Liverpool Girls' High School
Innovation Excellence Learning

Mathematics Extension 2
STAGE 6 HSC ~ COURSE OUTLINE

The course offers a suitable preparation for study of mathematics at tertiary level, as well as a deeper and more extensive treatment of certain topics than is offered in other mathematics courses. It represents a distinctly high level in school mathematics involving the development of considerable manipulative skill and a high degree of understanding of the fundamental ideas of algebra and calculus. These topics are treated in some depth. Thus, the course provides a sufficient basis for a wide range of useful applications of mathematics as well as an adequate foundation for the further study of the subject.

MAIN TOPICS COVERED

- Graphs
- Complex Numbers
- Conics
- Integration
- Volumes
- Mechanics
- Polynomials
- Harder Extension 1 Topics

Syllabus Outcomes

E1   Appreciates the creativity, power and usefulness of mathematics to solve a broad range of problems

E2   Chooses appropriate strategies to construct arguments and proofs in both concrete and abstract settings

E3   Uses the relationship between algebraic and geometric representations of complex numbers and of conic sections

E4   Uses efficient techniques for the algebraic manipulation required in dealing with questions such as those involving conic sections and polynomials

E5   Uses ideas and techniques from calculus to solve problems in mechanics involving resolution of forces, resisted motion and circular motion

E6   Combines the ideas of algebra and calculus to determine the important features of the graphs of a wide variety of functions

E7   Uses the techniques of slicing and cylindrical shells to determine volumes

E8   Applies further techniques of integration, including partial fractions, integration by parts and recurrence formulae, to problems

E9   Communicates abstract ideas and relationships using appropriate notation and logical argument

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	90	B. Reasoning and Communication	50
TOTAL MARKS	**100**	**TOTAL MARKS**	**100**

School Based Evidence of Learning ~ Formal Task Schedule

Task No.	Targeted Outcomes	Learning Context	Task	Date Due	Weighting A	Weighting B	Marks
1	E – 3, 6, 9	Complex Numbers Graphs	Assessment Task	Tm 4 Wk 9	12.5%	12.5%	25%
2	E – 3, 4, 9	Polynomials, conics	Assessment Task	Tm 1 Wk 8	12.5%	12.5%	25%
3	E – 1, 2, 3, 4, 7, 8, 9	Complex numbers, conics, polynomials, graphs, volumes, integration	Trial HSC Examination	Tm 2 Wk 9/10	15%	15%	30%
4	E – 5, 9	Mechanics, harder applications of the extension course.	Assessment Task	Tm 3 Wk 2	10%	10%	20%
TOTAL					**50%**	**50%**	**100%**