




Mathematical Methods



Year 12 at Walford

Her Way

You will develop an increasingly complex and sophisticated understanding of calculus and statistics. By using functions and their derivatives and integrals, and by mathematically modelling physical processes, you will develop a deep understanding of the physical world through a sound knowledge of relationships involving rates of change. You will use statistics to describe and analyse phenomena that involve uncertainty and variation.

SACE Stage 2
20 Credits

|  Engage <i>Skills</i> |  Extend <i>Knowledge</i> |  Enrich <i>Experiences</i> |
|---|--|---|
| <p>The focus is on the use of mathematics to model practical situations, and on its usefulness in such situations. Mathematical skills and techniques are developed to enable students to explore, describe, and explain aspects of the world around them in a mathematical way. Problems considered include forming algebraic conjectures and their proof. Students find solutions to mathematical problems that may:</p> <ul style="list-style-type: none"> • be routine, analytical, and/or interpretative • be posed in a variety of familiar and new contexts • require discerning use of electronic technology | <p>The following Calculus and Statistics topics are studied (not necessarily studied in this order):</p> <p>Topic 1: Further differentiation and applications</p> <p>Topic 2: Discrete random variables</p> <p>Topic 3: Integral calculus</p> <p>Topic 4: Logarithmic functions</p> <p>Topic 5: Continuous random variables</p> <p>Topic 6: Sampling and confidence intervals.</p> | <p>Students are encouraged to participate in Senior Level Mathematics competitions including:</p> <ul style="list-style-type: none"> • The Hamann School Mathematics Competition (HSMC), from The Mathematical Association of South Australia (MASA) • The Computational and Algorithmic Thinking Competition (CAT), from the Australian Mathematics Trust (AMT) • The Australian Mathematics Competition (AMC), from The Australian Mathematics Trust (AMT) |

|  Assessments/Outcomes |  Pathways |
|--|---|
| <p>50%: Six Skills and Application Tasks (SATs) (including the equivalent of one conducted without the use of notes or a graphics calculator);</p> <p>20%: One Investigation task (up to 15 pages);</p> <p>30%: SACE 130 minute examination on all topics (use of a graphics calculator and two double-sided A4 pages of hand-written notes is allowed).</p> | <p>Career Pathways: Mathematical Methods provides the foundation for further study in mathematics, computer sciences, statistics, health and the sciences. When studied together with Specialist Mathematics, this subject can be a pathway to advanced engineering, mathematical sciences, physical sciences and laser physics. Tertiary options from Mathematical Methods include: Applied Data Analytics, Computer Science, Data Science, Dental Surgery, Engineering, Finance and Banking, Mathematical and Computer Sciences, High Performance Computational Physics, Industrial and Applied Mathematics, Mathematical Science, Medical Studies/Medicine, Mineral Geoscience, Science, Secondary School Teaching/Mathematics, Space Science and Astrophysics, Veterinary Bioscience.</p> <p>When studied together with Specialist Mathematics tertiary options include: Engineering (Honours), Engineering double degrees, Mathematical Sciences (Honours), Mathematical Sciences (Advanced), High Performance Computational Physics.</p> |