range of contexts and apply to real life situations.

What will we cover?

In Unit 1, Acids and Bases, students develop an understanding of the properties of acids and bases and how they react, including in biological systems. This unit covers chemistry, biology and earth science topics.

In Unit 2, Wheels in Motion, students learn about how an understanding of physics can help drivers make informed decisions about the risks when driving and how the nervous system reacts to stimuli. This unit covers mostly physics and human biology concepts.

In Year 12 the theme is Forensic Science. Over the year students get to explore how biological and chemical evidence can be used by forensic investigation officers to identify victims and offenders and determine time and cause of death.

What does a typical week look like?

Students will be involved in a variety of engaging classroom activities, including practical work to complement the theory. Students need to be able to work as an effective team member to complete practical investigations and present their findings. Students will use technology to enhance their understanding of scientific principles..

Complementary Courses

- ATAR/General Psychology
- General Mathematics Essentials
- ATAR Human Biology
- ATAR Biology

What can it lead to?

General science literacy is valuable to many careers and desirable for future study in many TAFE courses

https://myfuture.edu.au/bullseyes/details/13--environmental-sciences

There are no prerequisites for this course.

* Indicates List B Courses

ATAR Physics*

What is ATAR Physics?
Physics is a fundamental science that endeavours to explain all the natural phenomena that occur in the universe. Its power lies in the use of a comparatively small number of assumptions, models, laws and theories to explain a wide range of phenomena, from the incredibly small to the incredibly large. The Physics ATAR course uses qualitative and quantitative models and theories based on physical laws to visualise, explain and predict physical phenomena. In this course, students gather, analyse and interpret data to investigate a range of phenomena and technologies using some of the most important models, laws and theories of physics, including the kinetic particle model, the atomic model, electromagnetic theory, and the laws of classical mechanics.

Studying physics will enable students to become citizens who are better informed about the world around them and who have the critical skills to evaluate and make evidence-based decisions about current scientific issues.

What will we cover?

- Heating and cooling
- Ionising radiation & nuclear reactions
- Electrical circuits
- Electromagnetism
- Waves & wave particle duality
- Quantum Theory
- The standard model
- Special relativity
- Linear motion & force
- Gravity & motion

What does a typical week look like?

Students can expect an expert delivery of the theory as well as hands on experience, in our technologically advanced and spacious science laboratories, including but not limited to investigating radiation, projectile motion, lasers, magnetism, electrical circuits as well as some thermodynamic experiments.

Complementary Courses

- ATAR Mathematics Methods
- ATAR Chemistry
- ATAR/General Engineering (Mechatronics)
- ATAR Mathematics Specialist
- General Science in Practice

What can it lead to?

Certificate IV in Electronics and Communications, Diploma of Aviation, Diploma of Civil and Structural Engineering.
Bachelor of Science, Bachelor of Engineering, Bachelor of Medicine, Bachelor of Nursing.

https://myfuture.edu.au/bullseyes/details/29--physics

Are there any Prerequisites?

- A grade in Year 10 Science (chemical and/or Physical Science sub strands)
- A grade in Year 10 Mathematics

* Indicates List B Courses

ATAR Psychology*

What is ATAR Psychology?

Psychology is fascinating field that explores the working of the brain and how it influences your behaviour, emotions, and thoughts. The knowledge you gain will help you to navigate relationships, work more effectively in teams, and better understand the world around you. You should study this course because it helps you gain an understanding of how your mind works, and how people behave and interact with others.

What will we cover?

We will cover psychological theories and concepts which you can relate to your everyday life such as:

- the inner workings of your brain
- physical and emotional development
- social interactions
- external influences on your behaviour

What does a typical week look like?

In class there is a balance of practical and theoretical lessons. Engaging experiments are designed to explore psychological concepts that link to your real-life experiences, whilst working collaboratively with your peers. This course combines your psychological science understanding with science inquiry skills, to enable you to critically analyse famous, historical psychological experiments.

Complementary Courses

- ATAR Mathematics Applications
- ATAR Biology
- ATAR English/Literature
- ATAR/General Physical Education
- ATAR/General Human Biology
- General Science in Practice
- ATAR/General Health Studies

What can it lead to?

Psychologist, Psychiatrist, School Teacher, Counsellors, Criminal/Forensic Psychologist, Sport Psychologist, Market Research Analyst, Communications officer, Social Media Analyst, Health and Well-being Officer, Human Resources, Recruitment Consultant, Occupational Health and Safety Officer, Art therapist.

https://myfuture.edu.au/bullseyes/details/32--social-sciences

Are there any Prerequisites?

- B grade in Year 10 Science and English
- C grade in Year 10 Mathematics

* Indicates List B Courses

General Psychology*

What is General Psychology?

Psychology is fascinating field that explores the working of the brain and how it influences your behaviour, emotions, and thoughts. The knowledge you gain will help you to navigate relationships, work more effectively in teams, and better understand the world around you. You should study this course because it helps you gain an understanding of how your mind works, and how people behave and interact with others.

What will we cover?

Have you ever wondered why you act differently when you are alone, compared to when you are in a group situation? Or why you act differently to others in emergency situations? Are you interested in understanding how you develop socially, emotionally, and cognitively?

In this course we will explore human development, personality, culture, how the brain works, and factors that influence your social interactions. You will also conduct and analyse psychological experiments building on your science inquiry skills

What does a typical week look like?

This course is good balance of practical lessons, allowing you to take part in experiments to explore psychological concepts, alongside theory lessons using a variety of learning strategies.

Participating in engaging experiments are designed to explore concepts that link to your real-life experiences, whilst working collaboratively with your peers. This course combines your psychological science understanding with research skills, to enable you to explore famous experiments.

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Complementary Courses

- General Science in Practice
- General Physical Education
- General Caring for Others: Children, Family & Community
- General Human Biology
- General Health Studies

What can it lead to?

Education Assistant, Enrolled nurse, Midwife, Advertising and Marketing, Counsellors, Social Media Analyst, Art therapist, Design Psychologist

https://myfuture.edu.au/bullseyes/details/32--social-sciences

Are there any Prerequisites?

- C grade in Year 10 Science and English

* Indicates List B Courses

ATAR Mathematics Specialist*

What is ATAR Mathematics Specialist?

This course deepens and extends many ideas that are taught in the Mathematics Methods course as well as introduces topics that will not have been met before in previous studies.

Students who successfully complete this course in Year 12 will receive a 10% bonus of their final scaled score, towards their ATAR.

What will we cover?

- Geometry
- Combinations
- Vectors
- Trigonometry
- Matrices
- Real & complex numbers

Students will also develop skills in mathematical arguments and proof.

What does a typical week look like?

Content delivery can take the form of taking notes, completing examples as a class, working on exercises, quizzes, card sorts etc. Students will also sit their assessments in class including response items and investigations. Investigations may also be required to be completed outside of classroom time. As a guide, students would typically spend around 3-4 hours working on this course at home.

Complementary Courses

- ATAR Mathematics Methods
- ATAR/General Human Biology
- ATAR/General Computer Science
- ATAR Physics
- ATAR Chemistry
- ATAR/General Engineering (Mechatronics)

What can it lead to?

Degrees in specialised fields such as Medicine, Engineering, Physical Sciences and Mathematics.

https://myfuture.edu.au/bullseyes/details/22--maths

Are there any Prerequisites?

- A grade in Year 10 Mathematics
- Solid algebraic understanding & Skills
- This course **must** be taken with ATAR Mathematics Methods

* Indicates List B Courses

ATAR Mathematics Methods*

What is ATAR Mathematics Methods?

This course provides a foundation for further studies in careers where mathematical and statistical concepts have important roles. Students who successfully complete this course in Year 12 will receive a 10% bonus of their final scaled score, towards their ATAR.

What will we cover?

The major themes of the course are calculus and statistics. Students will also develop skills in mathematical arguments and proof.

- Review of basic algebraic concepts & techniques allowing an introduction to the study of functions & calculus.
- Building on the concepts of conditional probability & independence.
- The study of the trigonometric function & its application is extended.
- Exponential functions are introduced, and their properties and graphs examined.
- Understanding concepts & solving problems involving Arithmetic & Geometric sequences.
- Introduction to techniques used in differential calculus.

What does a typical week look like?

Most of your week is spent on theory and practice questions. Our specialist teachers use a range of strategies to explain the concepts involved and developing your understanding. Three hours per week of study is recommended, with practice questions being the most effective way to ensure you understand the concepts.

Complementary Courses

- ATAR Mathematics Specialist
- ATAR Mathematics Applications
- ATAR/General Computer Science
- ATAR Physics
- ATAR Chemistry
- ATAR/General Engineering (Mechatronics)

What can it lead to?

Methods can prepare students for a range of careers, including those as a Data Analyst, Scientist, Statistician, Mathematician, Forensic Science, Environmental Science, Engineering, Medicine, Dentistry, Pharmacy, Physiotherapist, Sports Science, Architecture, Computer Science, Programmer, Economist, Actuary, Physicist.

https://myfuture.edu.au/bullseyes/details/22--maths

Are there any Prerequisites?

- A grade in Year 10 Mathematics
- Solid algebraic understanding & Skills
- This course can be combined with **either** ATAR Mathematics Specialist **or** ATAR Mathematics Applications

* Indicates List B Courses

ATAR Mathematics Applications*

What is ATAR Mathematics Applications?
This course will focus on using Mathematics to solve problems.

What will we cover?

Students will start their year studying Arithmetic and Percentages and applying these skills to real situations such as Interest, Inflation and other financial considerations. We then explore Finance further, looking at different types of Income and Wages, Shares, Budgets, Foreign Currency and Comparing prices. Semester 1 also includes topics such as Matrices, Measurement, including Area, Surface Area and Volume; Pythagorean Theorem and Scales and Similarity.

Moving into Semester 2, students will focus on Statistics and Data Analysis, Linear Equations and Functions and Trigonometry. These skills are then applied to real world situations and are used to solve problems.

What does a typical week look like?

Lessons can involve teacher directed learning, note taking, completion of exercises and practice questions, online quizzes, group activities and assessments. Most assessments are completed during class time. The main assessment types are Response Tasks, Investigations and Examinations. As a guide, it is recommended that students complete three hours of study a week at home to reinforce and revise their skills and concepts taught

Complementary Courses

- ATAR/General Human Biology
- ATAR Mathematics Methods
- General Science in Practice
- ATAR/General Food Science & Technology
- ATAR/General Accounting & Finance
- ATAR/General Physical Education Studies

What can it lead to?

This course is designed for students who want to continue their studies at a University or TAFE level, without requiring the specific skills of Calculus. Example Degrees and Courses include: Bachelor of Science, Nursing, Exercise Physiology, Education, Accounting, Bachelor of Commerce or Business, Electrical Apprenticeship.

https://myfuture.edu.au/bullseyes/details/22--maths

Are there any Prerequisites?

- C grade in Year 10 Mathematics
- This course can be combined with ATAR Mathematics Methods

* Indicates List B Courses

General Mathematics Essential*

What is General Mathematics Essential?

This course is all about preparing students for life after school by arming them with the essential mathematical skills that underpin everyday life.

What will we cover?

General Mathematics Essential is all about developing skills that will prepare students to take on post-school life and the challenges of their varied workplace, personal and further learning contexts. This includes topics such as powering your body effectively, earning and saving money, budgeting and making informed decisions about purchases.

Students will also develop skills that will enable them to productively problem-solve in a variety of situations they may encounter throughout life.

What does a typical week look like?

The General Mathematics Essential course provides varied learning experiences to the students, including the delivery of mathematical theory, as well as opportunities to investigate and apply these skills in various real-life contexts.

Complementary Courses

- General Human Biology
- General Health Studies
- General Science in Practice
- General Business Management & Enterprise
- General Geography
- General Food Science & Technology

What can it lead to?

Careers in sales and consulting. Trades like construction, plumbing and mechanics.

https://myfuture.edu.au/bullseyes/details/22--maths

Are there any Prerequisites?

No course pre-requisites but students must have achieved Category 2 or above in Numeracy OLNA. Students who are yet to achieve Category 2 in Numeracy OLNA must enrol in the Mathematics Foundations Course.

Students in OLNA Category 2 may be streamed into a focus General Mathematics class to assist in achieving Category 3 by the end of Year 12.

* Indicates List B Courses

Foundation Mathematics*

What is Foundation Mathematics?

This course will improve students number skills by going back to the basics and filling in the gaps from previous years.

What will we cover?

Topics include mental calculations, measurement, time and statistics with a focus on whole numbers and money, before moving on to fractions, decimals and percentages.

What does a typical week look like?

There is a balance of written work and concrete examples. Students take measurements and work with physical objects to make strong connections between mathematics and the real world.

What can it lead to?

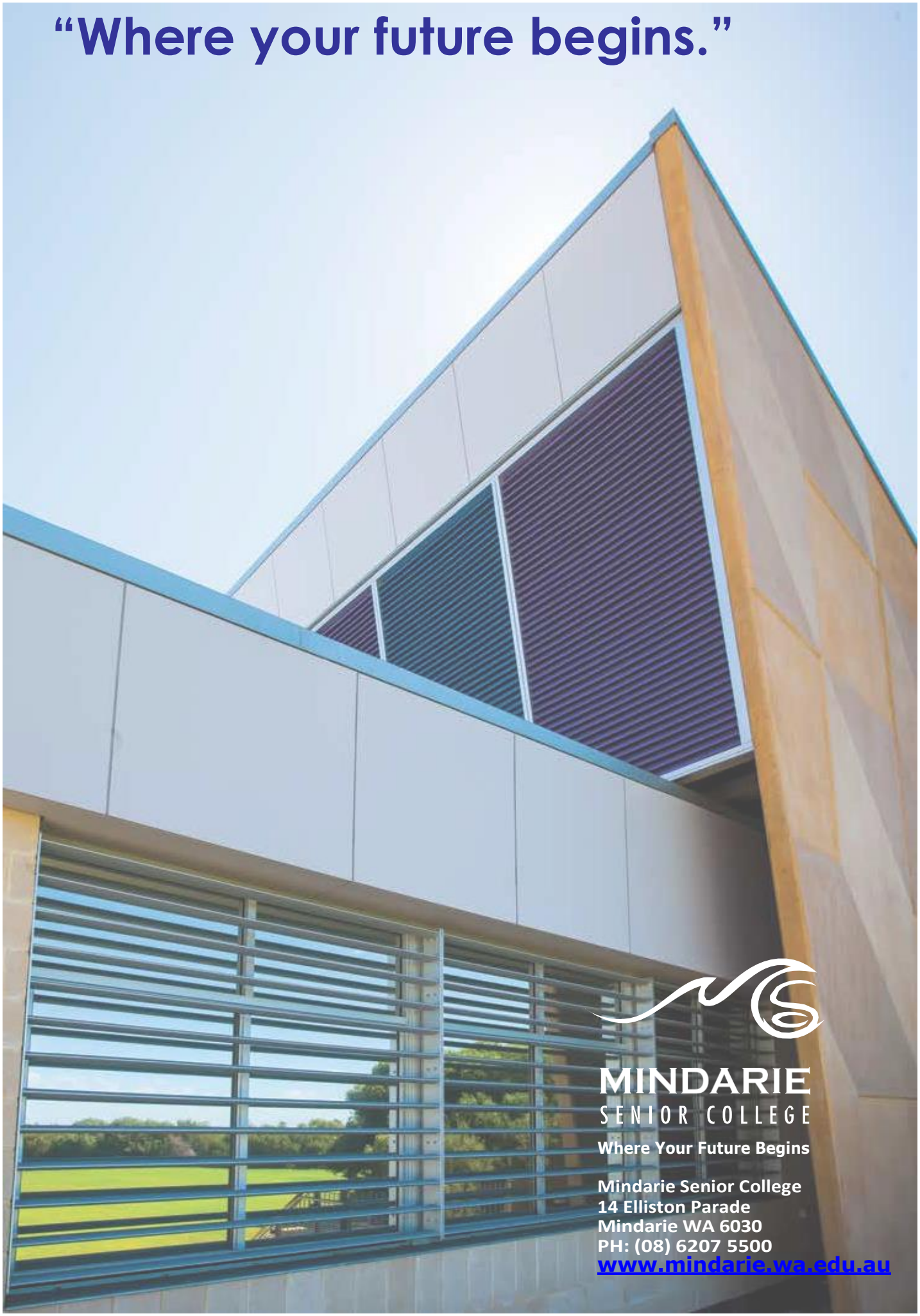
With its focus on mental number skills and building understanding of basic mathematics concepts this course helps students acquire the mathematical skills needed for the workplace. Passing OLNA is a primary goal and some students move from Foundation to Essential Mathematics General after success in OLNA.

Are there any Prerequisites?

Mathematics Foundation is only available to students who are yet to achieve Cat 2 in OLNA. We do support Category 2 students through targeted General Mathematics classes.

* Indicates List B Courses

“Where your future begins.”



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