Lanyon High School

Year 10 — Australian Curriculum: Optional Content for Post-Year 10 Mathematics Pathways

Rationale	**Introduction**	The Australian Curriculum: Mathematics F – 10 provides students with essential mathematical knowledge, skills, procedures and processes in number, algebra, measurement, space, statistics and probability. It develops the numeracy capabilities that all students need in their personal, work and civic lives, and provides the fundamentals on which mathematical specialties and professional applications of mathematics are built. In Year 10, students also consider possible pathways to study senior secondary mathematics. Preparation for subsequent study of subjects based on ACARA's Mathematical Methods Units 1 and 2 can be supported by further development of aspects of mathematics from Year 10. This provides a basis for building understanding that underpins these and equivalent courses of study. Teachers will support students with additional content to extend and enrich their study of the Year 10 Mathematics curriculum.
Teaching and learning	**Suggested topics**	Students will have an opportunity to learn extension topics in the strands of number, algebra, measurement, space, statistics and probability. Suggested topics include: • Operations on numbers involving fractional exponents and surds • Simplification of combinations of linear expressions with rational coefficients and the solution of related equations • Algebraic representations of quadratic functions of the form $f(x) = ax^2 + bx + c$ • Where a, b and c are non-zero integers, and their transformation to the form $f(x) = a(x + h)^2 + k$ where h and k are non-zero rational numbers, and the solution of related equations • The graphs of $y = sin(x)$ and $y = cos(x)$ as functions of a real variable and the solution of related equations • The inverse relationship between exponential functions and logarithmic functions and the solution of related equations • The effect of increasingly small changes in the value of variables on the average rate of change and in relation to limiting values • Relationships between angles and various lines associated with circles (radii, diameters, chords, tangents) • Measures of spread, their interpretations and usefulness with respect to different data distributions • Counting principles, and factorial notation as a representation that provides efficient counting in multiplicative contexts, including calculations of probabilities Learning activities will include explicit direct instruction alongside constructivist, problem-based learning.
	General capabilities and Cross curriculum priorities	
	Key to general capabilities and cross-curriculum priorities	Literacy, Numeracy, ICT capability, Critical and creative thinking, Ethical behaviour, Personal and social capability, Intercultural understanding, Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia's engagement with Asia, Sustainability
Develop assessment	**Assessment**	As this is an optional course, students will not undertake formal assessment items. However, they will do ongoing formative assessment in class to mark their progress and to provide feedback to themselves and the teacher of their success with understanding and applying the concepts. Students will receive a simplified report for this class which will indicate their effort and work habits in the area.