Narrabundah College offers four mathematics courses:

- **Specialist Mathematics (T)**
- **Mathematical Methods (T)**
- **Mathematical Applications (T)**
- **General Maths (A)**

**Selection of Courses**

Students may study mathematics as a Double Major, Major/Minor, Major or Minor course.

The courses are designed for students to progress naturally from one unit to the next, continually building on their skills. Movement between courses is possible. Students may change from Applications to Methods after the first session only and may change from Methods to Applications anytime during year 11. A student with an unsatisfactory grade in any unit will be allowed to proceed to the following unit only after discussion with the class teacher, the Executive Teacher and other relevant staff.

**Specialist Mathematics (T)**

This course is designed to prepare students for university studies that assume a high level of understanding of mathematics and creativity in its use, such as scientific research, actuarial studies, engineering, computer science and mathematics. This course is offered as a Major/Minor (which consists of a Major in Mathematical Methods plus sufficient Specialist units to form a Major/Minor), or a Double Major (which consists of a Major in Mathematical Methods plus sufficient Specialist units to form a Double Major).

**Mathematical Methods (T)**

Mathematical Methods is designed to prepare students for university studies in subjects that involve a significant amount of mathematics, including calculus, such as accounting, commerce and applied sciences. The course is offered as a Minor or Major.

**Mathematical Applications (T)**

This course is designed to provide background for students wishing to enter tertiary studies in subjects that involve quantitative elements, such as nursing, psychology, sociology, education, administration and laboratory technology. The course is offered as a Minor or Major.

**General Mathematics (A)**

This course aims to provide an understanding of the mathematics appropriate to the workplace and for everyday living, with emphases on statistics and finance. The course is offered as a Minor or Major.
**International Baccalaureate Higher Level:** Students should study a Specialist Mathematics Major/Minor or Double Major.

**Standard Level - Methods:** Students studying this level should study at least a major in Mathematical Methods.

**Standard Level - Studies:** Students studying this level are advised to complete a minor in Mathematical Methods (MM1, MM2, MM3) for calculus. They may continue with Methods or change to Applications. They may, with some extra coursework covered by privately arranged tuition, start with Mathematical Applications.

Students must seek advice on their selection of units from the IB Mathematics Coordinator.

**Graphics Calculators**

All Students studying T level courses are expected to purchase a graphics calculator, as they are an integral part of our program. The recommended model is the Sharp EL 9900. It is available at the college at the reduced price of approximately $120.

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**Specialist Mathematics (T)**

**Prerequisites**

Students enrolling in this course should have an above average result in Year 10 Mathematics at advanced level, or equivalent.

**Course Description**

The areas covered in this course are: Abstract Algebra, Logic and Proof, Vectors, Complex Numbers, Further Trigonometry, Statistical Inference and Further Calculus.

Students generally enrol in one unit from the Mathematics Methods stream and one unit from the Specialist Mathematics stream each session. At the discretion of the Executive Teacher, other units may form part of the course when a student transfers either from another school or another mathematics course during Year 11.

Students who complete mathematics units in the advanced programs offered by the Australian National University and the University of Canberra may count these units towards their Specialist Mathematics course.

**International Baccalaureate Higher Level** students should complete all units from Mathematical Methods 1 – 5 and Specialist Mathematics 1 – 5 in order to prepare sufficiently for the exams. Tutorials will be offered in Year 12 for IB exam preparation.
French Baccalauréat  A number of units are delivered in the French language to meet the needs of students attempting Mathematiques Scientifique in the French Baccalauréat program. If these students also want an ACT Year 12 Certificate UAI, they need to complete certain Specialist Mathematics units in English in order to establish their ranking in the course for the calculation of an ACT UAI. Any student intending to study mathematics in the French program must discuss the requirements with the Executive Teacher, Mathematics, early in Year 11.

Assessment  In each of the T courses students will encounter a variety of assessment items that could include conventional assignments, closed and open-book tests, overnight questions, open-ended projects, practical work, group work and class presentations. Weightings are 50 – 70% for tests and 30 – 50% for assignments and projects.

Mathematical Methods (T)  Students enrolling in this course should have a good result in the top Year 10 Mathematics course, or an excellent result in the second level of mathematics offered in Year 10.

Course Description  The areas covered in this course are: Sequences and Series, Functions and Relations, Differential Calculus, Statistics, Probability and Combinatorics, Matrices, Integral Calculus and Optimisation.

Students generally enrol in one unit each session from the Mathematics Methods stream. At the discretion of the Executive Teacher, other units may form part of the course when a student transfers either from another school or another mathematics course during Year 11.

International Baccalaureate  Standard Level (Methods or Studies) students should complete all units from Mathematical Methods 1 – 5 in order to prepare sufficiently for the exams. Tutorials will be offered in Year 12 for IB preparation.

Assessment  In each of the T courses students will encounter a variety of assessment items that could include conventional assignments, closed and open-book tests, overnight questions, open-ended projects, practical work, group work and class presentations. Weightings are 50 – 70% for tests and 30 – 50% for assignments and projects.
Mathematics

Mathematical Applications (T)

Prerequisites  Students enrolling in this course should have at least a good result in the second level of mathematics offered in Year 10 Mathematics.

Course Description  The areas covered in this course are: Modelling and Optimisation, Financial Applications, Applied Geometry and Trigonometry, and Statistics and Probability.

Students generally enrol in one unit from the Mathematical Applications stream each session. At the discretion of the Executive Teacher, other units may form part of the course when a student transfers either from another school or another mathematics course during Year 11.

International Baccalaureate Standard Level - Studies: Students studying this level are advised to complete a minor in Mathematical Methods (MM1, MM2, MM3) for calculus. They may, with some extra coursework covered in tutorials, or private tutoring study a Major in Mathematical Applications.

Assessment  In each of the T courses students will encounter a variety of assessment items that could include conventional assignments, closed and open-book tests, overnight questions, open-ended projects, practical work, group work and class presentations. Weightings are 50 – 70% for tests and 30 – 50% for assignments and projects.

General Mathematics (A)

Course Description  The units in this course are listed below, in the pattern in which students would normally attempt them. Units are non-sequential and may be completed in any order. No duplication is allowed.

Course Patterns  A Major course consists of the equivalent of 3.5 standard units.

A Minor course consists of the equivalent of at least 2 but less than 3.5 standard units.

Unit Description  Units are offered as either half-standard (0·5) and/or standard (1·0) units as indicated against each unit.
Each of the Units below consist of two separate parts:

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<thead>
<tr>
<th>Mathematics General A1</th>
<th>Surveying</th>
<th>(0.5)</th>
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<td>Food &amp; Nutrition</td>
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<tr>
<th>Mathematics General A2</th>
<th>Mathematics in Sport Spending</th>
<th>A2 (a)</th>
<th>(1.0)</th>
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<tr>
<td></td>
<td>Mathematics in the Home Trigonometry</td>
<td>A2 (b)</td>
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<tr>
<th>Mathematics General A3</th>
<th>Weather Getting Around</th>
<th>(0.5)</th>
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<tr>
<th>Mathematics General A4</th>
<th>Owning a Car Earning</th>
<th>(0.5)</th>
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<tr>
<th>Mathematics General A5</th>
<th>Accommodation Chance</th>
<th>A2 (a)</th>
<th>(1.0)</th>
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<tr>
<td></td>
<td>Health</td>
<td>A2 (b)</td>
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<td></td>
<td>Land and Coastal Navigation</td>
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<tr>
<th>Mathematics General A6</th>
<th>World Travel Environment</th>
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**Assessment** A variety of assessment methods will be used with emphasis being placed on practical projects and applied assignments along with tests and classwork.