



# A- LEVEL MATHEMATICS

For A level Mathematics courses, a thorough understanding of Mathematics at GCSE level is essential. An interest in the subject, a willingness to persevere despite difficulties and a consistent effort throughout the two-year course will be needed to ensure success. There is a big jump between GCSE and AS-level Maths so in order to get off to the best possible start students are encouraged to revisit grade 8 and 9 GCSE algebra topics; as fluency with algebra really is the key to success.

Syllabus: Pearson Edexcel Level 3 Advanced GCE in Mathematics

## **Aims and Objectives:**

NHGS provides A level Mathematics courses which will:

- (i) enable students to acquire knowledge and skills with confidence, satisfaction and enjoyment;
- (ii) give students experience of mathematical activity and develop resourcefulness in solving problems;
- (iii) enable students to apply mathematics and recognise its significance to other disciplines;
- (iv) develop students' understanding of mathematical reasoning;
- (v) provide students with a foundation for the continuing study of mathematics.

## **Syllabus Content: A level Mathematics**

### **Pure Mathematics**

The main areas of study are algebra, functions, exponentials and logarithms, vectors numerical methods, trigonometry, co-ordinate geometry, sequences and series, differentiation, integration and direct methods of proof.

### **Applied Mathematics**

The mechanics content applies mathematical concepts and methods to modelling physical situations such as the motion and equilibrium of objects. Many of the techniques learned in pure mathematics are used in the problems solved in the mechanics questions. The study of mechanics complements Physics and will prove useful to those students with an interest in any branch of engineering.

The statistics content covers the processing and interpreting of numerical data and the laws of probability, and will complement topics studied in Geography, Biology, Economics and Social Science subjects. It will be useful for those students considering a career in finance.

### **Method of Assessment: A level Mathematics**

There are three papers. Students must answer all questions.

All A level papers are weighted equally. Each paper consists of a 2 hour examination.

Paper 1: Pure Mathematics 1

Paper 2: Pure Mathematics 2.

Paper 3: Section A – Statistics and Section B – Mechanics.

# A- LEVEL FURTHER MATHEMATICS

Pearson Edexcel Level 3 Advanced GCE in Further Mathematics

**A level Further Mathematics can only be studied if students take A level Mathematics.**

**Syllabus Content: A level Further Pure mathematics:**

The main areas of study are; proof, complex numbers; matrices, further algebra and functions, further calculus, further vectors, polar coordinates, hyperbolic functions and differential equations.

**Students will study the following options for Further Mathematics:**

## **Further Statistics 1**

Statistical distributions (discrete and continuous), correlation, hypothesis testing, Chi squared tests. Probability distributions, combinations of random variables, estimation, confidence intervals, and hypothesis tests. Probability generating functions, quality of tests.

## **Further Mechanics 1**

Momentum and impulse, collisions, centres of mass, work and energy, elastic strings and springs.

## **Method of Assessment: A level Further Mathematics**

There are four papers. All papers are weighted equally. Each paper consists of a one and a half hour examination.

Paper 1: Core Pure 1

Paper 2: Core Pure 2

Paper 3: Further Statistics 1

Paper 4: Further Mechanics 1

Students opting for A level Mathematics and A level Further Mathematics have the opportunity to extend their understanding of a unique language and problem solving tool. Mathematical techniques are widely used in science, engineering, accountancy, medicine and information technology. Qualifications in Mathematics are relevant and highly valued in many fields - such qualifications are evidence of good problem solving skills and the ability to think logically.

Candidates need to discuss their choice with a member of the Mathematics department to ensure that they embark upon a course which is suitable for them.

There will be an option to take AS level Further Mathematics at the end of year 12.

Any student interested in A level Mathematics or Further Mathematics may obtain more information from **Mrs H J Ablewhite**.