MATHEMATICS

Unit 1&2
Specialist Mathematics

COURSE OUTLINE:

The course is designed for students intending to do a post-secondary course in Mathematics, Engineering or Physical/Applied Sciences. It is recommended for good maths students who have shown an interest in maths from Year 9 SEAL Maths, Year 10 Pre-Methods and Extension Advanced Maths). The course would fit well into an eight-unit Mathematics program (ie taken in conjunction with Units 1 & 2 Mathematical Methods). The content provides sufficient grounding for students wishing to undertake Mathematical Methods Units 3 & 4 and Specialist Mathematics Units 3 & 4.

AREAS OF STUDY WILL BE CHOSEN FROM:

- Arithmetic and Number
- Geometry, Measurement and Trigonometry
- Graphs of Linear and Non-linear Relations
- Algebra and Structure
- Transformations, Trigonometry and Matrices
- Discrete Mathematics
- Statistics

OUTCOMES:

On completion of these units, students should be able to:

1. Define and explain key concepts in relation to the topics from the selected areas of study and apply a range of mathematical routines and procedures.

2. Apply mathematical processes in non-routine contexts and analyse and discuss these applications of mathematics in at least three areas of study.

3. Use technology to produce results and carry out analysis in situations requiring problem-solving, modelling or investigative techniques or approaches in at least three of the areas of study.

ASSESSMENT:

S or N based on the demonstrated achievement of the outcomes specified above. In addition, a level of achievement A+ to E or N will be reported based on results obtained in assessment tasks which include assignments and homework, tests and an exam for each unit.

Unit 3&4
Specialist Mathematics

COURSE OUTLINE:

This course is intended for students interested in pursuing Mathematics studies at a tertiary level and is highly recommended for many Science and Engineering degree courses. This study extends the material from Mathematical Methods Units 3 & 4 and can only be taken following or concurrently with Mathematical Methods Units 3 & 4.

The appropriate use of Computer Algebra System (CAS) technology to support and develop the teaching and learning of mathematics, and in related assessments, is to be incorporated throughout the unit.

AREAS OF STUDY:

- Functions, Relations and Graphs
- Algebra
- Calculus
- Vectors
- Logic and Proof
- Probability and Statistics

OUTCOMES:

On completion of these units, students should be able to:

1. Define and explain key terms and concepts as specified in the areas of study and to apply a range of related mathematical routines and procedures.

2. Apply mathematical processes with an emphasis on general cases in non-routine contexts and to analyse and discuss these applications of mathematics.

3. Select and appropriately use technology to develop mathematical ideas, produce results and carry out analysis in situations requiring problem-solving, modelling or investigative techniques or approaches.

ASSESSMENT:

S or N based on the demonstrated achievement of the outcomes specified above. The student's level of achievement for Units 3 and 4 will be determined by:

School-Assessed Coursework for Unit 3: 20%
School-Assessed Coursework for Unit 4: 20%
Two end-of-year exams: Exam 1 20%
                        Exam 2 40%