



Mathematics Extension 1

STAGE 6 HSC ~ COURSE OUTLINE

The content of this course and its depth of treatment indicate that it is intended for students who have demonstrated a mastery of the skills of Stage 5 Mathematics and are interested in the study of further skills and ideas in mathematics. The course is intended to give these students a thorough understanding of and competence in aspects of mathematics, including many which are applicable to the real world. It has general educational merit and is also useful for concurrent studies of science, industrial arts and commerce. The course is a recommended minimum basis for further studies in mathematics as a major discipline at a tertiary level and for the study of mathematics in support of the physical and engineering sciences. Although the course is sufficient for these purposes, students of outstanding mathematical ability should consider undertaking the Mathematics Extension 2 course.

MAIN TOPICS COVERED

HSC Course

- Methods of integration
- Primitive of \sin^2x and \cos^2x
- Equation $\frac{dN}{dt} = k(N - P)$
- Velocity and acceleration as a function of x
- Projectile motion
- Simple harmonic motion
- Inverse functions and inverse trigonometric functions
- Induction
- Binomial theorem
- Further probability
- Iterative methods for numerical estimation of the roots of a polynomial equation
- Harder applications of Mathematics HSC course topics



SYLLABUS OUTCOMES

- HE1** Appreciates interrelationships between ideas drawn from different areas of mathematics
- HE2** Uses inductive reasoning in the construction of proofs
- HE3** Uses a variety of strategies to investigate mathematical models of situations involving binomial probability, projectiles, simple harmonic motion, or exponential growth and decay
- HE4** Uses the relationship between functions, inverse functions and their derivatives
- HE5** Applies the chain rule to problems including those involving velocity and acceleration as functions of displacement
- HE6** Determines integrals by reduction to a standard form through a given substitution
- HE7** Evaluates mathematical solutions to problems and communicates them in an appropriate form

BOSTES Assessment Information

External examination	Marks	Internal assessment	Weighting
Section 1 – Objective Response Questions	10	A. Concepts, skills and techniques	50
Section 2 - Short answer questions	60	B. Reasoning and Communication	50
TOTAL MARKS	70	TOTAL MARKS	100

School Based Evidence of Learning ~ Formal Task Schedule

Task No.	Targeted Outcomes	Learning Context	Task	Date Due	Weighting		Marks
					A	B	
1	He – 1, 2	Geometrical application of the derivative plane and circle geometry, sequence and series	Assessment Task	Tm 4 Wk 9	12.5%	12.5%	25%
2	HE 4, 6	Integration, Exponential and log Functions, Trimetric functions	Assessment Task	Tm 1 Wk 8	12.5%	12.5%	25%
3	HE 2-7	All Areas	Trial HSC Examination	Tm 2 Wk 9/10	15%	15%	30%
4	HE – 3-7	Inverse function, polynomials, binomial theorem	Assessment Task	Tm 3 Wk 2	10%	10%	20%
TOTAL					50%	50%	100%