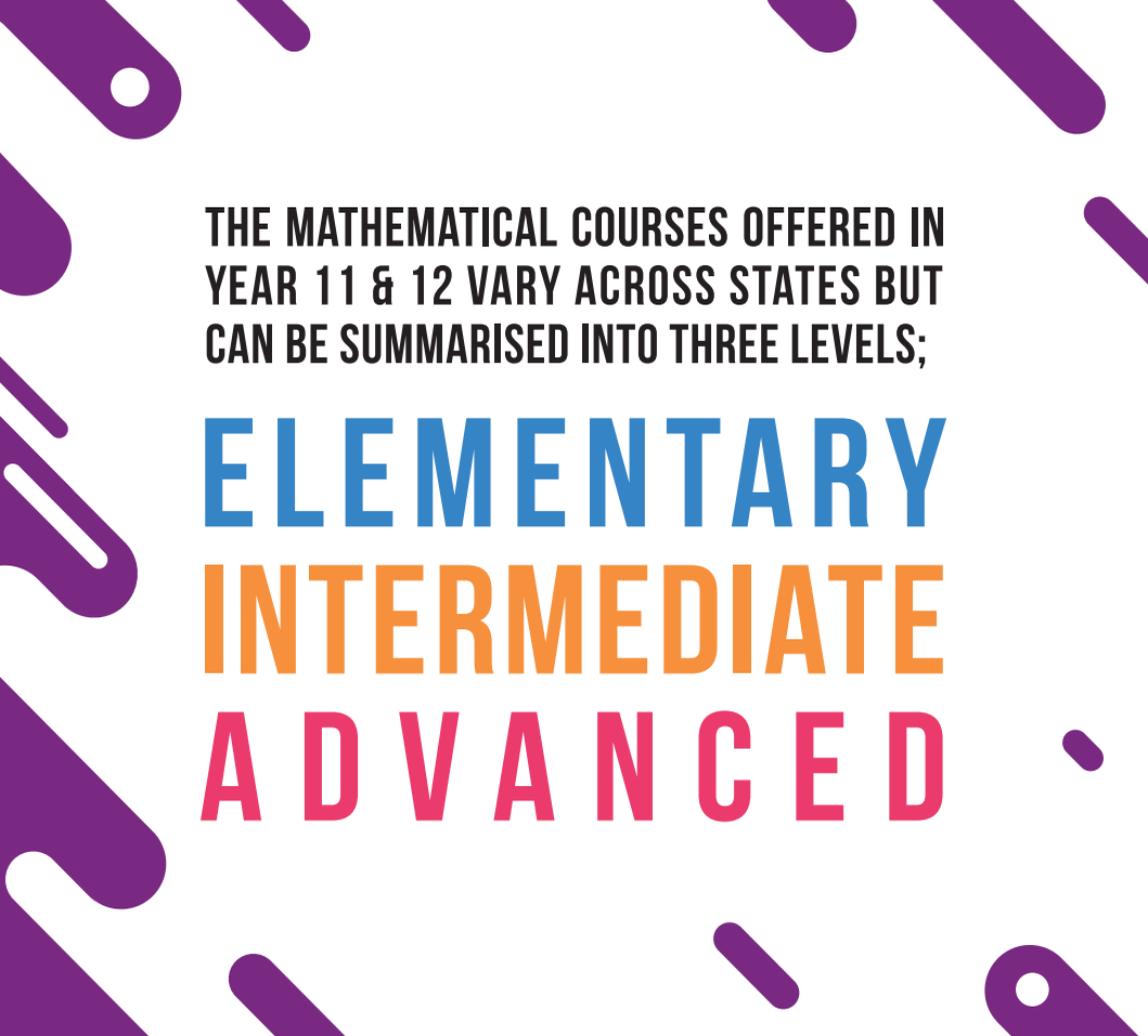# SENIOR
Maths Pathways

MATHEMATICS

SUBJECT SELECTION ADVICE FOR SENIOR STUDENTS

Mathematics is an integral part of our everyday lives. Basic numeracy skills in mathematics are essential to cope with everyday living, whilst more advanced levels are necessary to access many educational courses and jobs.

Students are advised to choose a course which is appropriate for their ability and aligns with their interest, but to ensure that they have chosen a course which will give them a foundation which is sufficient enough to ensure that they can access any potential future pathways that they wish to follow. Generally speaking, the higher the level of mathematics they undertake, the wider their options will be in terms of future careers.

THE MATHEMATICAL COURSES OFFERED IN YEAR 11 & 12 VARY ACROSS STATES BUT CAN BE SUMMARISED INTO THREE LEVELS;

ELEMENTARY

INTERMEDIATE

ADVANCED

ARCHITECT

Piera Bellanca

ELEMENTARY

When choosing your mathematics subjects, remember that you can always drop down to a lower level but it is usually not possible to go up to a higher level. So make sure you challenge yourself with the highest level you can.

Elementary mathematics courses will provide students with essential skills which will provide a good foundation for courses which need an implied understanding of mathematics. These subjects contribute to students' tertiary scores and they also equip students with important mathematical life skills. The Year 12 Elementary subjects are:

NEW SOUTH WALES
MATHEMATICS STANDARD

VICTORIA
FURTHER MATHEMATICS

QUEENSLAND
GENERAL MATHEMATICS

SOUTH AUSTRALIA & NORTHERN TERITORY
GENERAL MATHEMATICS

WESTERN AUSTRALIA
MATHEMATICS APPLICATIONS

TASMANIA
GENERAL MATHEMATICS

AUSTRALIAN CAPITAL TERITORY
MATHEMATICS APPLICATIONS
FURTHER MATHEMATICS

INTERMEDIATE

At some universities there is a prerequisite requirement to have at least an Intermediate maths subject for entry to some of their courses.

The Intermediate subjects are suitable for students who wish to undertake tertiary studies that require mathematics such as biological studies, science, commerce, dentistry and pharmacology. The Year 12 Intermediate subjects are:

NEW SOUTH WALES
MATHEMATICS ADVANCED

VICTORIA
MATHEMATICAL METHODS

QUEENSLAND
MATHEMATICAL METHODS

SOUTH AUSTRALIA & NORTHERN TERITORY
MATHEMATICAL METHODS

WESTERN AUSTRALIA
MATHEMATICAL METHODS

TASMANIA
MATHEMATICAL METHODS

AUSTRALIAN CAPITAL TERITORY
MATHEMATICAL METHODS
SPECIALIST METHODS

PHARMACIST

Wendy Ewing

MARKETING ANALYST

Lesley West

ADVANCED

Studies have shown that the higher levels of mathematics taken in senior secondary school are strong predictors of success in first year science and mathematics.

(Source: *International Journal of Innovation in Science and Mathematics Education*, 23(1), 37-51, 2015.)

The Advanced mathematical subjects are generally taken by students who wish to undertake tertiary studies that require a high level of mathematics such as engineering, physical sciences, statistics, mathematics, bioinformatics, data science and actuarial studies. The Year 12 Advanced subjects are:

NEW SOUTH WALES
MATHEMATICS EXTENSION 1 & 2

VICTORIA
SPECIALIST MATHEMATICS

QUEENSLAND
SPECIALIST MATHEMATICS

SOUTH AUSTRALIA & NORTHERN TERITORY
SPECIALIST MATHEMATICS

WESTERN AUSTRALIA
MATHEMATICS SPECIALIST

TASMANIA
MATHEMATICS SPECIALISED

AUSTRALIAN CAPITAL TERITORY
SPECIALIST MATHEMATICS

CAREERS IN MATHS

More than numbers

LEVEL 1

ACCESSIBLE THROUGH YEAR 12 COMPLETION OR CERTIFICATE I / II

Bank Teller | Bartender | **Debt Collector**
Hospitality Worker | **Insurance Agent**
Payroll Officer | **Retail Buyer** | Sales
Assistant | **Trades Assistant**

LEVEL 2

ACCESSIBLE THROUGH DIPLOMA OR CERTIFICATE III / IV

Aircraft Maintenance Engineer
Draftsperson | **Biomedical Technician**
Construction Manager | **Cartographer**
Civil Engineering Technician | **Computer
Technician** | Data Processor | **Electrician**
Insurance Clerk | **Laboratory Worker**
Line Mechanic | **Mechanical Technician**
Personal Trainer | **Procurement Manager**
Production Manager | **Telco Engineer**

LEVEL 3

Accountant | Air Traffic Control Analyst
APP DEVELOPER | **ARCHITECT**
Biotechnician | **Business Analyst**
Computer Systems Analyst | **Commercial
Underwriter** | Cryptologist | **Data Analyst**
Ecologist | **Game Designer** | Industrial
Designer | **Insights Analyst** | Marine
Surveyor | **MARKETING ANALYST**
Nurse | Optometrist | **PHARMACIST**
Pharmacologist | **PILOT** | Quantity
Surveyor | **Software Engineer** | Systems
Analyst | **Teacher** | Web Analyst
Web Developer | Veterinarian

LEVEL 4

Actuary | Aeronautical Engineer | **Auditor**
ASTROPHYSICIST | Bioinformatician
Biomedical Engineer | Biostatistician
Chemical Engineer | **CIVIL ENGINEER** | Data
Scientist | **Economist** | Electrical Engineer
Environmental Engineer | Financial Analyst
FOREST SCIENTIST | **FOOTBALL ANALYST**
Geologist | Geomatics Engineer
Geophysicist | **Geospatial Specialist**
Mechanical Engineer | **Marine Engineer**
MATHEMATICIAN | Meteorologist | **Mining
Engineer** | Naval Architect | **NEUROSURGEON**
Operations Research Analyst | **QUANTUM
PHYSICIST** | Quantitative Analyst | **RISK
ANALYST** | Research Scientist
ROBOTICIST | Statistician | **SUPPLY
PLANNER** | University Lecturer | Zoologist

NEW SOUTH WALES (HSC)

YEAR 11
Mathematics Extension 1 (Preliminary)
Mathematics Advanced (Preliminary)
Mathematics Standard (Preliminary)

YEAR 12
Mathematics Extension 2 (HSC)
Mathematics Extension 1 (HSC)
Mathematics Advanced (HSC)
Mathematics Standard (HSC)

SOUTH AUSTRALIA & (SACE) NORTHERN TERITORY (NTCET)

YEAR 11
Mathematics (Stage 1)
General Mathematics (Stage 1)
Essential Mathematics (Stage 1)

YEAR 12
Specialist Mathematics (Stage 2)
Mathematical Methods (Stage 2)
General Mathematics (Stage 2)
Essential Mathematics (Stage 2)

TASMANIA (TCE)

YEAR 11
Mathematics Methods – Foundation (Level 3)
General Mathematics – Foundation (Level 2)
Essential Skills Maths (Level 2)
Everyday Maths (Level 1)
Basic Number Skills (Level Pre)

YEAR 12
Mathematics Specialised (Level 4)
Mathematics Methods (Level 4)
General Mathematics (Level 3)
Workplace Maths (Level 2)

VICTORIA (VCE)

YEAR 11
Specialist Mathematics (Units 1 & 2)
Mathematical Methods (Units 1 & 2)
General Mathematics (Units 1 & 2)
Foundation Mathematics (Units 1 & 2)

YEAR 12
Specialist Mathematics (Units 3 & 4)
Mathematical Methods (Units 3 & 4)
Further Mathematics (Units 3 & 4)

SENIOR

Mathematics Pathways

WESTERN AUSTRALIA (WACE)

YEAR 11
Mathematics Specialist
Mathematics Methods
Mathematics Applications
Mathematics Essential
Mathematics Foundation – (for non OLNA)
Mathematics Preliminary – (special educational needs)

YEAR 12
Mathematics Specialist
Mathematics Methods
Mathematics Applications
Mathematics Essential
Mathematics Foundation – (for non OLNA)
Mathematics Preliminary – (special educational needs)

QUEENSLAND (QCE)

YEAR 11
Specialist Mathematics
Mathematical Methods
General Mathematics
Essential Mathematics

YEAR 12
Specialist Mathematics
Mathematical Methods
General Mathematics

AUSTRALIAN CAPITAL TERITORY

YEAR 11
Specialist Mathematics
Specialist Methods
Mathematical Methods
Further Mathematics
Mathematical Applications
Essential Mathematics

YEAR 12
Specialist Mathematics
Specialist Methods
Mathematical Methods
Further Mathematics
Mathematical Applications
Essential Mathematics

CHOOSE**MATHS**

AN **AMSI** SCHOOLS PROJECT

The Australian Mathematical Sciences Institute (AMSI) and the BHP Foundation are working together to empower students, particularly girls and women, to pursue careers in mathematics.

A five-year national project, we are working with teachers, parents and students to challenge public perception of mathematics and deliver initiatives to increase engagement and capacity from the classroom and university to the industry frontline.

Since 2015 we have been leading the national implementation of key classroom and pipeline strategies to transform Australia's mathematical capability. As mathematics is essential to a growing number of jobs, it is critical we foster understanding of the value and impact of mathematics and equip students to embrace these opportunities now and into the future. Working across four key components, the project is addressing pipeline challenges through:

SCHOOLS
OUTREACH

CAREERS
AWARENESS

WOMEN IN MATHS
NETWORK

CHOOSE**MATHS**
AWARDS

CHOOSE
MATHS
CAREERS